Long Range Transportation Plan

CROSSROADS
It's time to chart our future.

MMMPO
morgantown monongalia
metropolitan planning organization

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CHAPTER 1 – INTRODUCTION

1. 1 The Long Range Transportation Plan

This Long Range Transportation Plan (LRTP) document summarizes the planning process, data, technical analysis, and recommended transportation strategies, programs, and construction projects to support transportation goals and objectives in the Morgantown-Monongalia County region. This document includes the following chapters:

1. Introduction
2. Regional Vision
3. Transportation Goals and Objectives
4. Existing Transportation System
5. Regional Growth Forecasts
6. Transportation Demand Model Development
7. Multimodal Alternatives Analysis
8. Funding the Long Range Transportation Plan
9. Projects and Strategies
10. System Management
11. Transportation System Security
12. Innovative Funding Strategies
13. Environmental Justice Analysis

This Plan has been prepared as required by federal regulations including 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 Users (SAFETEA-LU).

On July 6, 2012, near the end of the formal planning process for this plan, the Moving Ahead for Progress in the 21st Century Act (MAP-21) became law. MAP-21 authorizes federal surface transportation programs through the end of the federal fiscal year 2014. While this Plan has been prepared to be consistent with the new law, specific federal rulemaking related to metropolitan plans (like this plan) has not been issued at the time of this writing. Specific guidance on MAP-21 could affect the implementation of this Plan.

The preparation of this plan is part of an ongoing planning process by the Metropolitan Planning Organization (MPO) as required in the U.S. Code of Regulations:

"…each urbanized area is to carry out a continuing, cooperative, and comprehensive multimodal transportation planning process, including the development of a metropolitan transportation plan and a Transportation Improvement Program (TIP), that encourages and promotes the safe and efficient development, management, and operation of surface transportation systems to serve the mobility needs of people and freight (including accessible pedestrian walkways and bicycle transportation facilities) and foster economic growth and development, while minimizing transportation-related fuel consumption and air pollution…"

1.2 Purpose of the Long Range Transportation Plan (LRTP)

The LRTP serves as a guide for planning and improving the transportation system in support and promotion of a future vision for the region. It will be the basis for the MPO's ongoing planning efforts, pursuit of improvement projects, programs, and policy development by the Morgantown Monongalia Metropolitan Planning Organization (MMMPO) for the next five years. The LRTP is based on a vision for the future of the region in 2040. This plan is an update to the *Greater Morgantown Regional Transportation Plan* adopted in March of 2007. The next update of the LRTP will be in 2018, and will be based on how the needs and goals of the region will have changed since the adoption of this Plan.

1.3 The Morgantown Monongalia Metropolitan Planning Organization (MMMPO)

The MMMPO was established in June 2003 as the regional agency responsible for administering the continuing, coordinated, and comprehensive transportation planning process in Monongalia County. The MMMPO coverage area is displayed in Figure 1-1.

MPOs are federally required transportation planning bodies. MPOs are comprised of elected and appointed officials representing local, state and federal governments and agencies having interest or responsibility for transportation planning and programming within an urbanized area. An MPO is responsible for the development of a Long Range Transportation Plan (LRTP), the Transportation Improvement Program (TIP), and a Unified Planning Work Program (UPWP) for its metropolitan

planning area. The adoption of these documents is a prerequisite for the receipt of both federal transit and federal highway funding. The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) 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.

The core functions of an MPO are:

Establish a setting: Establish and manage a fair and impartial setting for effective regional decision-making in the metropolitan area.

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).

Maintain a Long Range Transportation Plan (LRTP): At least every five years, develop and update a Long Range Transportation Plan for the metropolitan area covering a planning horizon of at least twenty years. The LRTP should foster (1) mobility and access for people and goods, (2) efficient system performance and preservation, and (3) quality of life.

Develop a Transportation Improvement Program (TIP): At least every four years, the MPO must develop a project implementation program based on the LRTP 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.

Involve the public: Involve the general public and all the significantly affected subgroups in the four essential functions listed above.

Source: *The Transportation Planning Process: Key Issues*, a Publication of the Transportation Planning Capacity Building Program, FHWA, FTA.

MMMPO Structure

The MMMPO is comprised of the following committees:

- The MPO Policy Board
- Transportation Technical Advisory Committee (TTAC)
- Citizen's Advisory Committee (CAC)
- Policy Advisory Committee (PAC)

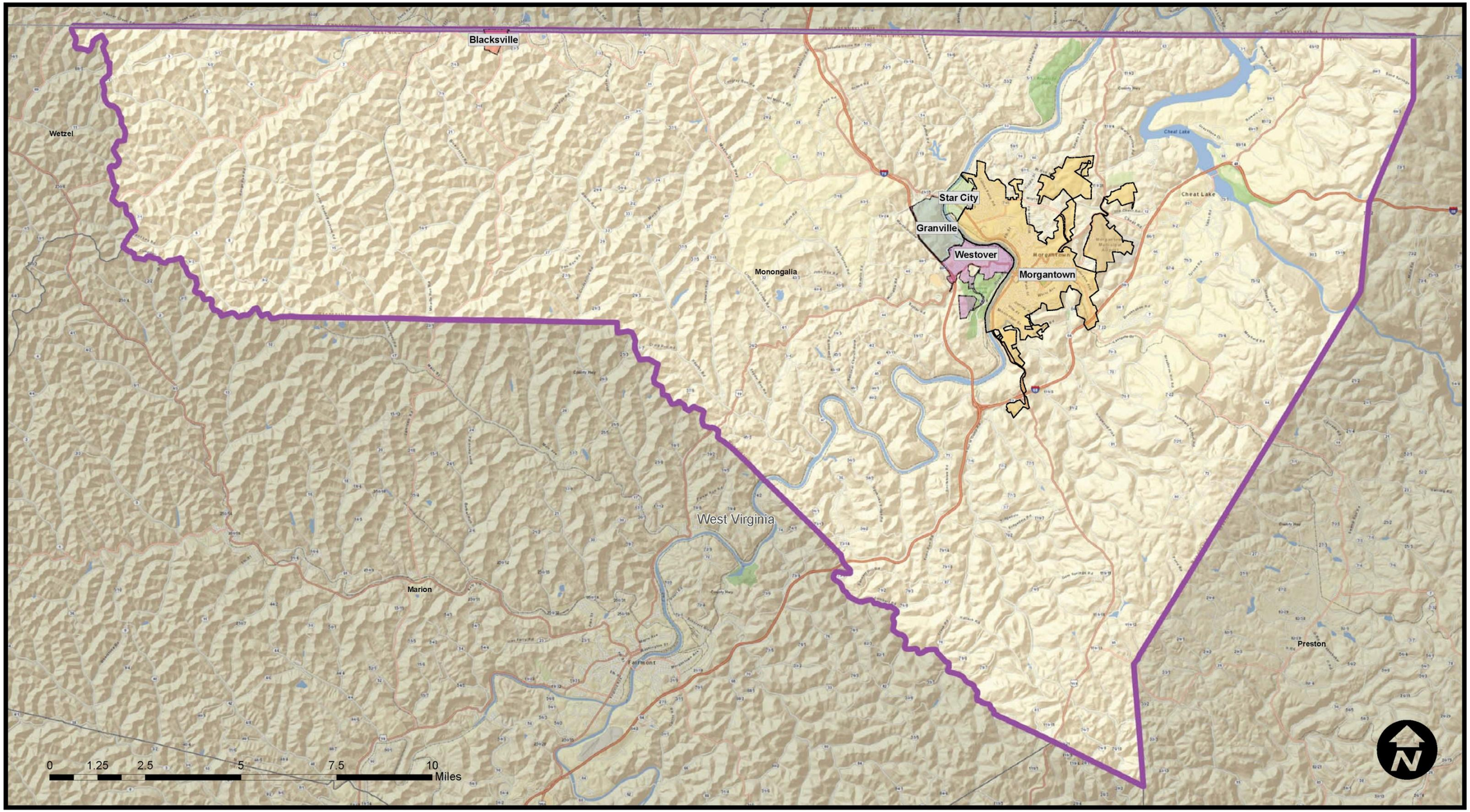
MMMPO Policy Board

The MMMPO Policy Board provides overall direction to the MPO as well as providing an open forum for transportation decision-making. Voting members of the Policy Board are primarily elected officials from the incorporated communities in the County, the County Commission, and representatives of other agencies in the County including the Monongalia County Board of Education, West Virginia University (WVU) and the Mountain Line Transit Authority. A representative of the West Virginia Department of Transportation (WVDOT) also is a voting member of the Policy Board. The Policy Board meets bi-monthly to discuss issues and review and approve major planning reports, documents, and activities. The Policy Board adopts and considers modifications to the LRTP, the UPWP, and the TIP.

Representation on the MMMPO 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 from the Mountain Line Transit Authority
- One representative from WVDOT
- One representative from WVU

Figure 1-1. MMMPO Coverage Area



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Advisory Committees

The Transportation Technical Advisory Committee (TTAC)

The Transportation Technical Advisory Committee (TTAC) and the Citizens Advisory Committee (CAC) also meet bimonthly 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 LRTP and TIP. TTAC members are appointed by the agency or municipality they represent.

The following agencies may be represented on the TTAC:

- City of Morgantown Planning Department
- City of Morgantown Engineering Department
- Monongalia County Planning Department
- Monongalia County Economic Development
- WVDOT
- FHWA
- Mountain Line Transit Authority
- Morgantown Utility Board
- Harley O. Staggers National Transportation Center at WVU

The Citizens Advisory Committee (CAC)

The Citizens Advisory Committee (CAC) is a standing MPO committee. A single individual representing the following interests can be appointed to the CAC by the Policy Board representative(s) of their agency.

CAC representatives may come from the following agencies:

- Mountain Line Transit Authority
- WVDOT
- WVU
- The various municipalities in the Urban Area
- Monongalia County Commission
- Monongalia County Board of Education
- Resident Associations
- Local Commercial Associations
- Emergency Service Organizations

The Policy Advisory Committee (PAC)

The Policy Advisory Committee (PAC) consists of leaders from across the community who are periodically asked to advise the Policy Board on regional issues.

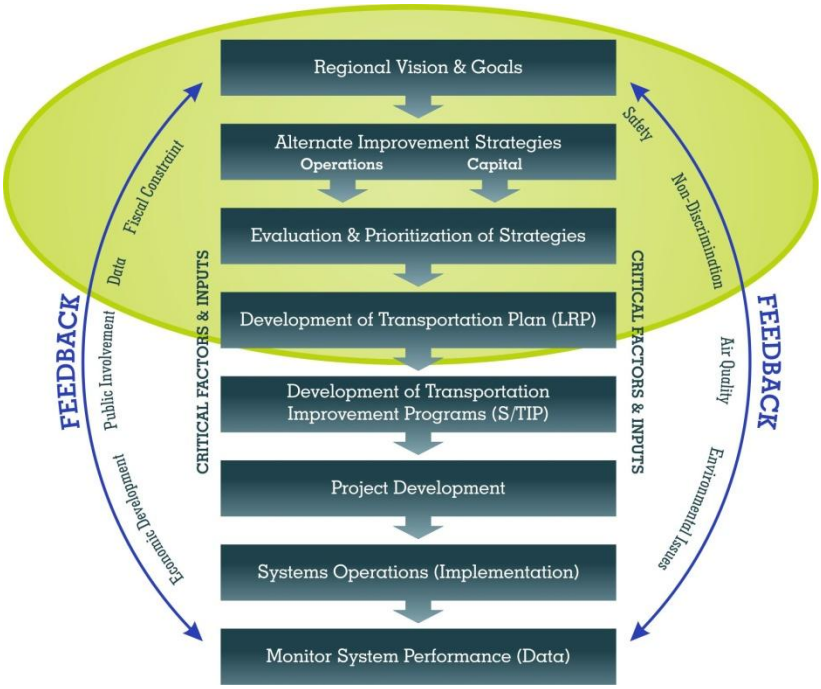
PAC members come from diverse organizations including those listed below:

- Monongalia County Development Authority
- Morgantown Area Economic Partnership
- Morgantown Area Chamber of Commerce
- FHWA
- Federal Aviation Administration
- Office of the Governor of West Virginia
- Major employers in the area

1.4 LRTP Development Process

The development of this Plan entails the first four boxes in the following illustration of an MPO's continuing transportation planning process:

Figure 1-2. The Transportation Planning Process



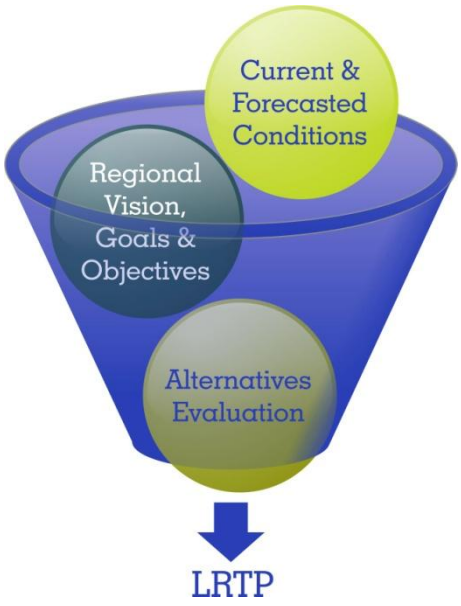
Source: *The Transportation Planning Process: Key Issues*, a Publication of the Transportation Planning Capacity Building Program, FHWA, FTA.

The public process for the development of this plan included a comprehensive regional visioning process (to be discussed in the next chapter). It also included an extensive stakeholder and public participation process that involved the MPO Policy Board, all standing committees of the MPO, other stakeholders in the region, and the general public. A formal and consistent group of representatives was assembled to guide the Plan development. This group included the MPO's Policy Board, Transportation Technical Advisory Committee (TTAC), and Citizen's Advisory Committee (CAC). This group was referred to as the Transportation Advisory Group (TAG) and was heavily engaged throughout the development of the Plan, as illustrated in Figure 1-3. The TAG will be described in subsequent chapters.

Key Process Elements

Key elements of the process include:

Establish a Regional Vision – A vision for the future of the region was articulated through a series of public involvement meetings, and interviews and meetings with local leaders and stakeholders. The vision



paints a picture of how the region desires its land use and transportation system to evolve over the next 20+ years.

Establish Transportation Vision, Goals, Objectives, and Measures – Based on regional goals and objectives expressed in the regional visioning process, and additional input from the TAG, a set of transportation-specific goals and objectives was developed. This included identification of items that should be measured to gauge progress toward those objectives.

Assess Current Conditions – Strengths, weaknesses, problems, and deficiencies in the region's transportation system were identified through review of data, previous studies, technical analysis, and input from stakeholders and the general public.

Forecast Future Conditions – Forecasts of future population, housing, employment, travel demand, and transportation funding levels were developed. Assessments of the future implications of those forecasts were made.

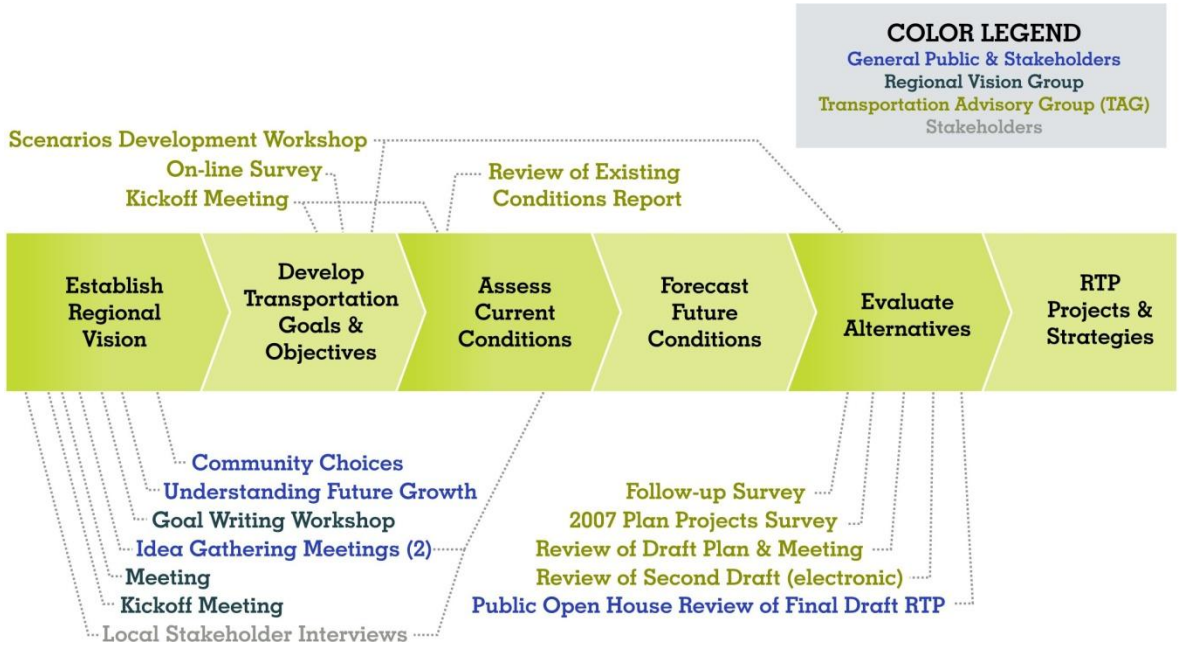
Evaluate Transportation Alternatives – With major involvement from the TAG, and in consideration of the input received from the public during the regional visioning process, numerous potential transportation improvement projects and strategies were developed and assessed. The projects and strategies support and promote the regional vision, and address current and future needs in the system. Items such as the potential effectiveness, cost, feasibility, advantages, and disadvantages for each concept were evaluated. The concepts considered also included those from the 2007 LRTP in addition to newly developed concepts.

Develop the Draft Recommended Plan – Based on these steps, a draft plan that recommended transportation improvement projects and regional transportation strategies was developed and presented to the TAG for a final review. The revised draft was then presented to the general public to ensure that it supports the vision, goals, and objectives for the region that were expressed during the regional visioning process. Then, with consideration of the public comments, the LRTP was finalized.

1.5 Involving the Public and Stakeholders

The following graphic illustrates the LRTP process timeline and the extensive stakeholder and public outreach program implemented for development of this plan.

Figure 1-3. LRTP Process and Public/Stakeholder Involvement



CHAPTER 2 – REGIONAL VISION

CROSSROADS
It's time to chart our future.

In late 2011 and early 2012, the City of Morgantown, Town of Star City, and the Morgantown Monongalia Metropolitan Planning Organization (MMMPO) embarked on an unprecedented collaborative effort to develop a shared vision for the future of the region. The process, called **"Crossroads — It's time to chart our future,"** engaged a diverse group of stakeholders, citizens, and community leaders. The group identified needs, aspirations, and the preferred direction of future growth for Monongalia County — with the intent of working toward that end. The Vision serves as a foundation for three plans: the City of Morgantown's Comprehensive Plan, the Town of Star City's Comprehensive Plan, and the regional Long Range Transportation Plan (LRTP) for the MMMPO.

2.1 Motivation for the Vision

Since the year 2000, Monongalia County has experienced rapid growth in both population and land development. This growth has significantly altered the area's physical, demographic, and economic landscape and overwhelmed efforts to meet the increased demand for transportation infrastructure and other urban services. Though existing long-range plans were individually well-conceived, they were not coordinated across jurisdictional boundaries or integrated with a regional multi-modal transportation plan. This led to varying expectations among area residents and inadequate support for action.

The City of Morgantown, Town of Star City, and MMMPO recognized that continued prosperity in Monongalia County depends on proactively and cooperatively addressing regional challenges, and sought a unifying vision upon which to base their plans.

2.2 Intent and Structure

The Vision describes citizen's aspirations for the future of Monongalia County. It consists of five aspirational statements, ten principles for development in the region, and a conceptual framework map that indicates where growth should and should not be encouraged. The Vision is the foundation of the strategies and policy recommendations of the LRTP.

2.3 The Vision Process

An effective vision process requires the participation of a broad cross section of a community. To achieve that end, a citizen committee, known as the Regional Vision Group, was formed to help guide the process. This diverse group met periodically to coordinate public meetings, review ideas generated through the public process, and draft the preliminary vision statements.

The Crossroads vision process included four rounds of public involvement opportunities:

1. Stakeholder Interviews
2. Idea Gathering Workshops
3. Understanding Future Growth Workshop
4. Community Choices Workshop

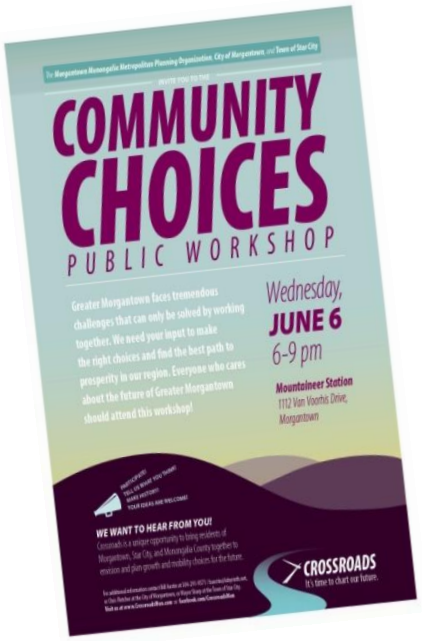
Everyone with an interest in the future of Greater Morgantown was invited to attend the public workshops. Appendix A contains detailed summaries of the public workshops and a complete record of public comments.

Stakeholder Interviews

Between December 7, 2011 and February 1, 2012, the planning team interviewed approximately 100 stakeholders in 12 small group sessions. The stakeholders represented West Virginia University (WVU), local realtors, the Board of Education, neighborhood organizations, economic development entities, businesses, developers, transportation professionals, and persons with disabilities. Various special interest groups such as advocates for environmental causes, biking, and historic preservation (among others) also were represented. The interviews were designed to identify regional strengths, weaknesses and opportunities, and gain insight on local knowledge.

Outreach

Competing interests, busy lifestyles, the long-term focus of comprehensive transportation planning, and the complexity of issues make enticing people to attend planning meetings very challenging.



To inform the public about the importance of the Vision and Plans, and the participatory nature of the workshops, a publicity and outreach effort was undertaken that included:

- Distributing flyers and posters
- Newspaper columns
- Radio interviews
- Promotions on City, Town and MPO websites
- Social media and a project website
- Email blasts
- Word of mouth

Participation

Participants represented many segments of the community, though representation was not proportional to the region's demographics. Participants represented all ages, races, levels of education and incomes, but there was proportionally greater representation from older people and those with higher levels of education and income. Below are the approximate number of participants who attended each phase of the public process:

- Stakeholder Interviews: 100
- Idea Gathering Meetings: 100
- Understanding Future Growth: 50
- Community Choices: 40

Idea Gathering Meetings

On January 25 and 26, 2012 at South Middle School and North Elementary School respectively, two Idea Gathering Meetings were conducted to collect ideas from citizens about the future of the region. These ideas are the foundation on which the Regional Vision is based.

Format

Participants worked in small groups led by trained volunteer facilitators. They brainstormed responses to the question, "What should be done to make Morgantown, Star City and Monongalia County the best they can be in the coming years?" Participants also engaged in a map-based activity where they identified and described strong and weak places in the community. Strong places are those that are appealing and reflect well on the community and that the community values. Weak places are those that represent conditions that should be improved or that do not reflect well on the community.

Outcomes

The meetings yielded 269 ideas for the future, which were entered verbatim into a database and sorted based upon recurring themes. Over half of the ideas related to transportation (traffic, roads, public transportation, biking and walking), while about a quarter of the ideas pertained to development, growth, land use or community collaboration. The remaining ideas related to quality of life topics (schools, amenities, parks, housing, and neighborhoods). These ideas and input from the stakeholder interviews were reviewed by the Regional Vision Group during a meeting in February 2012, which led to a set of preliminary vision statements for the region. The mapping exercise identified specific places within the community and their descriptive characteristics. These descriptions were used to develop ten principles for future growth and development.

Understanding Future Growth

On March 28, 2012 at University High School, the Understanding Future Growth workshop engaged the public in thinking about where growth should occur in the region. This was an analytical workshop that brought preliminary technical analysis and the draft vision statements together for participants to consider.

Community members participate in identifying where future growth should occur in the region.

Format

Like the Idea Gathering Meetings, participants worked in small groups led by trained volunteer facilitators. Through a map-based activity, groups allocated the total amount of land needed to accommodate the County's projected 2040 population assuming recent land consumption trends continued. Groups were given a total of 220 ¾-inch adhesive chips (each representing 40 acres, for a total of 8,800 acres) and asked to place them on a table-size map of the Greater Morgantown Area that showed developed land, undeveloped land, protected land, and natural features. Participants could place their chips anywhere they felt growth should occur, while considering the draft vision statements. Each group was required to place all of their chips on the map.

Outcomes

Several patterns emerged from the workshop's mapping activity and group discussions. These patterns and comments formed the basis for the Principles and Conceptual Map:

Groups of community members engage in discussion about the implications of various growth patterns.

- **Redevelopment at higher intensities.** All of the groups placed at least half of their chips on areas with existing development, indicating a clear preference for redevelopment over growth in currently undeveloped areas.
- **Infill development.** Most of the groups placed large amounts of growth in undeveloped areas near existing development. This infill pattern would plug holes in the urban fabric, develop areas already served by existing infrastructure, and allow the urban area to expand in a contiguous pattern.
- **Greenfield development is limited and clustered.** Groups generally indicated that any growth in rural areas should be both near existing development and/or clustered to "minimize sprawl" and "preserve open space."
- **Very limited development within the outlying areas.** Groups allocated very limited growth for areas in the far south and western portions of the county.

Community Choices

On June 6, 2012, at Mountaineer Station on WVU's campus, the Community Choices workshop invited the public to evaluate the draft vision and provide input on growth scenarios. The input helped to refine the Vision and provide direction for the comprehensive plans and transportation plan.

Format

During the workshop, participants heard a brief presentation about the vision process and what had been learned to-date. Then in a worksheet-based activity, they were asked to indicate their level of support for each of five vision statements and provide written comments to refine them.

Next, participants heard brief presentations about the technical work on economics and transportation conditions and were introduced to the draft principles. Through a second worksheet-based activity, participants indicated their level of support for each principle and provided written comments to refine them.

Finally, having considered the previous public input and technical findings, participants worked in small groups to evaluate and prioritize three general growth scenarios

- **Scenario 1:** The majority of future development will be in the form of infill and redevelopment within the primary urban area.
- **Scenario 2:** The majority of future development will be in the form of new development contiguous to the primary urban area.
- **Scenario 3:** The majority of future development will continue the growth patterns of the past 10 years.

Outcomes

Participants strongly supported the vision statements, and provided insightful comments to refine them. Likewise the principle statements received strong support. The scenario activity confirmed previous public input, which suggested that growth should be managed to balance redevelopment within existing areas and development in new areas contiguous to the existing urban area. Overall the Scenarios were ranked with Scenario 1 as most preferred followed by Scenario 2. Scenario 3 was nearly unanimously ranked as least preferred.

2.4 The Vision

The Vision: Aspirations

Five statements convey the vision for the future of Monongalia County. They reflect the strongest themes from public input and are the broadest expression of the community's aspirations.

The following statements directly reflect public input collected at the Idea Gathering Meetings and subsequent Crossroads workshops. Below each statement is a sample of actual comments that showcase common ideas heard from participants at these meetings. For all comments from the public, see Appendix A.

GROWING…

Managed growth that is efficient, attractive, and well-connected through appropriate infrastructure will balance land consumption with redevelopment while protecting and preserving open space, local agriculture, energy resources and the environment.

"Plan comprehensively, coherent, regulated development."

"Citywide aesthetics/ landscaping plan."

"Promote farmland protection."

"Develop design standards for new construction and enforce them."

"Preserve and expand green space."

"Need Countywide planning."

MOVING…

A balanced, safe, attractive, and accessible transportation system will reduce congestion, improve connectivity and support and direct future growth while integrating private vehicles and expanding public transportation, biking, and walking networks.

"Ensure access regardless of individual or mode of travel (i.e., wheelchairs and bicycles)."

"Implement streets (complete streets) that support all kinds of transportation (bicycles, pedestrians, cars)."

"Promote mix use pedestrian-oriented development that comprises active transport (walking/cycling) – public transportation (de-emphasis on car transportation)."

LIVING…

Job and income growth, improved community services, support for the arts, accessible and connected parks and recreational facilities, good schools, desirable, diverse, and affordable housing, and safe neighborhoods that have access to local shops and markets, will be hallmarks of our region's quality of life.

"Job/Income growth to preserve and improve quality of life."

"Link neighborhoods via biking/walking to community attractions, commercial, and educational venues."

"Affordable housing for all income levels with affordable transportation options for each development. People would like to live closer but can't afford it. Thus having to drive/mixed-use zoning."

COMPETING…

A regional approach to economic development and infrastructure investments that is founded on cooperative relationships will make the region competitive and capable of attracting and supporting existing and new businesses.

"New business while maintaining existing to improve the town's growth."

"Lead the state in the usage of innovative technology products."

"Support strategies that would attract residents so they want to come live here."

COLLABORATING…

An engaged community with leaders that embrace continued citizen engagement and stronger collaboration among municipalities, the County, the State, WVU, neighborhoods and major employers will enable the sharing of resources and lead to successful implementation.

"Consolidate services between cities to leave more money to spend on other things."

"Encourage the region to develop a more balanced product with alternative energy."

"Increase collaboration with other surrounding governments."

The Vision: Ten Principles

Ten Principles reflect community values related to the physical environment in the region. They describe the community's intent about "how" (character attributes) and "where" (conceptual location) development should occur. They reflect a variety of land management themes that are mutually reinforcing. They include the quality, appearance, pattern, character, and organization of development, environmental quality, efficient use of infrastructure, and expanded connectivity and mobility choices for residents.

It is our intent that...

1. **Infill development and redevelopment of underutilized and/or deteriorating sites takes priority over development in remote greenfield locations.**
   It is preferable to accommodate growth within the existing urban area in locations that are appropriate for and can support increased development densities. Infill and redevelopment will occur in a strategic manner that considers community needs like access to amenities, transportation service, and the quality and quantity of open space.
2. **Expansion of the urban area will occur in a contiguous pattern that favors areas already served by existing infrastructure.**
   To the extent that outward expansion of the urban area occurs, it should progress in a concentric pattern, emphasizing areas nearest to the urban area's geographic center. Development should promote responsible management of the region's transportation and utility infrastructure, and help to provide services efficiently by preferring sites that are supported by existing capacity.

3. **Future growth in rural areas will conserve open space, preserve sensitive natural features, and respect significant view sheds.**
   To the extent that development occurs in rural areas (away from the urban center) it should be rural in character (as opposed to urban or suburban) and/or occur in a clustered pattern that preserves open space and avoids negative impacts on steep slopes, wetlands, waterways, and scenic quality.

4. **Quality design is emphasized for all uses to create an attractive, distinctive public and private realm, and promote positive perceptions of the region.**
   Public areas (streets, sidewalks, parks, street trees, etc.) and private areas (building facades, lawns, landscaping, parking lots, driveways, etc.) are planned and designed to balance function, appearance, and affordability, while allowing for creative differences, innovation, and diversity of design.

5. **Development that integrates mixed-uses (residential, commercial, institutional, civic, etc.) and connects with the existing urban fabric is encouraged.**
   Places are created with multiple uses—residential, commercial, and institutional, among others—in proximity to each other, perhaps on the same site and/or in the same structure. Close attention is given to the compatibility of those uses and their surroundings. Uses are arranged in a manner that maximizes pedestrian activity.

6. **Places will be better connected to improve the function of the street network and create more opportunities to walk, bike, and access public transportation throughout the region.**
   While the region's topography is a challenge to create an ideal level of street connectivity, opportunities will be sought to improve the street pattern and thereby increase travel options, potentially decrease vehicle miles, reduce congestion, and improve wayfinding. Bicycle and pedestrian paths and supporting amenities will be integrated into new development and areas undergoing redevelopment.

7. **Residential development will support the formation of complete neighborhoods with diverse housing, pedestrian-scale streets, integrated public spaces, connection to adjacent neighborhoods, and access to transportation alternatives and basic retail needs.**
   Complete neighborhoods include a variety of land uses (residential, commercial, civic, and recreational areas), building types, and housing types; have an identifiable center that offers basic services

such as grocery stores and specialty shops; support a variety of travel options; are well-connected to adjacent neighborhoods and districts; and seamlessly integrate diverse, multi-generational residents living in proximity to one another.

8. **A broad range of housing types, price levels, and occupancy types will provide desirable living options for a diverse population.**
   Housing in the region is diverse in type (single-family and multi-family, detached and attached, etc.) and offers options for both ownership and rental occupancy at a wide range of price levels.

9. **Parks, open spaces, and recreational areas are incorporated as part of future development.**
   Future development will contribute to expanding the quantity, quality, access to, and connections between the region's parks, open space, and recreational amenities.

10. **Environmentally sensitive and sustainable practices will be encouraged in future developments.**
    Development will be designed to reduce potentially negative impacts on environmental features such as steep slopes, stream corridors, wetlands, and significant stands of mature trees. Infill and redevelopment will maintain or enhance the urban tree canopy. Green building practices will be encouraged.

The Vision: Framework Map

The Framework Map (Figure 2-1) illustrates the Principles through seven concepts and shows where these concepts generally apply throughout the Greater Morgantown Area. The Principles and this map form a conceptual framework to serve as a guide to inform the Comprehensive Plans and Long Range Transportation Plan. As a framework, this map is not tied to any regulations, specific policies, or development proposals.

Seven Concepts

The map depicts three areas where development is restricted and four areas where development can occur. The growth areas indicate the degree to which growth should occur, from Priority (most supported) to Limited (least supported).

1. **Preserve Open** – Areas that are permanently protected from development due to public ownership and use as parkland.

2. **Reserve Open (slopes**) – Areas of steep slopes (generally greater than 40%) that, due to the difficulty of building on such extreme topography, are likely to remain as open space. However, these areas may be subject to development and should be protected.

3. **Restricted (floodplain**) **–** Areas that are subject to development, but where development is restricted by local and federal regulations due to a high risk of flooding.

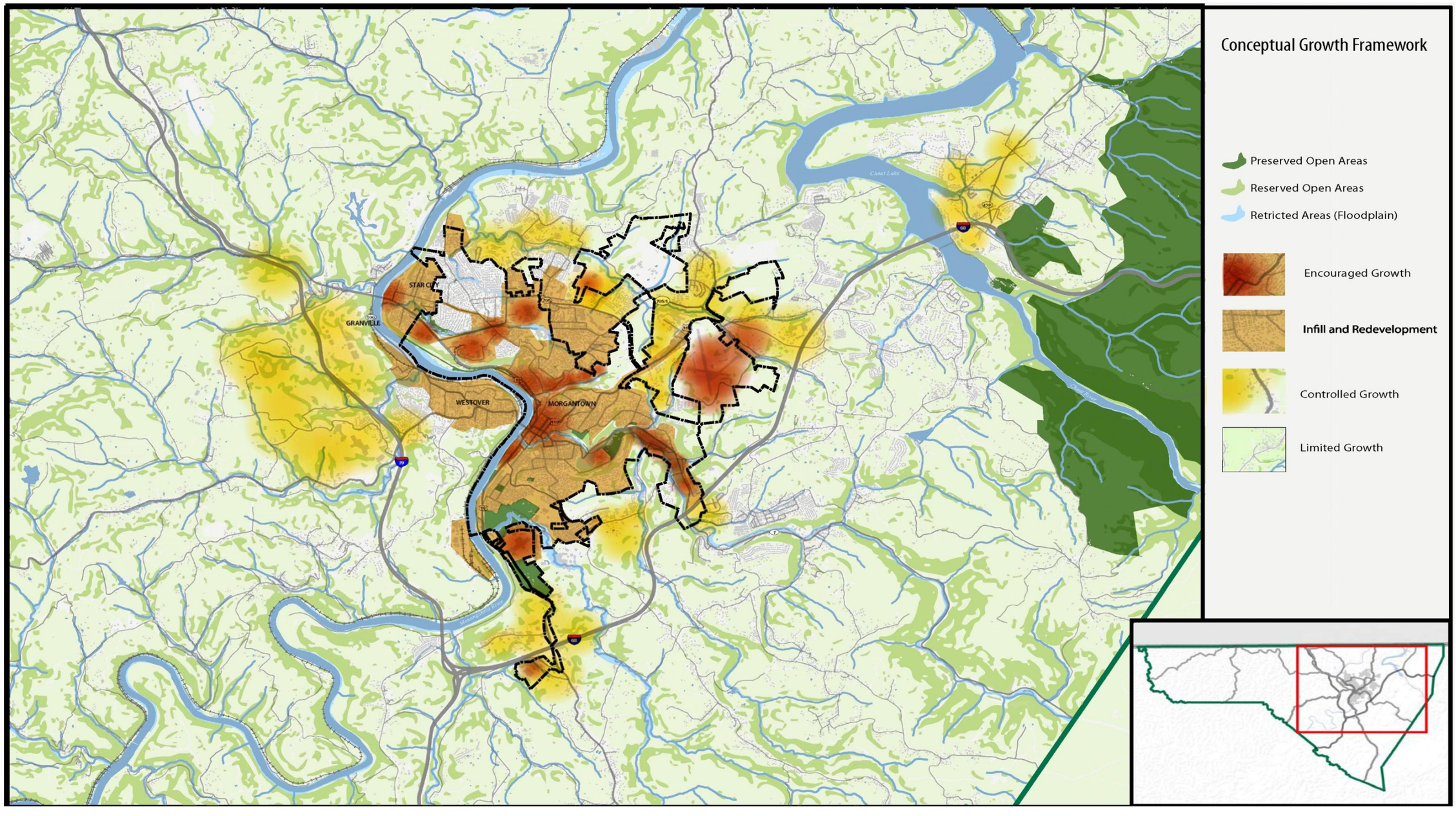
4. **Encouraged Growth** – Areas where growth should be strongly encouraged for economic development interests and revitalizing neighborhoods and districts. Such growth includes new development and redevelopment within existing areas.

5. **Infill and Redevelopment Growth –** Existing developed areas where additional growth through infill or redevelopment is appropriate.

6. **Controlled Growth –** Developing areas, or currently undeveloped land, where more growth is likely due to proximity to existing thoroughfares, infrastructure, and adjacency to recent development. Growth in these areas generally expands the footprint of the urban area and should be controlled to footprint minimize negative impacts.

7. **Limited Growth** – All other areas that are subject to development, but where increased intensity is generally not desired. These areas include existing open space, existing development, and all developable land in areas of the County that are not shown.

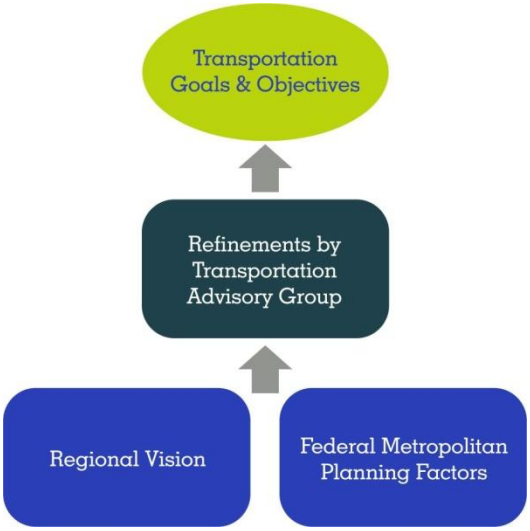
Figure 2-1. The Framework Map



CHAPTER 3 – TRANSPORTATION GOALS AND OBJECTIVES

3.1 Introduction

Establishing well-defined goals and objectives early in the process is critical to the success of any plan, since they will serve as the litmus test for all potential improvements and strategies. The Goals and Objectives of the Long Range Transportation Plan (LRTP) are rooted in the *Regional Vision* (see Chapter 2) and in the Federally mandated *Metropolitan Planning Factors* (see below).



3.2 Goals and Objectives Development Process

The development of the *Regional Vision* served as the initial step in developing the region's transportation goals and objectives. Building off of the community's vision for the region, through a process led by the Transportation Advisory Group (TAG), the region's vision, goals, objectives, and principles were translated into specific goals and objectives for the region's transportation system (see Chapter 1 for a definition of the TAG). Additionally, key measurements needed to determine progress toward each objective also were identified.

Metropolitan Planning Factors
SAFETEA-LU and MAP-21 Section 5303

Federal law emphasizes eight areas that Metropolitan Planning Organizations (MPOs) and states should consider when developing their plans.

The metropolitan planning process for a metropolitan planning area…shall provide for consideration of projects and strategies that will:

a. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
b. Increase the safety of the transportation system for motorized and non-motorized users.
c. Increase the security of the transportation system for motorized and non-motorized users.
d. Increase the accessibility and mobility of people and for freight.
e. 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.
f. Enhance the integration and connectivity of the transportation system, across and between modes for people and freight.
g. Promote efficient system management and operation.
h. Emphasize the preservation of the existing transportation system.

The TAG was engaged at several points in the process to assist in the development and refinement of the transportation goals and objectives. At the May 17, 2012 TAG kickoff meeting, TAG members were introduced to the findings of the regional visioning process and asked to assist in developing preliminary goals, objectives, and measures for the LRTP.

Based on the *Regional Vision*, the *Metropolitan Planning Factors*, and initial input received from the TAG, first draft transportation system vision, goals, objectives, and measures were distributed electronically for review and comment by the TAG on June 21, 2012. The TAG could submit comments by whatever means they wanted. An online survey link was provided as a convenient option for the TAG members to provide feedback.

The goals were refined based on TAG feedback received and presented again to the TAG at a June 28, 2012 meeting. Additional feedback was requested and incorporated into the first draft of the LRTP recommendations which were distributed to the TAG on November 8, 2012. No additional comments on the goals and objectives were received. The goals and objectives were made available for public comment on the MPO website and presented at the December 5, 2012 public open house. No negative comments specific to the goals and objectives were received from the public.

3.3 Regional Transportation Vision, Goals, Objectives and Measurements

Transportation Vision Statement

The following transportation vision statement has been established, based primarily on the *Regional Vision* articulated through the *Crossroads* regional visioning process:

> *The Morgantown Monongalia area will have a complete and attractive transportation system with reduced congestion. The system will support and guide future growth by integrating the use of private vehicles, with public transportation, biking, and walking.*

This overarching vision statement paints a picture of the desired long-term condition of the transportation system.

Goals, Objectives, and Measures Defined

The following definitions describe the scope and intent of the goals, objectives, and measures in this plan.

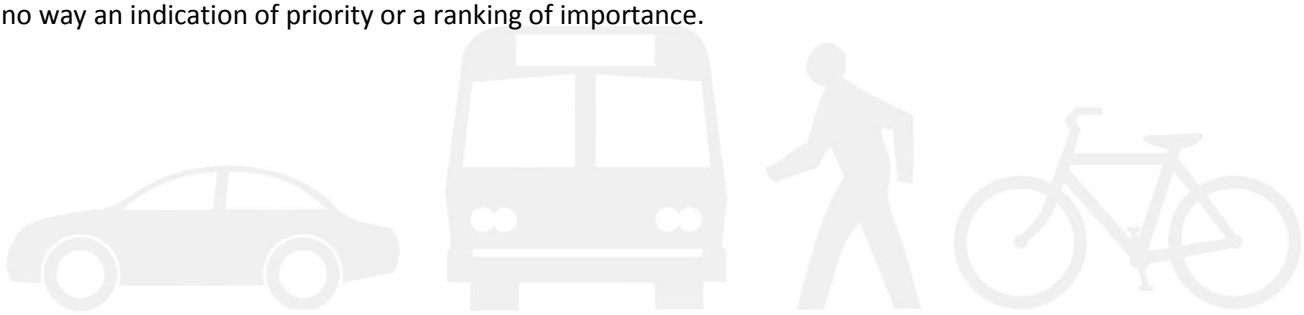
Goals are far-reaching statements of intent, often generalized and somewhat conceptual. An example goal of a transportation plan might be "to provide a more efficient transportation system." This example goal would communicate an intention, but the goal cannot be directly quantified or measured to determine 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 could be "to reduce automobile travel time and delays on the roadway system." This example objective offers a concrete means of determining the relative success of plan outcomes.

Measures indicate the conditions that need to be quantified to determine if an objective is being met. For example, travel times in key corridors could be measured to determine if there is a decrease (or increase) in travel times over a specific time period.

While the "Measures" indicated for each of the goals are intended to be truly measurable, the effort and cost to quantify all of the identified measures on a continuous basis would be a nearly impossible undertaking for the MPO and/or other agencies and organizations. It will be necessary to prioritize the measures and build the data collection and analysis, for those deemed most important, into annual programs, the Unified Planning Work Program (UPWP), project before and after studies, etc.

The following eight transportation goals, with objectives and measures, are the culmination of the process described and should guide transportation planning in the region. The numbering of the goals is in no way an indication of priority or a ranking of importance.



Goal #1: A multimodal transportation system that efficiently moves people and goods				
OBJECTIVES	**MEASUREMENTS**			
Objective 1A: To eliminate/reduce current congestion and multimodal traffic flow restrictions on arterial and collector roadways	Change in delay and travel time for pedestrians	Change in delay and travel time for bicyclists	Change in delay and travel time for automobiles	Change in delay and travel time for bus and Personal Rapid Transit (PRT)
Objective 1B: To ensure that future development and related transportation improvements address capacity and connectivity needs proactively rather than reactively	Change in number of transportation improvements built prior to and concurrently with growth and development (rather than reactive to)			
Objective 1C: Improve ingress/egress to the most densely developed/highest activity areas of region (the core)	Change in time to travel to and from core	Change in number of people traveling to and from core	Change in number of routes and connection options to and from the core (all modes)	
Objective 1D: Provide adequate transportation capacity and access to support current businesses	Change in access to current clusters of businesses	Change in travel time to current clusters of businesses		
Objective 1E: Focus capacity improvements for all modes in areas of desired future growth and development that support the public's vision for the region	Change in number of improvements planned, designed, and/or constructed in areas of desired growth		Change in amount of growth and development in areas identified as priority areas in regional vision	

Goal #2: A transportation system in which all modes are highly integrated and connected			
OBJECTIVES	**MEASUREMENTS**		
Objective 2A: To allow for convenient transfer from one mode to another in the region (i.e. biking to bus, vanpooling to bus, etc.) to maximize travel efficiency	Change in number of multimodal trips	Change in travel time / travel delay for trips	Change in cost of travel
Objective 2B: To encourage the use of the most efficient mode based on the distance and characteristics of a particular trip	Change in number of people walking for trips one-mile or less	Change in number of people bicycling for trips 10-miles or less	Change in number of people riding the bus and PRT for all trips
Objective 2C: Increase the geographic area in which people have convenient access to non-automobile modes	Change in number of travel options to individuals in all populated areas	Change in the area of the county served by non-auto transportation modes	
Objective 2D: Reduce reliance on automobile for travel	Change in number of person trips by non-automobile modes	Change in auto ownership	
Objective 2E: Better serve those who do not/cannot own and drive a personal automobile	Change in number of opportunities to travel for those who do not drive	Change in travel times for those who do not drive	
Objective 2F: To allow for efficient transfers of goods between modes (air, pipeline, river, rail)	Change in quantity of people and goods transferred by these modes		
Objective 2G: Improve and expand infrastructure for pedestrians, bicyclists and people with disabilities	Change in linear feet of sidewalks that connect destinations/attractions	Change in number and length of bicycle routes that connect destinations/attractions	Change in number of fully accessible (per Americans with Disabilities Act [ADA] guidelines) transportation options and facilities
Objective 2H: Increase use of existing rail-trails for transportation purposes	Number of trail users with trip purposes of commuting, shopping, entertainment		

Goal #3: A multimodal transportation system that safely moves people and goods		
OBJECTIVES	**MEASUREMENTS**	
Objective 3A: To minimize crashes, especially injury/fatality crashes, by 50% through improvements to high crash locations, improvements to local enforcement of traffic laws, and education of transportation system users	Change in frequency and rate of crashes (all modes)	Change in frequency of injury/fatality crashes (all modes)
Objective 3B: To ensure that future growth and related transportation improvements address transportation safety needs in planning and design	Change in crash frequency and rates in areas affected by development and growth	Transportation improvements built prior to and concurrently with growth and development (rather than in reaction to growth)

Goal #4: A transportation system that maximizes the efficiency of freight movement through and within the region with minimal impacts on neighborhoods and campus areas, especially areas of higher bicycle and pedestrian demand			
OBJECTIVES	**MEASUREMENTS**		
Objective 4A: Reduce truck traffic in residential neighborhoods and on other streets where significant numbers of bicycles and pedestrians are present	Change in number of trucks in neighborhoods	Change in number of trucks in other pedestrian/bicycle activity areas	
Objective 4B: Improve truck access to key industrial areas	Change in time to deliver freight	Change in amount of freight moved	Change in number of freight-dependent industries
Objective 4C: Increase options for freight movement that minimizes truck traffic on non-interstate roadways	Change in amount of freight moved by non-truck mode		

Goal #5: Greater collaboration between local agencies, state officials, and private interests in the pursuit and funding of transportation improvements			
OBJECTIVES	**MEASUREMENTS**		
Objective 5A: More effective and less costly transportation improvements by capitalizing on common goals and needs between communities and agencies in the region	Change in number of policies and projects co-sponsored by multiple jurisdictions	Change in number of projects funded by multiple jurisdictions	Change in number of projects that physically cross jurisdictional lines
Objective 5B: Higher quality transportation system improvements due to cost sharing and collaboration	Change in the ratio of funding by state sources versus local sources for projects	Change in public opinion related to quality of transportation improvements	Change in number of projects and programs jointly funded by multiple jurisdictions
Objective 5C: Transportation improvements that support the public's long-term vision for the region	Change in number of regional goals supported by projects	Change in public satisfaction related to transportation projects	

Goal #6: A transportation system that is attractive, sustainable, and livable			
OBJECTIVES	**MEASUREMENTS**		
Objective 6A: Integrate the local context of the area into the planning, design, and construction of transportation improvements	Change in the quality and livability of the built environment	Change in public satisfaction related to transportation projects	Change in property values
Objective 6B: Include sustainability features in design of transportation improvements that minimize environmental impacts	Change in storm water runoff due to transportation infrastructure and runoff related to vehicular byproducts	Change in vehicle emissions impact on air-quality	Change in negative impacts to environment due to transportation
Objective 6C: Address multimodal system needs in all planning, design, and construction of transportation improvements	Change in number of non-automobile focused transportation projects planned, designed, and constructed	Change in comfort, safety and convenience for travel (all modes)	

Goal #7: Reduce automobile trip demand, especially during peak travel hours			
OBJECTIVES	**MEASUREMENTS**		
Objective 7A: Reduce the need to construct costly transportation and parking infrastructure improvements	Change in project funding required to meet the region's transportation and parking needs		
Objective 7B: Invest in transportation improvements that encourage and support development/land use patterns that decrease need to travel	Change in number of projects that support mixed-use, transit oriented, and non-auto centric land development		
Objective 7C: Reduce automobile emissions and improve air quality	Change in air quality measures		
Objective 7D: 50% increase in trips made by walking	Change in walking trips		
Objective 7E: 5% of all trips made by bicycle by 2025	Change in bicycle trips		
Objective 7F: Increase number of trips made by public transit by 200%	Change in bus trips	Change in PRT trips	Change in other public transit trips
Objective 7G: Increase work telecommuting and virtual lectures (WVU)	Change in number of employees working from home or other remote locations	Change in number of students taking classes remotely	Change in person trips to/from work and classes
Objective 7H: Increase average vehicle occupancy by 50%	Change in average number of occupants per vehicle		

Goal #8: A multimodal transportation system that enhances the homeland security of the region	
OBJECTIVES	**MEASUREMENTS**
Objective 8A: Heighten awareness of homeland security needs related to transportation	Change in occurrences of security issues being considered
Objective 8B: Improve understanding of critical transportation system-related homeland security issues in the region	Change in knowledge of critical homeland security issues
Objective 8C: Incorporate homeland security needs in transportation project planning, design, and construction	Change in number of projects and policies that include homeland security considerations

3.4 Correlation of the LRTP Goals and Objectives with the Federal Planning Factors

Table 3-1 illustrates the close correlation between the LRTP goals and objectives, and the federally required planning factors indicating that this plan is consistent with federal requirements in terms of its goals and objectives.

Table 3-1. Correlation of LRTP Goals and Objectives with the Federal Planning Factors

Federal Planning Factors	LRTP Goal							
	1	2	3	4	5	6	7	8
a. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.	X	X		X	X	X	X	
b. Increase the safety of the transportation system for motorized and non-motorized users.	X		X	X	X	X	X	
c. Increase the security of the transportation system for motorized and non-motorized users.		X			X			X
d. Increase accessibility and mobility of people and for freight.	X	X		X	X	X	X	
e. 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.	X	X	X	X	X	X	X	
f. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.		X		X	X	X	X	
g. Promote efficient system management and operation.	X	X		X	X	X	X	
h. Emphasize the preservation of the existing transportation system.	X	X	X		X	X	X	

CHAPTER 4 - EXISTING TRANSPORTATION SYSTEM

4.1 Introduction

Having a clear understanding of the current transportation system is vital to the planning process because the existing system is the starting point from which changes will occur. The region's current transportation system includes the following:

- Highways, local roads and streets
- Sidewalks
- Trails
- Public transit (bus and PRT)
- Intercity bus transportation
- Railroad
- River
- Morgantown Municipal Airport

The Morgantown Monongalia Metropolitan Planning Organization (MMMPO) planning area (see Figure 4-1) is made up of both urban and rural areas. Below is a definition of what is considered the "urbanized" area.

Definition of the Urbanized Area

According to the 2010 U.S. Census Bureau data, the region's *Urbanized Area* includes Granville, Morgantown, Star City, and Westover. *Census Designated Places* include Cheat Lake, Brookhaven, and Cassville. A *Census Designated Place* is defined by the U.S. Census Bureau as a location with a settled concentration of population that is identifiable by name but not legally incorporated under the laws of the state in which it is located.

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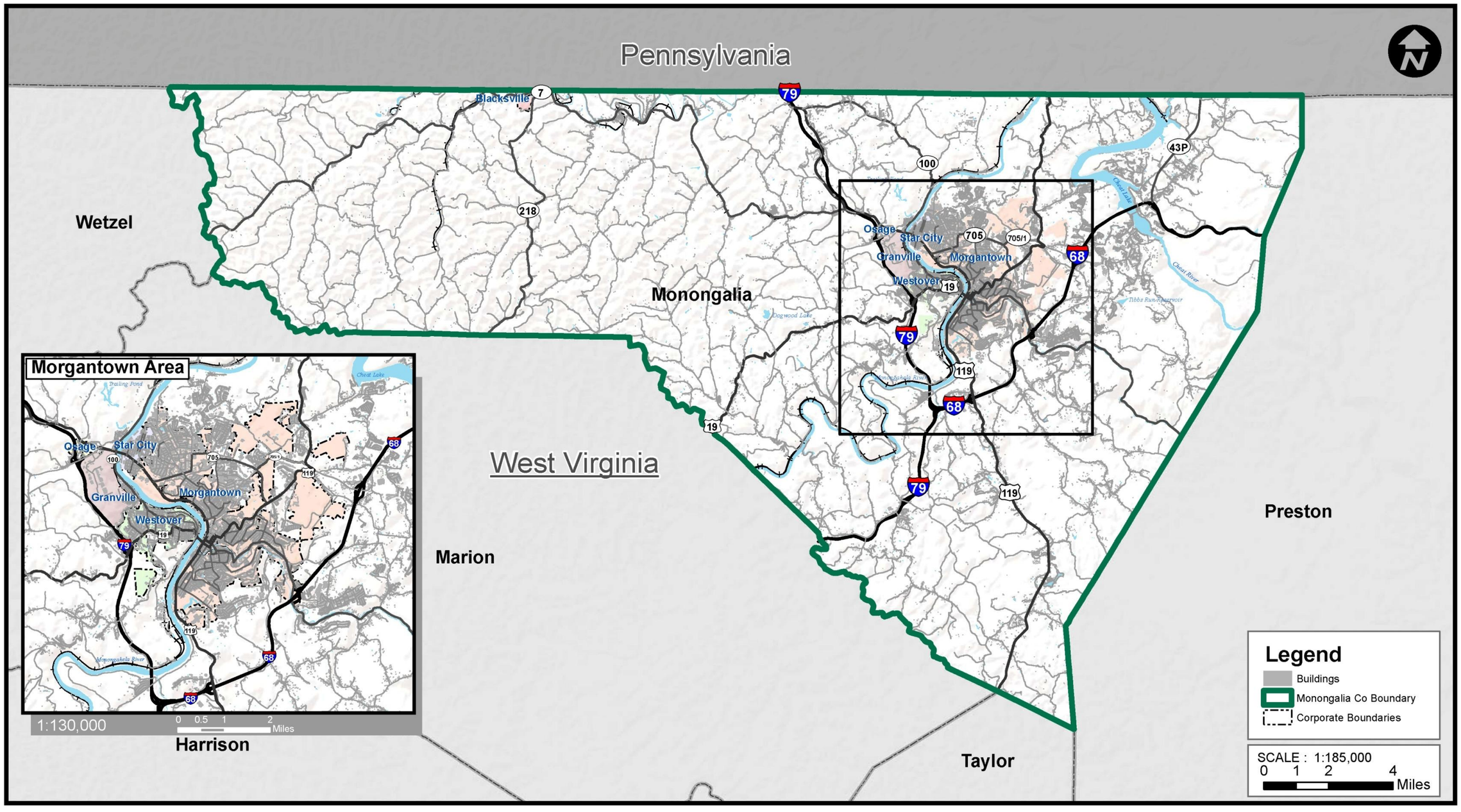
Figure 4-1. MPO Coverage Area



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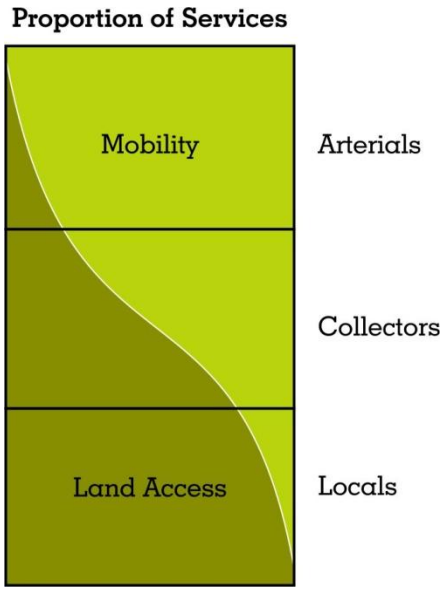
4.2 Functional Classifications

Roadway functional classifications group streets and highways according to the service they are intended to provide and the role each street or road will play in serving the traffic in a region. In general the streets in an urbanized area have one of two primary functions:

Access – Providing transportation access to land
Mobility – Moving vehicles between points



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

In West Virginia, there are two functional classification systems. A federal classification system called the *National Highway Functional Classification System (NFCS)* established through the National Highway Act of 1973, and a state functional classification system that was established by the West Virginia State Legislature in 1967.

National Highway Functional Classification System (NFCS)

Through the NFCS, regions/jurisdictions are addressed as urban and rural. While the classification system applications in urban and rural areas use a very similar terminology, there are fundamental differences in the 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
  - Other Principal Arterials
- Minor Arterials
- Major Collectors
- Minor Collectors
- Local Streets

The urban street system includes:

- Urban Arterials
- Minor Arterials
- Collectors
- Local Streets

The West Virginia Department of Transportation's (WVDOT) definition of these street types is documented in the following sections.

Urban Functional Classification Definitions

Principal Arterial System
This system serves the major centers of activity of a metropolitan area, highest traffic volume corridors, majority of trips entering and/or leaving an urban area, and 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 (CBD).

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; and
- *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 areas, and the county.

Urban Local System
The primary function of the Urban Local System is to provide direct access to abutting land and access to and 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; and
- *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 capable of attracting travel over similarly long distances. They also provide a 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); and
- *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 each roadway over which it has jurisdiction as 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 (LOS).

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; and
- *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 sub-classify 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; and
  - *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 six general functional categories from both the urban and rural systems:

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

The current NFCS developed by the WVDOT is displayed in Figure 4-2 for the county. Figure 4-3 shows average daily traffic volumes on the NFCS. The facility mileage by functional class is documented in Table 4-1 as well as the average mileage by functional classification observed throughout the state.

A comparison with the state system highlights how different Monongalia County is when compared to the statewide average. Only 9 percent of the state system is classified as urban. In contrast, almost 23 percent of Monongalia County roads are classified using the urban definitions. This distinguishes the county from the rest of the state and how its transportation system operates.

Table 4-1. Facility Mileage by Functional Class

Functional Classification		WV Statewide System		Monongalia County System	
		Roadway Mileage	Percent of the System	Roadway Mileage	Percent of the System
Urban	Principal Arterial System				
	Interstate (including the WV Turnpike)	186.50	0.51%	12.56	1.40%
	Other Freeways and Expressways	10.30	0.03%	0.00	0.00%
	Other Principal Arterials	334.78	0.92%	21.86	2.44%
	Minor Arterial System	742.95	2.05%	34.28	3.82%
	Collector System	736.25	2.03%	53.62	5.98%
	Local System	1,386.29	3.82%	82.96	9.25%
	Subtotal	3,397.07	9.37%	205.28	22.89%
Rural	Principal Arterial System				
	Interstate (including the WV Turnpike)	368.09	1.02%	23.12	2.58%
	Other Principal Arterials	1,068.11	2.95%	28.10	3.13%
	Minor Arterial System	1,340.11	3.70%	15.31	1.71%
	Major Collector System	5,652.59	15.59%	98.38	10.97%
	Minor Collector System	2,216.64	6.11%	526.81	58.73%
	Local System	22,206.79	61.26%		
	Subtotal	32,852.33	90.63%	691.72	77.11%
	TOTAL: Urban and Rural	36,249.40	100.00%	897.00	100.00%

Source: *WV DOH 2010 Annual Roadway Statistics*, West Virginia Department of Transportation, Division of Highways, Program Planning and Administration Division, April 2011.

Figure 4-2. Monongalia National Highway Functional Classification System

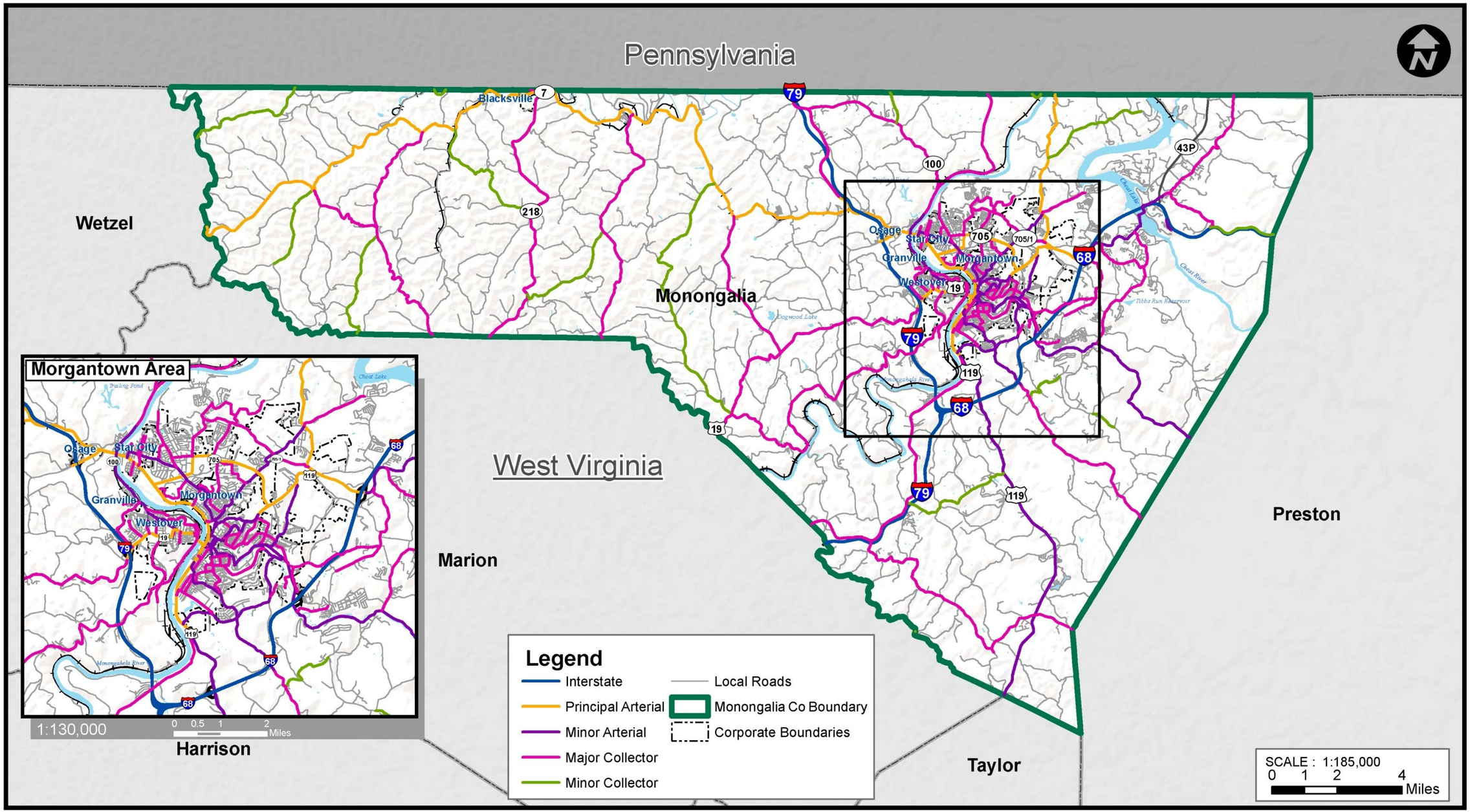
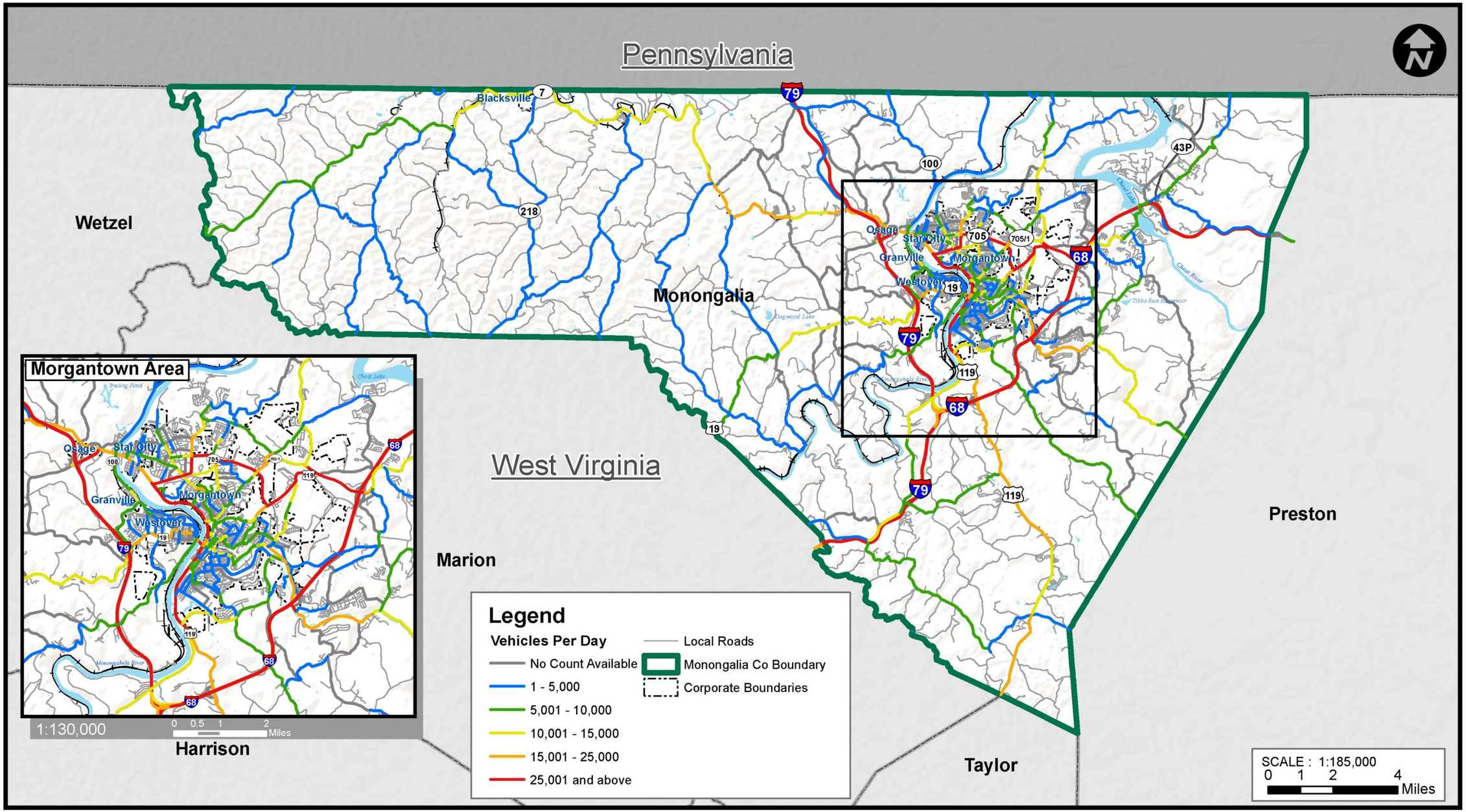


Figure 4-3. Traffic Volumes on the National Highway System in the Urbanized Area



4.3 Roadway Character

The mountainous nature of the region has resulted in many narrow roadways with steep grades and curvature. This creates undesirable conditions for traffic safety and lowers the roads ability to carry traffic. The hilly topography makes widening existing roadways and constructing new roadways difficult and costly compared to regions with flatter topography. Consequently, the region is left with very few direct and convenient roadway connections, and it is difficult and costly to improve the roadway system.

4.4 Current Traffic Volumes

Existing traffic volume data is available from several sources including the MMMPO, the City of Morgantown, WVDOT, and West Virginia University (WVU). All of the counts provided by the MPO, the City, and WVU are dated from spring 2010 to fall 2011. The most recent count data available from WVDOT at the time of this writing was collected in 2008.

Morgantown area traffic volumes and operating conditions are highly influenced by activities at WVU. The level of traffic on area roads increases dramatically when classes are in session relative to non-session periods. To account for this type of variation, seasonal and day of the week fac`tors have been applied to the volumes to obtain an average daily traffic volume estimate. The applied factors were developed by the WVDOT and were obtained directly from the MMMPO. The countywide average daily traffic volume data from all sources is illustrated in Figure 4-4. Figure 4-5 displays the average daily traffic volume data within the urbanized area.

Roads with average daily traffic volumes greater than 25,000 vehicles per day (vpd) are listed below:

- I-79
- I-68
- CR 19/24 (Chaplin Hill Road) from the I-79 Interchange to US 19 (Monongahela Blvd)
- US 19 (Monongahela Blvd) from Chaplin Hill Road to CR 55/7 (Chipps Hollow Road)
- US 19/WV 7 (Beechurst Avenue) south of Campus Drive
- US 19/WV 7 (University Avenue) south of Foundry Street
- US 19 (Don Knotts Blvd) south of Dorsey Avenue
- WV 705 (Patteson Drive) from Laurel Street to east of CR 67 (Stewartstown Road)

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Figure 4-4. Average Daily Traffic Volumes for Monongalia County

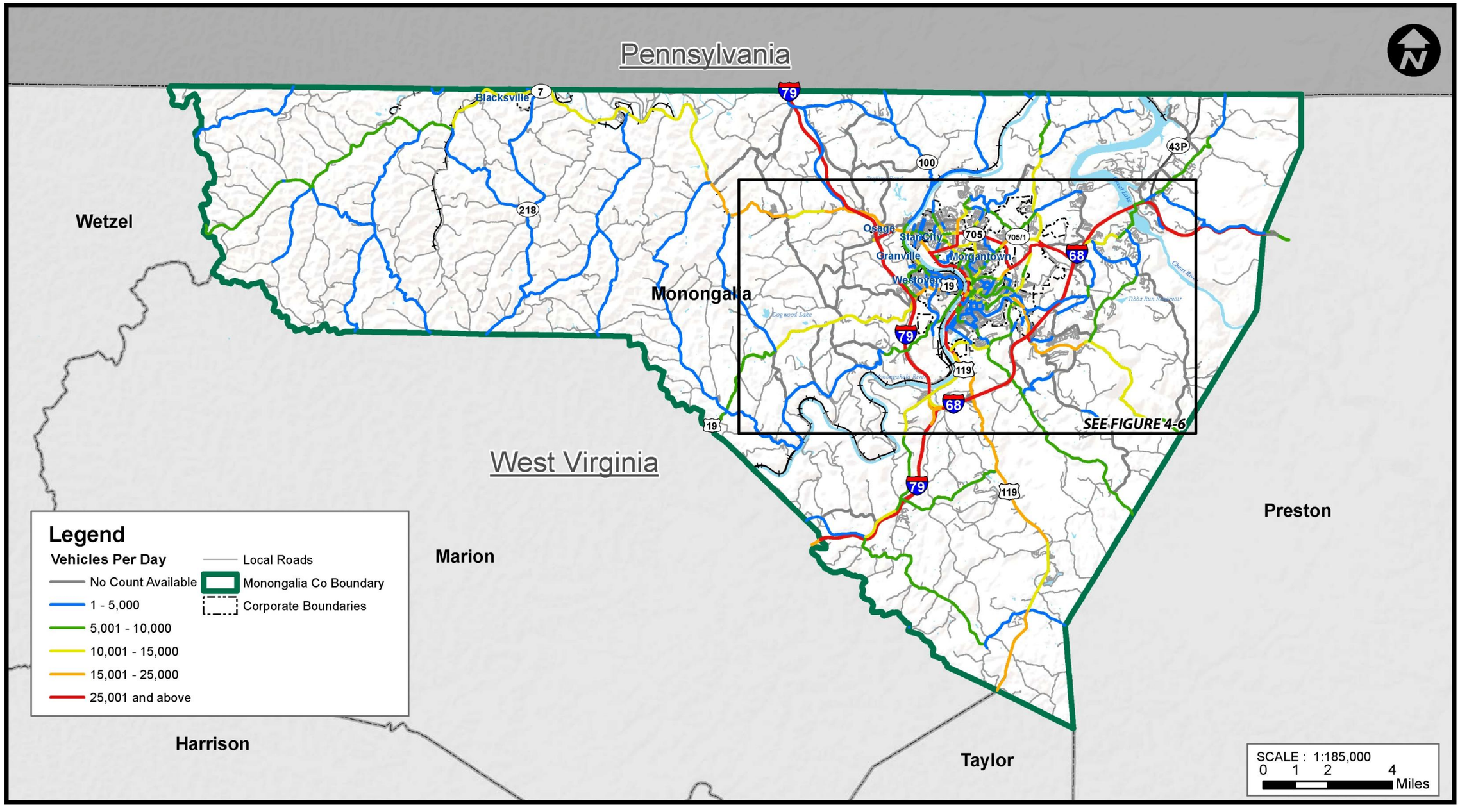
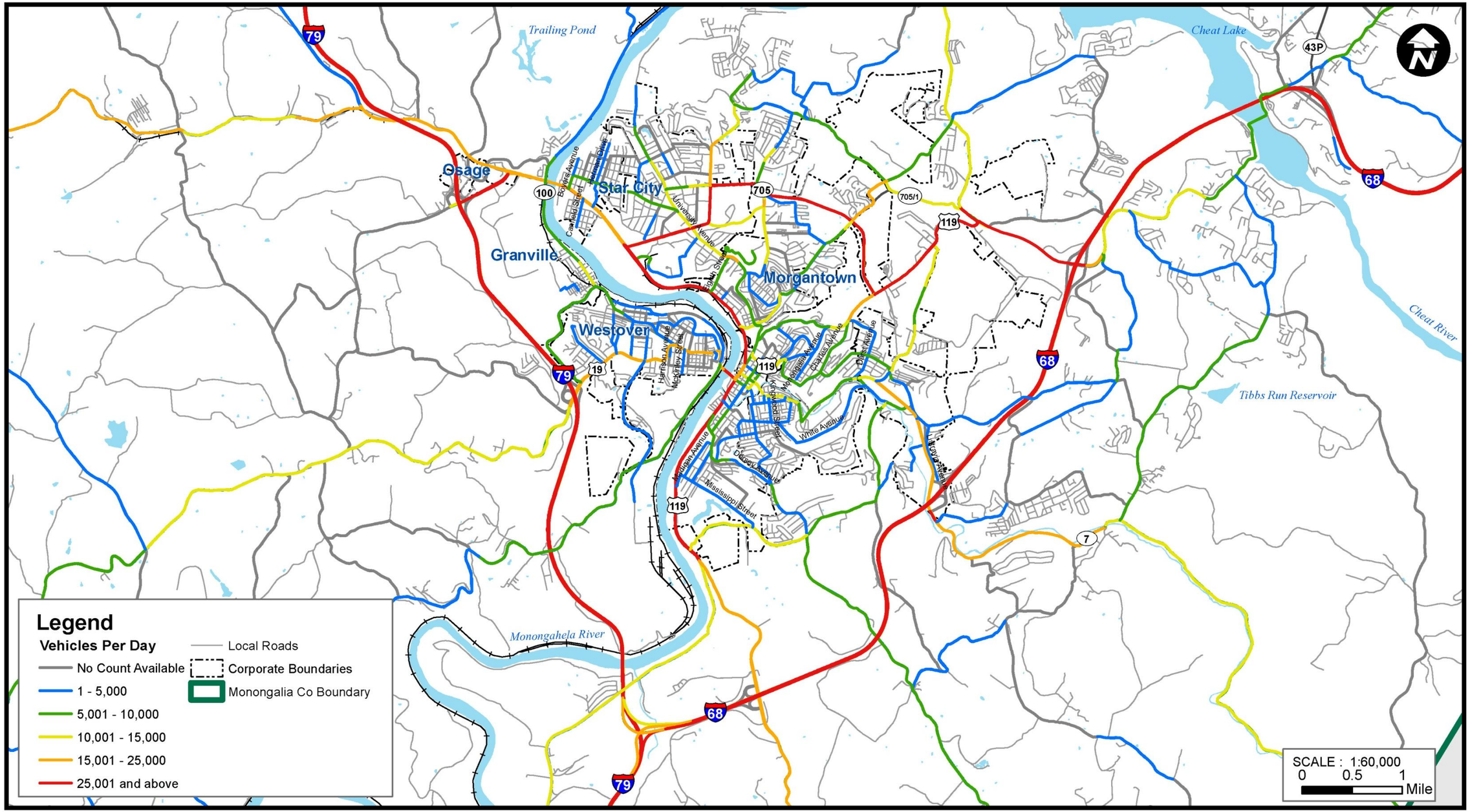


Figure 4-5. Average Daily Traffic Volumes (Inset)



4.5 Existing Roadway Capacities and Levels of Service

Capacity

Each roadway in the transportation network has a finite vehicle carrying capacity. Capacity is defined as the maximum number of vehicles that can traverse a given roadway length within a specified time frame. This capacity is affected by the speed of the facility, the width of the lanes, the number of lanes, and other roadway characteristics.

The primary factor that impacts the capacity of a roadway in an urbanized area is the operation and capacity of its intersections, which typically are the bottlenecks on an urban roadway. Roadways in Morgantown also experience a vehicle capacity reduction in key locations due to the large number of pedestrians crossing the roadway. For example, Grumbeins Island in the WVU Downtown Campus is a busy pedestrian crossing that drastically reduces vehicular capacity. Travel time increases on University Avenue during class change periods throughout the day.

Level of Service (LOS)

Level of Service (LOS) is a measure of the acceptability of roadway delay to the traveler. As defined in the Institute of Transportation Research Board's Highway Capacity Manual (HCM), when a roadway has a traffic volume that equals its maximum capacity, the travel delay incurred is typically more than is considered acceptable to the typical traveler.

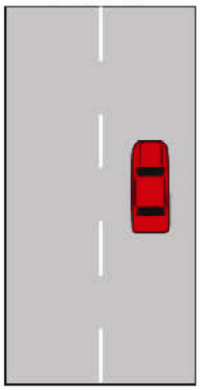
Level of Service (LOS) is the measure of effectiveness that is most often used in transportation planning to quantify the quality of service a particular roadway provides (i.e. the amount of delay experienced). For this LRTP, the LOS is evaluated based on the volume of traffic on the roadway versus established thresholds for capacities for different levels of service.

LOS is quantified using a grading system similar to what is used in schools, where "A" is the best service and "F" is the worst and often considered "failing." Table 4-2 and Figure 4-6 define and illustrate the definitions of LOS used in this LRTP.

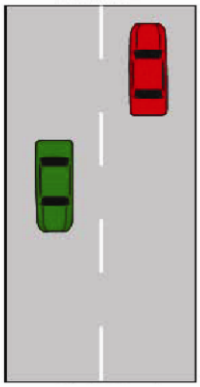
Table 4-2. Intersection LOS Definitions

LOS	Definition
A	*Free Flow, Insignificant Delays.* 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 driver's decision as to how fast to drive).
B	*Stable Operation, Minimal Delays*. 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	*Stable Operation, Acceptable Delays.* Operations within the corridor are stable, however, a 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	*Restricted Flow, Regular Delays.* 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 from 35 to 55 seconds.
E	*Maximum Capacity, Extended Delays*. 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	*Forced Flow, Excessive Delays*. Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.

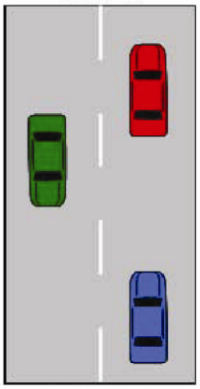
Figure 4-6. Traffic Flow Characteristics by Level of Service



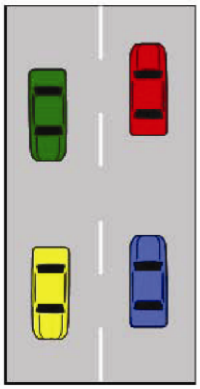
LOS A
Free flowing traffic. Your driving habits/choices are unaffected by others.



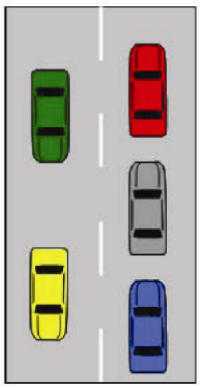
LOS B
"Stable" traffic flow – not a lot of starting and stopping or braking to maintain a comfortable distance. Driving patterns of others are noticeable.



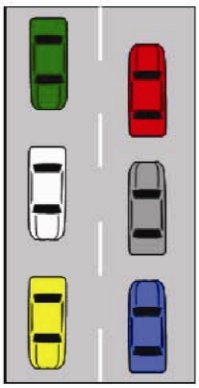
LOS C
Flow is still "stable", but many more adjustments to account for habits/ presence of other vehicles/ pedestrians. Queues form at signals, but generally clear in one cycle.



LOS D
Dense, but fairly stable flow. Your freedom to maneuver from lane to lane or through an intersection is severely restricted. Your trip comfort and convenience are highly influenced by others on the road.



LOS E
Conditions reflect "capacity" – Very few, if any additional vehicles can be accommodated. Comfort and convenience are extremely poor and driver frustration is high.



LOS F
Approaching gridlock. It takes several cycles to move through an intersection.

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

Capacity Thresholds

Estimated capacities for different facilities are documented in Table 4-3. The table includes separate capacity volumes for urbanized areas versus rural areas.

In urbanized areas, the vehicle carrying capacity of a roadway is generally expected to be lower than in other areas because of delays caused by:

- Greater number of intersections and driveways
- More traffic signals
- Greater number of pedestrian crossings
- More turns at each intersection
- More parking maneuvers

The levels of service threshold volumes are based on planning applications of the Highway Capacity Manual (HCM). The primary source used was the "2009 FDOT Quality/Level of Service Handbook" (Tables 1 and 3).

Table 4-3. Estimated Daily Roadway Capacity at Specified Level of Service

Functional Classification		Number of Thru Lanes	Level of Service Threshold Maximum Vehicles per Day			
			E	D	C	B
Urban	Interstate	4	79,400	73,600	59,800	43,500
		6	122,700	110,300	90,500	65,300
	Principal Arterial	2	*	16,500	15,400	9,600
		4	*	36,700	35,500	29,800
	Minor Arterial	2	16,200	15,200	10,500	**
		4	35,100	33,200	25,000	**
	Major Collector	2	14,900	11,900	5,100	**
		4	31,900	28,200	12,600	**
	Minor Collector	2	13,410	10,710	4,590	**
Rural	Interstate	4	63,700	59,900	50,800	37,100
		6	98,300	89,900	76,400	56,500
	Principal Arterial	2	27,600	13,800	8,100	4,500
	Minor Arterial	2	27,600	13,800	8,100	4,500
	Major Collector	2	27,600	13,800	8,100	4,500
	Minor Collector	2	27,600	13,800	8,100	4,500

*Not applicable for that level of service letter grade. Volume greater than LOS D became LOS F because intersection capacities have been reached.
**Cannot typically be achieved under urban signalized conditions.

Capacity Deficiencies

For the MMMPO region, the following thresholds of acceptable roadway capacity are assumed:

- For corridors within the urbanized area, "C" is the target LOS, but "D" is an acceptable LOS in corridors that have restricted right-of-way.
- For rural portions of the study area, LOS "C" is the minimum acceptable level of operations.

Based on the 2008 – 2011 traffic volumes and the existing roadway network, capacity deficiencies were calculated and are displayed in Figure 4-7 (County) and Figure 4-8 (urbanized area).

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Figure 4-7. Existing Capacity Deficiencies for Monongalia County

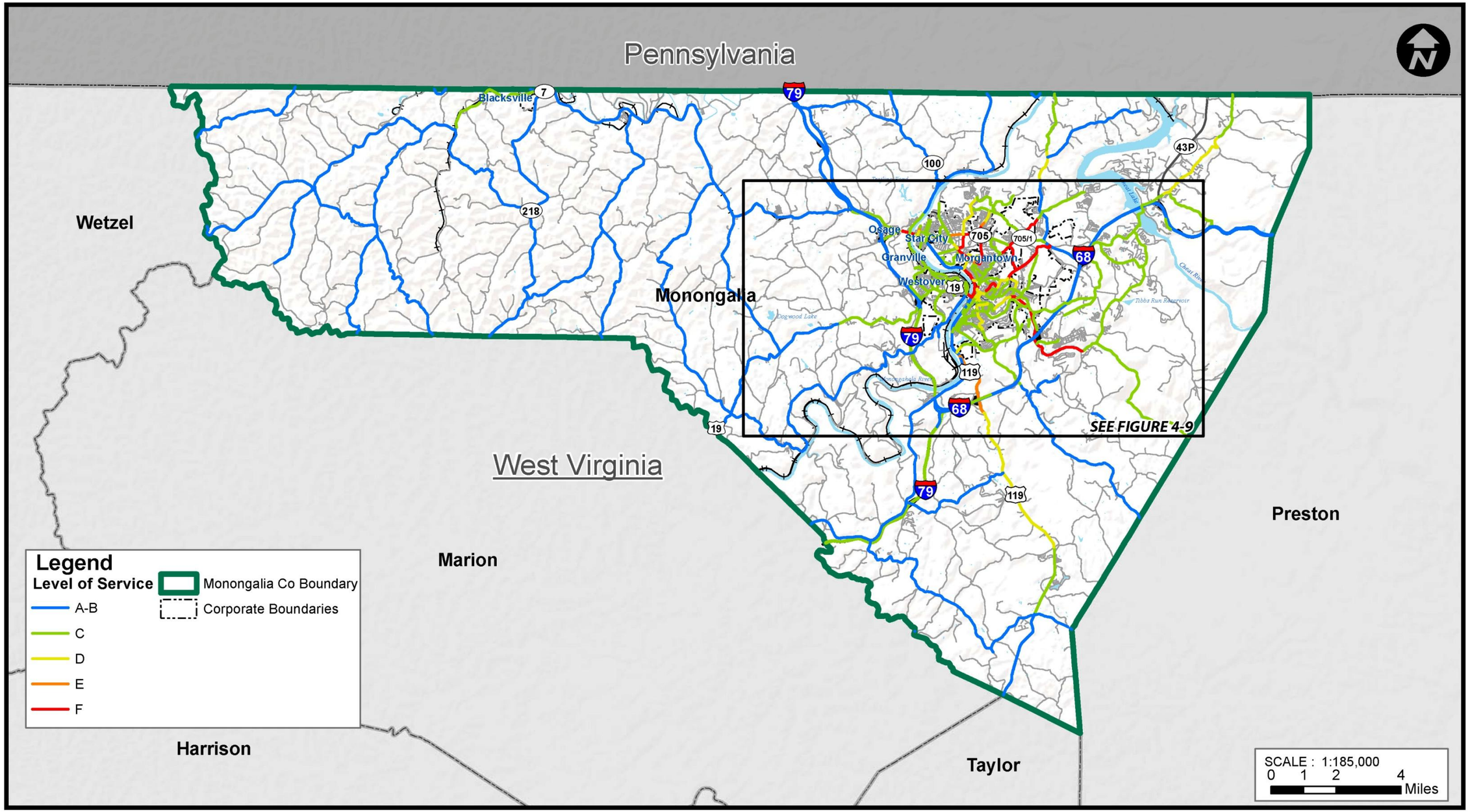
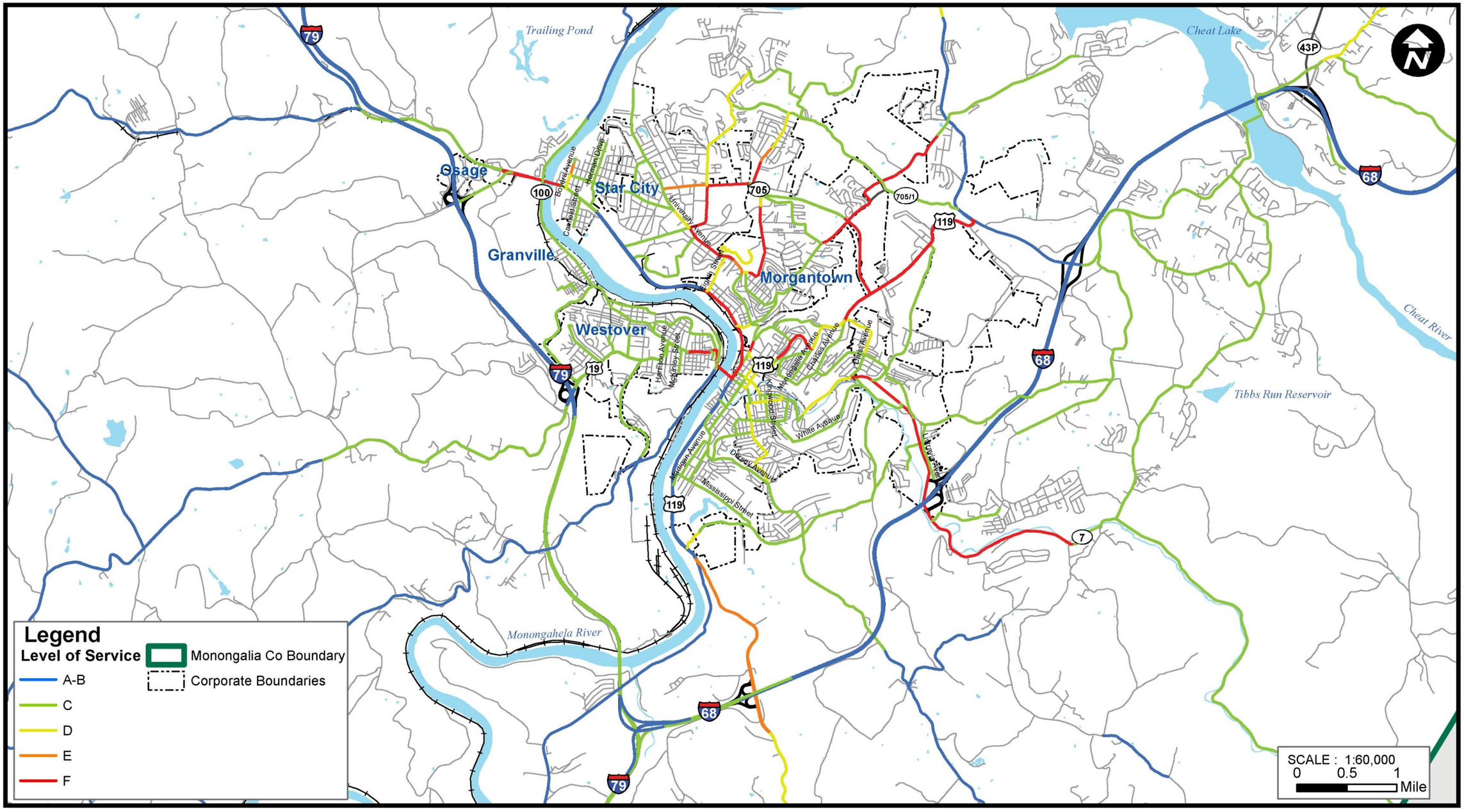


Figure 4-8. Existing Capacity Deficiencies (Inset)



Traffic operations analyses were conducted using data available from existing sources. Because there is not 100 percent coverage of the system, there are additional locations that travelers observe to be congested that are not highlighted in the figures. These locations are listed later in this chapter, based on public input received.

Table 4-4 shows the number of miles by level of service for each functional classification. The following observations of the information were noted:

- All interstate facilities operate at an acceptable LOS
- Less than 12 percent of all roadways across the functional classifications operate at a LOS D or worse
- Over half of the roadways operate in the LOS A – B range

Through analysis of the information included in the capacity deficiency figures, it was concluded that the following corridors are operating at either a LOS E or F:

- US 19 (Monongahela Blvd.) from Chaplin Hill Rd. to Boyers Ave.
- US 19 (Beechurst Ave.) from 8th St. to Pleasant St.
- US 19 (Pleasant St./Westover Bridge/Holland Ave.) from University Ave. to Lane St.
- US 119 (Mileground Rd.) from Cheat Rd. to Hampton Ave.
- US 119 (N. Willey St.) from Monongalia Ave. to Richwood Ave.
- US 119 (Grafton Rd.) from Smithtown Rd. to Fairview Cemetery
- WV 705 (Van Voorhis Rd./Chestnut Ridge Rd.) from University Ave. to Pineview Dr.
- WV 705 from Stewartstown Rd. to US 119 (Mileground Rd.)
- WV 7 (Earl Core Rd.) from Deckers Creek Blvd. to Beulah Rd.
- CR 67 (Stewartstown Rd.) from Chestnut Ridge Rd. to south of US 119 (Point Marion Rd.)
- Boyers Ave. between University Ave. and Stafford St.
- Burroughs St. from University Ave. to WV 705 (Van Voorhis Rd.)
- Pineview Drive from WV 705 (Chestnut Ridge Rd.) to Riddle St.
- Riddle St. from Pineview Dr. to Hickory St.
- Willowdale Rd. from Grove St. to Medical Center Dr.

- University Ave. from WV 705 (Patteson Dr./Van Voorhis Rd.) to North Ave.
- University Ave. from College Ave. to Willey St.

Table 4-4. Existing Mileage by Level of Service

Functional Classification	Mileage by Level of Service Category				
	A/B	C	D	E/F	Total
Interstate	45.1	22.0	0.0	0.0	67.1
Principal Arterial	38.5	16.7	2.1	9.9	67.2
Minor Arterial	5.5	32.2	13.2	11.7	62.6
Major Collector	104.2	51.0	7.8	2.3	165.3
Minor Collector	41.4	0.0	0.0	0.0	41.4
TOTAL	234.7	121.9	23.1	23.9	403.6

Functional Classification	Percentage of Mileage by Level of Service Category				
	A/B	C	D	E/F	Total
Interstate	67.2%	32.8%	0.0%	0.0%	100.0%
Principal Arterial	57.3%	24.9%	3.1%	14.7%	100.0%
Minor Arterial	8.8%	51.4%	21.1%	18.7%	100.0%
Major Collector	63.0%	30.9%	4.7%	1.4%	100.0%
Minor Collector	100.0%	0.0%	0.0%	0.0%	100.0%

Source Data from: MMMPO, WVDOT, the City of Morgantown, and WVU

Crash Data and Safety Assessment

Safety conditions for motorized vehicles in the urbanized area were assessed using crash record information obtained from the City of Morgantown who obtained the information from WVDOT. At the time of this writing crash data for areas outside the City of Morgantown were unavailable. The MMMPO has received this data from WVDOH and is in the process of updated the list of locations to include those areas outside of the City. The data used in this analysis is from June 2008 to December 2011. Table 4-5 includes the number of crashes by year as well as a daily crash rate. Out of the 4,060 crashes, there were 20 that occurred within a work zone. Table 4-6 breaks down the percentage of crashes that occurred by type of crash.

Table 4-5. Crash Totals

Date Range	Number of Crashes	Crash Rate (per day)
6/19/2008 – 12/31/2008	637	3.250
1/1/2009 – 12/31/2009	1,148	3.145
1/1/2010 – 12/31/2010	1,168	3.200
1/1/2011 – 12/11/2011	1,107	3.209
TOTAL CRASHES	4,060	3.194

Table 4-6. Crashes by Type

Crash Type	Number of Crashes	Percentage
Rear End	1,350	33.2%
Angle/Right Angle	885	21.8%
Sideswipe/Angle Same Direction	616	15.2%
Single Vehicle	561	13.8%
Sideswipe/Angle Opposite Direction	434	10.7%
Head-on	120	3.0%
Backing	94	2.3%
TOTAL CRASHES	4,060	100.0%

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

- During the years analyzed, a total of 4,060 crashes occurred throughout the planning area. This equates to 3 to 4 crashes per day.
- The regional crash rate has remained steady.
- The majority of incidents are related to congestion and intersections.

Intersection Crashes

Figure 4-9 displays the crash frequency and rate results for intersections where crash data and count data were available for the assessment period. The crash information provided did not include a breakdown of crashes by severity, property damage, injury, or fatality. Table 4-7 includes the 20 intersections with the highest crash rates.

Table 4-7. Intersection Crash Frequencies and Rates

Top Crash Rate Locations			
Intersection		**Crashes**	**Crash Rate**
Top 10 Crash Intersections	Patteson Drive at Monongahela Blvd.	188	5.90
	Stewart St. at CR-67/Van Guilder St.	26	3.62
	Spruce St. at Walnut St.	49	2.05
	University Ave. at Beechurst Ave. at Fayette St.	64	1.88
	Spruce St. at Pleasant St.	35	1.80
	Patteson Drive at Laurel St.	54	1.66
	Van Voorhis Rd. at Chestnut Ridge Rd./Burroughs St.	95	1.52
	High St. at Walnut St.	31	1.37
	Fayette St. at High St.	25	1.36
	University Ave. at Stewart St./Campus Dr.	24	1.29
Other Intersections of Interest	High St. at Willey St.	27	1.28
	Earl L Core Rd. at WV-857/WV-7	41	1.20
	VanVoorhis Rd. at Christy St.	51	1.17
	VanVoorhis Rd./Patteson Dr. at University Ave.	72	1.04
	University Ave. at College Ave.	21	1.04
	University Ave. at 8th Ave.	29	1.04
	University Ave. at Pleasant St.	36	0.92
	High St. at Pleasant St.	19	0.88
	University Ave. at Walnut St	37	0.86
	Van Voorhis Rd. at Elmer Prince Dr.	41	0.77

Source: WVDOT (June 2008 - December 2011)

Crash rate is determined as the number of crashes per million vehicles entering the intersection.

Roadway Section Crashes

Table 4-8 shows the roadway sections with the highest frequency of crashes.

Table 4-8. Roadway Section Crashes

Roadway Corridor	Length (miles)	Number of Crashes	Crashes per Mile
US 119 from Cheat Road to Smithtown Road	5.5	720	130.9
From Cheat Road to Spruce Street	3.0	95	36.5
From the intersection of Willey Street at Spruce Street to Don Knotts Boulevard at Foundry Street	0.7	497	710.0
Don Knotts Boulevard from Foundry Street to Smithtown Road	1.8	128	71.1
WV 705 from US 19 to Pineview Drive	1.7	698	410.6
Patteson Drive from US 19 to Van Voorhis Road	0.7	358	511.4
Van Voorhis Road from Patteson Drive to Chestnut Ridge Road	0.5	184	368.0
Chestnut Ridge Road from Van Voorhis Road to Pineview Drive	0.5	273	546.0
US 19 from Chaplin Hill Road to Patteson Drive	3.7	627	169.5
Monongahela Boulevard from Chaplin Hill Road to Patteson Drive	1.4	68	48.6
Beechurst Avenue from Patteson Drive to University Avenue	1.8	286	158.9
University Avenue from Beechurst Avenue to West Park Avenue	0.5	273	546.0
WV 7 from I-68 EB on ramp to University Avenue	3.3	503	152.4
Earl Core Road from I-68 EB on ramp to WV 857 (Hartman Run Road)	1.5	170	113.3
Earl Core Road/Rogers Avenue/East Brockway Avenue/Brockway Avenue from WV 857 to University Avenue	1.8	333	185.0

It should be noted that several of these corridors overlap each other, so a particular crash may be included in more than one corridor.

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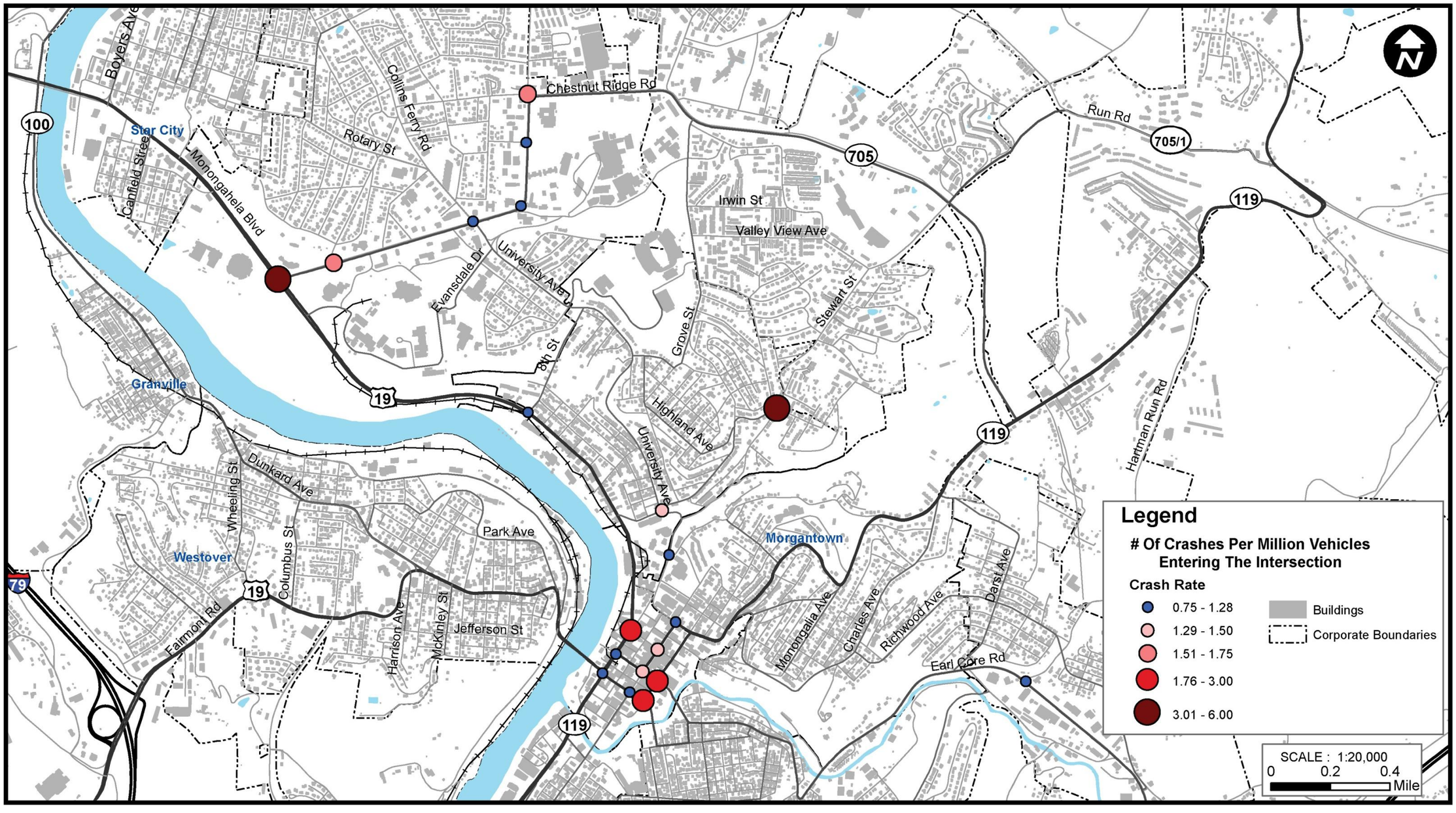
Figure 4-9. Crash Locations



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4.6 Public Transportation

Overview

The Mountain Line Transit Authority (MLTA) is the primary provider of public transportation service within Morgantown and Monongalia County offering deviated fixed-route, flex-route, and dial-a-ride service seven days a week, 365 days a year. West Virginia University (WVU) also provides public transportation service within Morgantown and Monongalia County offering a variety of shuttles and buses as well as a unique fixed-guideway system known as Personal Rapid Transit (PRT). The following section provides an evaluation of the existing MLTA and WVU services in terms of service coverage, hours of operation, and service frequency as well as a brief description of other transit services in the area.

Mountain Line Transit Authority (MLTA)

The MLTA was established in 1996 as a merger between the City of Morgantown Transit service and the Monongalia Transit service. The MLTA is governed by a seven member Board of Directors appointed by the City of Morgantown and the Monongalia County Commission. The MLTA receives additional input from a citizen's advisory committee and the general public during monthly board meetings. Meeting minutes dating back to October 1997 are available on the MLTA website at www.busride.org. MLTA is publicly supported and funded. The Federal Transit Authority (FTA), WVU, the Monongalia County Commission, and Morgantown City Council subsidize the cost of each ride.

Fixed Routes Service

MLTA operates 20 deviated fixed-routes within Morgantown and Monongalia County. All MLTA fixed-route buses provide for deviations from the fixed-routes of up to three-quarters of a mile to pick up patrons at a location of their choosing. Patrons can call as little as 15 minutes before pickup to request the deviation.

Most routes operate Monday through Friday between 6:00 a.m. and 6:00 p.m. with limited service provided on Saturdays and Sundays. The current fixed-routes are illustrated in Figure 4-10.

The following is a summary of MLTA's fixed route services.

Rural Service. MLTA has three routes that connect the smaller communities and rural areas of Monongalia County with Morgantown. Each route is offered only a few times each day with several hours between each trip.

- Crown Bus Route 13 serves the western part of the County, traveling west along Fairmont Road through Westover, then east along River Road through Everettville and Booth. Service is offered three times daily, Monday through Friday, beginning at 7:00 a.m., 1:00 p.m., and then in reverse direction at 5:15 p.m.
- Mountain Heights Bus Route 14 serves the southeastern part of the County, traveling east along Summer School Road, then west along Kingwood Pike. Service is offered five times a day, Monday through Friday, beginning at 8:05 a.m., 11:30 a.m., 1:30 p.m., 2:05 p.m., and then in reverse direction at 4:15 p.m. Service is also offered twice on Saturday beginning at 8:05 a.m. and 2:05 p.m.
- Grafton and Fairmont Road Bus Route 15 serves the southern part of the County, traveling south along Grafton Road, west along Halleck Road, then north along Smithtown Road. Service is offered twice a day, Monday through Friday, beginning at 9:10 a.m. and then in reverse direction at 3:05 p.m.

There are at least three other routes that provide service between the rural areas of Monongalia County and Morgantown, including Tyrone Road Bus Route 8, Cassville Bus Route 11, and the Blue Line Bus Route 12. Given the hours of service and service frequencies offered by these routes, as well as their primary service areas within the urban area of Morgantown, they are evaluated along with the urban core routes.

Urban Core Service. MLTA has nine routes that serve the densely populated areas of Morgantown. Most of the urban core service routes operate Monday through Friday between 6:00 a.m. and 6:00 p.m. on 60 to 120 minute headways depending on the route and the time of day. Hours of service and service frequencies are reduced on those routes that offer Saturday service. Table 4-9 summarizes the MLTA's urban core routes.

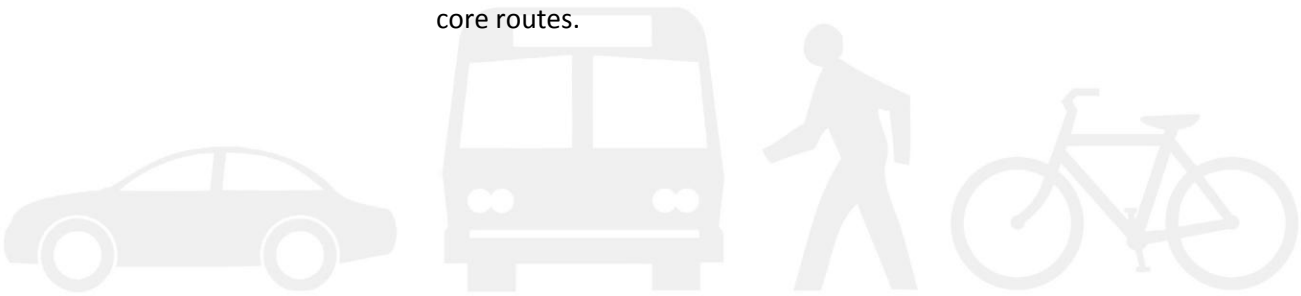

Table 4-9. MLTA Urban Core Routes

Route No.	Route Name	Days	Hours of Service	Service Frequency (Min)
3	Green Line	Mon thru Sat	8:00 a.m. to 6:04 p.m.	60[1]
6	Gold Line Hospital Bus	Mon thru Sat	6:00 a.m. to 5:55 p.m.	60[1]
8	Tyrone Road	Mon thru Sat	6:30 a.m. to 6:14 p.m.	90[1]
9	Purple Line	Mon thru Sat	7:00 a.m. to 5:50 p.m.	80[1]
10	Brown Line	Mon thru Fri	8:00 a.m. to 4:45 p.m.	120
11	Cassville	Mon thru Sat	6:00 a.m. to 5:55 p.m.	30[1]
12	Blue Line	Mon thru Sat	6:30 a.m. to 5:47 p.m.	60[1]
16	Pink Line	Mon thru Sat	7:40 a.m. to 5:00 p.m.	80[1]
30	West Run Express	Mon thru Fri	7:10 a.m. to 5:10 p.m.	20

1. Hours of service and service frequency are reduced on Saturday.

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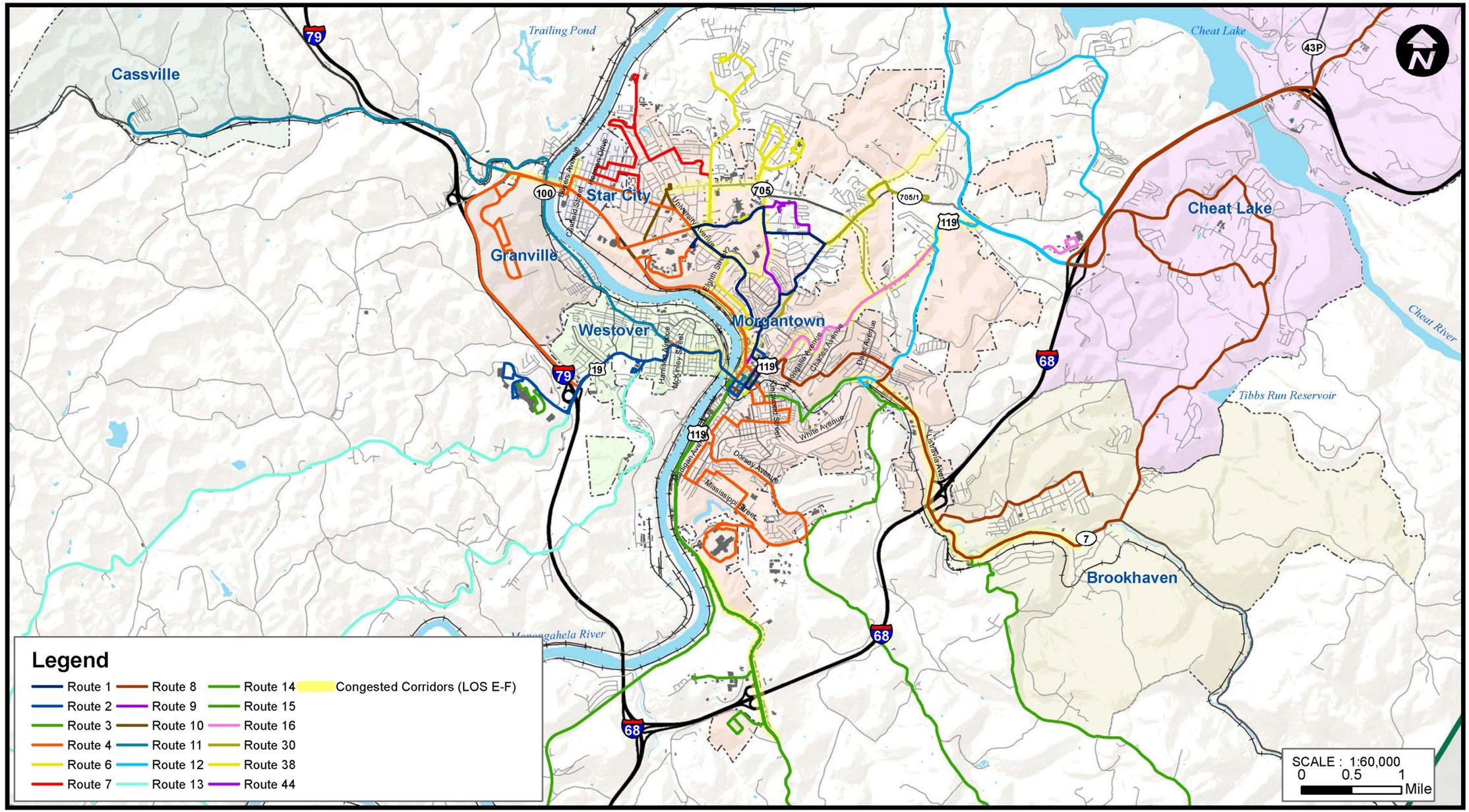
Figure 4-10. MLTA Fixed-Route Service



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Service to WVU Campuses. MLTA has seven routes that connect WVU students, faculty and staff to key on- and off-campus locations. Similar to MLTA's urban core routes, hours of service and service frequencies vary by route and by time of day. However, three routes – Campus PM, Blue & Gold, and Valley View – operate on 10 to 15 minute headways throughout most of the day providing frequent service between campus locations. Table 4-10 summarizes the MLTA's WVU routes.

Table 4-10. MLTA WVU Routes

Route No.	Route Name	Days	Hours of Service	Service Frequency (Min)
1	Campus PM	Thu thru Sat	6:00 p.m. to 3:10 a.m.	10
2	Downtown Mall PM	Mon thru Sat	6:00 p.m. to 12:12 a.m.	60
4	Orange Line	Mon thru Sat	7:00 a.m. to 11:08 p.m.	60
6	Gold Line Mountain Valley	Mon Thru Fri	6:30 a.m. to 9:48 p.m.	60
7	Red Line	Mon thru Sat	6:20 a.m. to 5:45 p.m.	80[1]
38	Blue & Gold	Mon thru Sun	6:40 a.m. to 8:50 p.m.	20[2]
44	Valley View	Mon thru Fri	7:30 a.m. to 2:30 p.m.	15

1. Hours of service and service frequency are reduced on Saturday.
2. During regular WVU sessions, Route 38 operates on 10 minute headways between 8:10 a.m. to 3:10 p.m.

While a majority of the routes shown in Table 4-9 also provide service to WVU campus locations, the routes shown in Table 4-10 have been specifically designed to accommodate the needs of WVU students, faculty, and staff. MLTA also provides a "quick-start guide," including a map and schedule of the WVU routes for reference.

Pittsburgh Airport Service. Grey Line Bus Route 29 is an intercity route that provides service to the Pittsburgh Airport. The route operates two trips per day, 365 days a year. The route begins in Westover at 6:15 a.m., travels south on I-79 to Clarksburg, then returns north stopping in Fairmont, Westover, Morgantown, WV, and Waynesburg, PA before continuing to the Pittsburgh Airport.

Transit Stops

MLTA primarily operates as a flag stop system, in which passengers can board a bus anywhere along a route by flagging down the driver as the bus approaches. The timetables MLTA provides for each route represent scheduled time points during which passengers can expect a bus along a route. The only exceptions are Mountain Line's two express routes: the West Run Express Route 30 and the Blue & Gold Connector Route 38. Both buses only stop at designated stops to maintain schedules.

Flex-Route & Dial-a-Ride Service

MLTA's NewFit program consolidates all of the flex-route, dial-a ride, and on-demand services available to residents of Morgantown and Monongalia County under one organization. NewFit provides curb-to-curb and door-to-door services to medical appointments and work/training opportunities to all residents and residents with disabilities are given priority. NewFit operates Monday through Friday from 6:00 a.m. to 5:30 p.m.

Transit Ridership

MLTA provided ridership projections for 12 of their 20 existing routes and services as well as their NewFit program. Based on the projections, ridership is expected to increase by 15 percent between 2013 and 2014 and then by an additional 6 percent between 2014 and 2015.

Proposed Route Changes for 2013

MLTA has proposed the addition of several new routes for 2013. Many of the routes combine components of existing routes while increasing service hours and frequency. The following is a summary of the proposed route changes for 2013.

- The proposed Blue Line will combine portions of the Purple Line Bus Route, Tyrone Bus Route 8, and others. The new route will provide service between downtown Morgantown, Evansdale, and eastern Monongalia County, Monday through Friday between, 7:30 a.m. and 11:00 p.m. on 30-minute headways.
- The proposed Brown Line will combine portions of the Cassville Bus Route 11 and the Blue Line Bus Route 12. The new route will provide service between Cassville and northern Monongalia County, Monday through Friday, between 5:30 a.m. and 9:00 p.m. on 30 minute headways.
- The proposed Green Line will combine portions of the Grafton-Fairmont Road Bus Route 15, Tyrone Road Bus Route 8, and others. The new route will provide service between the southern part of Monongalia County and Brookhaven, Monday through Friday, between 6:30 a.m. and 9:42 p.m. on 30-minute headways. This represents a significant increase in the amount of service to southern Monongalia County from two trips per day to 30.
- The proposed Orange Line follows essentially the same route as the existing Orange Line, with the exception of the current Day-Time

Orange segment that serves the Westover Terminal and the Morgantown Mall. This segment of the existing route has been removed. Additional route changes include the expansion of service hours and reduced headways. The Orange Line will operate from 6:30 a.m. to 11:30 p.m. on 30-minute headways.

- The Proposed Pink Line will combine the Pink Line Bus Route 16 with the Crown Line Bus Route 13. The new route will operate Monday through Friday between 6:30 a.m. and 9:25 p.m. on 60-minute headways. This represents a significant increase in service along the existing Crown Line from three routes per day to 14.
- The proposed Silver Line will combine components of the Mountain Heights Bus Route 14 and the Grafton-Fairmont Road Bus Route 15. The new Route will provide service between the southern part of Monongalia County and downtown, Monday through Friday, from 7:00 a.m. to 10:55 p.m. on 30-minute headways.

West Virginia University (WVU)

Personal Rapid Transit (PRT). WVU's PRT system is an Automated Guideway Transit (AGT) system that uses small computer driven cars to transport passengers to one of five stations located along its 8.7-mile route. The stations include the Walnut Street and Beechurst Avenue stations located on WVU's downtown campus, and the Engineering Science, Evansdale Residential Complex, and Health Sciences stations located on WVU's Evansdale campus. During peak time periods the cars operate on a fixed schedule.

During off-peak times the cars operate on demand and will arrive at a station within five minutes of swiping a University-affiliated Mountaineer Card or employee ID. The PRT operates Monday through Friday, from 6:30 a.m. to 10:15 p.m., and on Saturdays from 9:30 a.m. to 5:00 p.m. Service is not provided on Sundays, University holidays or during WVU break periods. According to WVU, approximately 15,000 people ride the PRT during the school year every day.

Shuttles and Buses. In addition to the PRT, WVU operates two campus shuttles. The Sunday Shopping Shuttle operates during Fall and Spring semester to and from various shopping and entertainment destinations around Morgantown. The shuttle operates on Sunday from 12:00 p.m. to 9:27 p.m. on 60-minute headways. The Coliseum/Engineering PRT Shuttle operates between the Morgantown Coliseum and the Engineering PRT Station, Monday through Friday, between 7:30 a.m. and 6:00 p.m. on 10-minute

headways. Service is not provided on Sundays, major holidays or when WVU is out of session.

PRT Facilities Master Plan. WVU prepared the PRT Facilities Master Plan in June 2010. The plan provides an assessment of the PRT's impact on the transportation system as well as an evaluation of various alternatives for improving and potentially expanding service. The plan concludes with recommendations to replace the existing PRT vehicles, purchase a new Automatic Trains Control System, and update the guideway and PRT Stations. The plan also includes a financing component that provides an overview of potential funding sources for improving and expanding the PRT system.

Other Transit Service Providers

Buckwheat Express. The Buckwheat Express provides public transportation service to residents of Preston County, West Virginia, including one fixed-route service that transports residents to Morgantown. The Kingwood-Morgantown-Terra Alta route operates Monday through Friday and arrives at the Mountain Line Depot at 9:50 a.m., 2:40 p.m. and 5:10 p.m.

Fairmont-Marion County Transit Authority. The Fairmont-Marion County Transit Authority (FMCTA) provides public transportation service to residents of Fairmont and Marion County, West Virginia, including one fixed-route service that transports residents to Morgantown. The Ruby Memorial Bus operates Monday through Friday and arrives at the Mountain Line Depot at 7:40 a.m., 11:25 a.m., 3:35 p.m. and 5:40 p.m. The Ruby Memorial Bus has three additional stops located within Morgantown, including the Ruby Memorial Hospital, the Health Sciences Center at West Virginia University, and the Morgantown Courthouse.

Fayette Area Coordinated Transportation. Fayette Area Coordinated Transportation (FACT) provides public transportation service to residents of Fayette County, PA, including one route that transports residents to Morgantown. The Morgantown route operates Monday through Friday and arrives at the Mountaineer Station, located adjacent to WVU, at 7:30 a.m., 9:30 a.m., and 5:00 p.m.

In Touch and Concerned. In Touch and Concerned is a nonprofit agency that provides door to door transportation service to appointments and the grocery store for the elderly within Morgantown and Monongalia County.

Transit Level-of-Service

The transit level-of-service analysis is based on the methodology described in the Transportation Research Board's *TCRP Report 100: Transit Capacity and Quality of Service Manual* (*TCQSM*). Chapter 3 of the TCQSM provides an extended discussion on quality of service, which is the evaluation of transit service from the passenger's point of view.

The *TCQSM* uses six measures to quantify service quality. Each of these measures is assigned a letter value, where LOS A represents the best service from the passenger perspective and LOS F represents the worst service. *(Note that high LOS values, such as LOS A or B, may not reflect optimal service from the transit agency's perspective, because the market may not support those service levels. The development of agency service standards helps to bridge the gap between the kind of service passengers would ideally want and the kind of service that is reasonable to provide, given available resources.)*

The transit LOS approach mirrors the system commonly used for streets and highways, and allows a speedy comparison of service performance to transit passenger desires. Of the six available measures, three were selected for this analysis as being most relevant to a long-range planning effort. Table 4-11 summarizes the TCQSM measures used and the ranges of values used to determine the LOS result for each measure.

Table 4-11. Transit Capacity and Quality of Service Manual - Level of Service (LOS) Measures

Level of Service	Transit Capacity and Quality of Service Measures		
	Frequency (minutes)	Hours of Service	Service Coverage
LOS A	<10	19-24	90.0-100.0%
LOS B	10-14	17-18	80.0-89.9%
LOS C	15-20	14-16	70.0-79.9%
LOS D	21-30	12-13	60.0-69.9%
LOS E	31-60	4-11	50.0-59.9%
LOS F	>60	0-3	<50.0%

Service Frequency. From the user's perspective, service frequency determines how many times an hour a user has access to the transit mode, assuming that transit service is provided within acceptable walking distance (measured by service coverage) and at the times the user wishes to travel (measured by *hours of service*). Service frequency also measures the convenience of transit service to choice riders and is one component of overall transit trip time (helping to determine the wait time at a stop).

- At LOS A, passengers are assured that a transit vehicle will arrive soon after they arrive at a stop. The delay experienced if a vehicle is missed is low.
- At LOS B, service is still relatively frequent, but passengers will consult schedules to minimize their wait time at the transit stop.
- Service frequencies at LOS C still provide a reasonable choice of travel times, but the wait involved if a bus is missed becomes long.
- At LOS D, service is only available about twice per hour and requires passengers to adjust their routines to fit the transit service provided.
- The threshold between LOS E and F is service once per hour; this corresponds to the typical analysis period and to the minimum service frequency applied when determining hours of service LOS. Service at frequencies greater than 1 hour entails highly creative planning or considerable time wasted on the part of passengers.

Table 4-12 summarizes the transit LOS analysis results for service frequency. As shown, a majority of MLTA's existing routes currently operate at LOS E.

Table 4-12. Service Frequency Level-of-Service Analysis

Routes	Service Frequency (Min)	Composite LOS
Campus PM Route 1	10	B
Downtown Mall PM Route 2	60	E
Green Line Route 3	60	E
Orange Line Route 4	60	E
Gold Line Route 6 – Mountain Valley	60	E
Gold Line Route 6 – Hospital Bus	60	E
Red Line Route 7	80	F
Tyrone Bus Route 8	90	F
Purple Line Bus Route 9	80	F
Brown Line Bus Route 10	120	F
Cassville Bus Route 11	30	D
Blue Line Bus Route 12	60	E
Pink Line Bus Route 16	80	F
Blue & Gold Bus Route 38	20	C
Valley View Bus Route 44	15	C

Hours of Service. Hours of service, also known as "service span," is simply the number of hours during the day when transit service is provided along a route, a segment of a route, or between two locations. It plays as important a role as frequency and service coverage in determining the availability of transit service to potential users. If transit service is not provided at the time of day a potential passenger needs to take a trip, it does not matter where or how often transit service is provided the rest of the day.

- At LOS A, service is available for most or all of the day. Workers who do not work traditional 8-to-5 jobs receive service and all riders are assured that they will not be stranded until the next morning if a late-evening bus is missed.
- At LOS B, service is available late into the evening, which allows a range of trip purposes other than commute trips to be served. Bus service runs only into the early evening at LOS C levels, but still provides some flexibility in one's choice of time for the trip home.
- Service at LOS D levels meets the needs of commuters who do not have to stay late and still provides service during the middle of the day for others.
- At LOS E, midday service is limited or non-existent and/or commuters have a limited choice of travel times. Finally, at LOS F, transit service is offered only a few hours per day or not at all.

Table 4-13 summarizes the transit level-of-service analysis results for hours of service. As shown, a majority of MLTA's existing routes currently operate at LOS E.

Table 4-13. Hours of Service Level-of-Service Analysis

Routes	Hours of Service	Composite LOS
Campus PM Route 1	9	E
Downtown Mall PM Route 2	6	E
Green Line Route 3	10	E
Orange Line Route 4	16	C
Gold Line Route 6 – Mountain Valley	15	C
Gold Line Route 6 – Hospital Bus	12	D
Red Line Route 7	11	E
Tyrone Bus Route 8	12	D
Purple Line Bus Route 9	11	E
Brown Line Bus Route 10	9	E
Cassville Bus Route 11	12	D
Blue Line Bus Route 12	11	E
Pink Line Bus Route 16	9	E
West Run Express Bus Route 30	10	E
Blue & Gold Bus Route 38	14	C
Valley View Bus Route 44	7	E

Service Coverage

Service coverage is a measure of the area within walking distance of transit service. Based on the TCQSM, areas must be within 1/4-mile of a bus stop (or route in the case of MLTA) or 1/2 mile of a transit station to be considered an area served by transit. As with the other availability measures, service coverage does not provide a complete picture of transit availability by itself, but when combined with frequency and hours of service, it helps identify the number of opportunities people have to access transit from different locations

Service coverage LOS evaluates the percentage of **transit-supportive areas (TSA)**—areas that would typically produce the majority of a system's ridership—that are served by transit.

To qualify as a transit-supportive area (TSA) one of the following thresholds must be met:

- Minimum population density of three households/gross acre; or
- Minimum job density of four employees/gross acre.

Figure 4-11 displays the population density of Morgantown and the surrounding area. Areas with a population density of less than three households per acre are shown in white, while areas with a population density of three or more households per acre are shown in dark red. The areas shown in dark red are TSAs.

Similarly, Figure 4-12 displays the workforce density as well as the locations of major employers of Morgantown and the surrounding area. Areas with a workforce density of less than four jobs per acre are shown in white and areas with a workforce density of four or more jobs per acre are shown in dark red. Areas shown in dark red are TSAs.

Figure 4-13 displays the TSAs served within Morgantown. Areas defined as transit supportive that have service are shown in green. Areas defined as transit supportive but are lacking service are shown in red. Areas that have transit service, but do not qualify as a TSA, are shown in orange.

The large area shown in red located north of WV 705 is currently undeveloped forest land (the population and employment densities within the census block that incorporate this area are sufficient to support transit with the entire area). However, if this area develops it would require additional transit routes, or new pathway connections to existing transit routes, to be served.

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Figure 4-11. Population Density

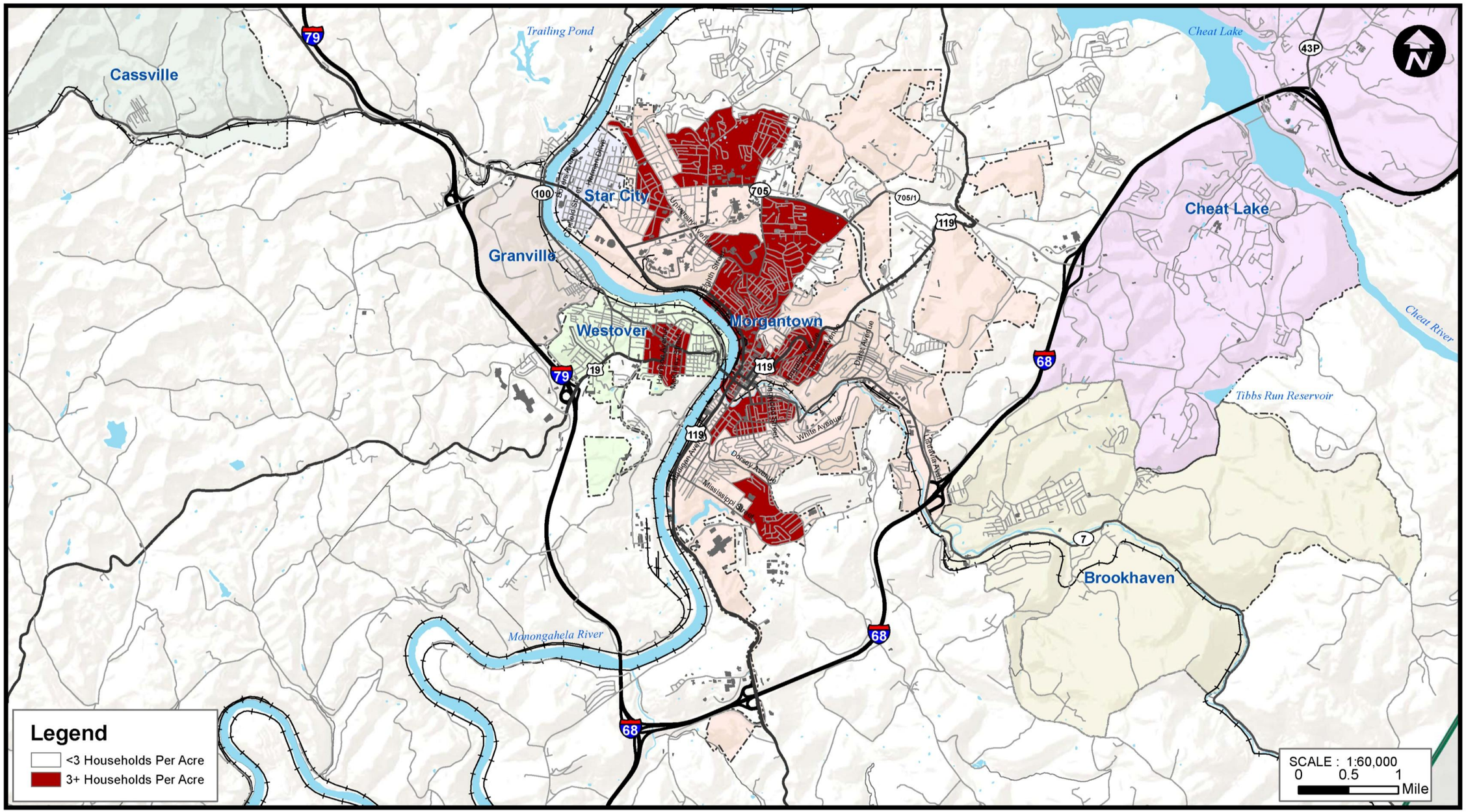


Figure 4-12. Employment Density

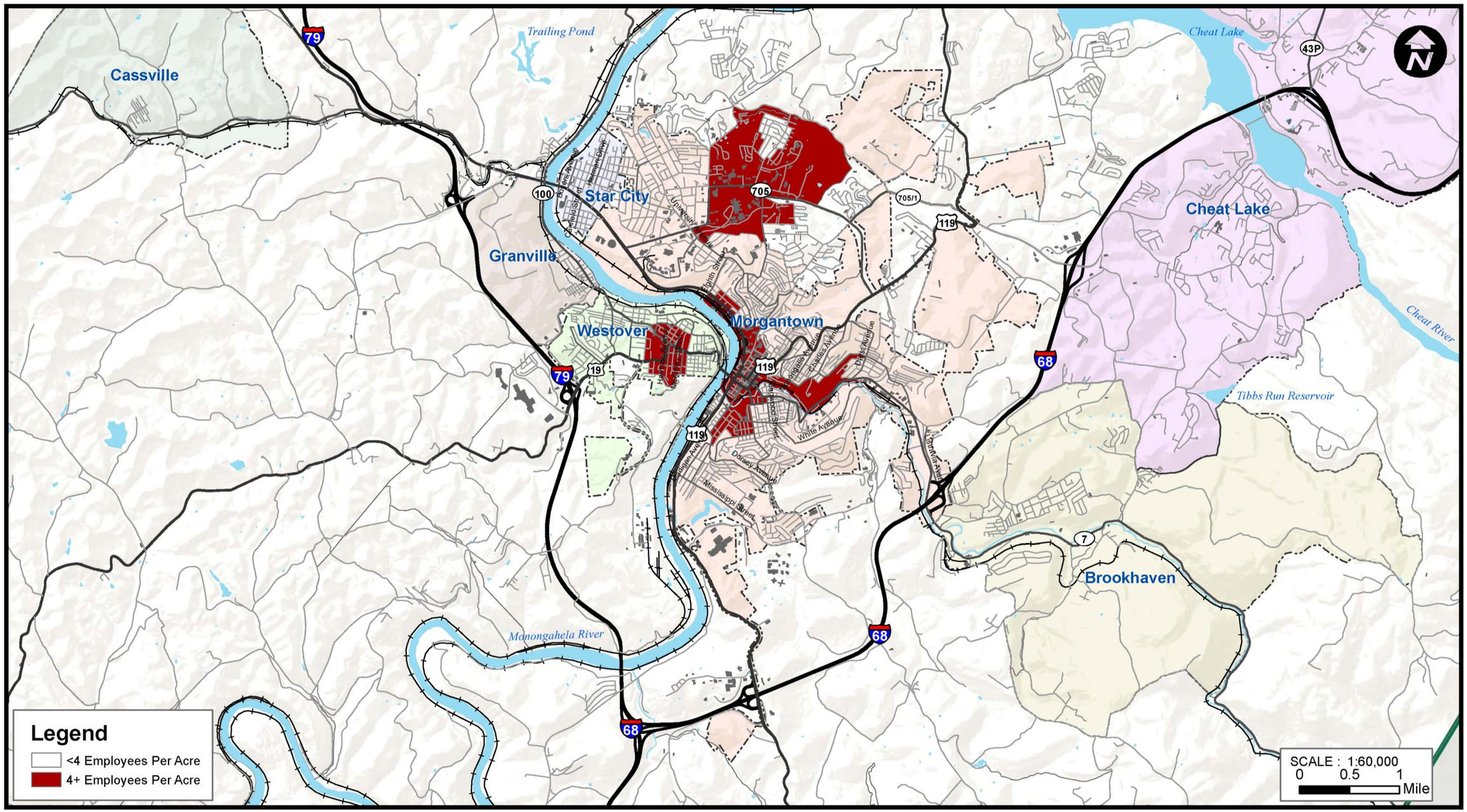
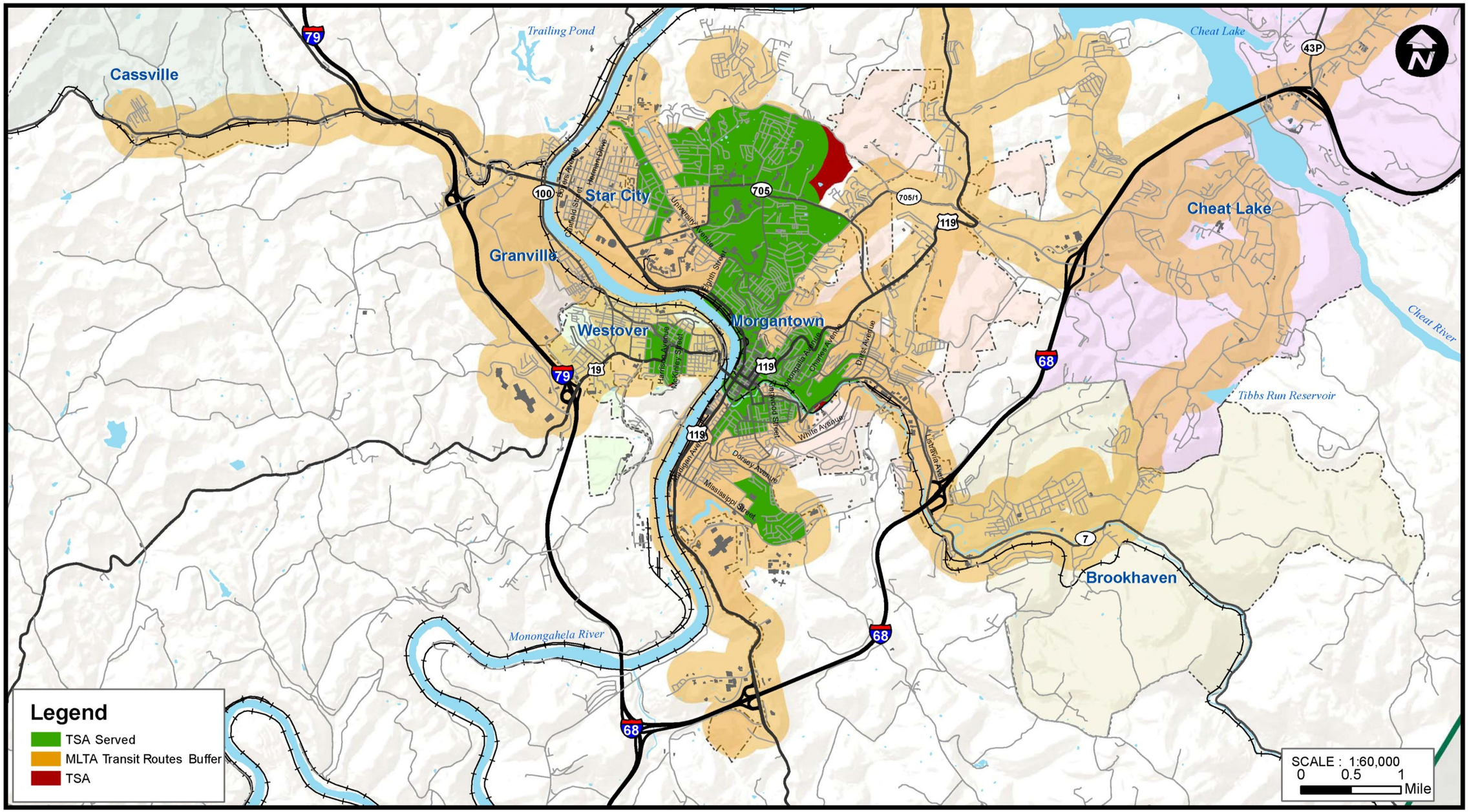


Figure 4-13. Transit Service Coverage



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Service coverage is an all-or-nothing issue for transit riders—either service is available for a particular trip or it is not. As a result, there is no direct correlation between service coverage LOS and what a passenger would experience for a given trip. Rather, service coverage LOS reflects the number of potential trip origins and destinations available to potential passengers. At LOS A, 90 percent or more of the TSAs have transit service; at LOS F, less than half of the TSAs have service.

The percentage of TSAs served within Morgantown and the corresponding LOS has been identified using the Transit Level of Service (TLOS) methodology. As shown in Table 4-14, the percent of transit supportive population areas served is 99 percent and the percent of transit supportive employment areas served is 97 percent. The corresponding LOS is A according to TLOS methodology. However, this should be understood as a metric that does not always consider real-world conditions such as topography, directness of routes to transit stops, and other factors that affect the user experience. Although TLOS methodology suggests a high level of service for Morgantown's TSAs, the actual user experience may be different.

Table 4-14. Service Coverage Analysis

Area Type	Population	Employment
Transit Supportive Area (TSA)[1]	28,011	18,747
Transit Supportive Areas Served[2]	27,592	18,129
Percent TSA Served by Transit	99%	97%
Level of Service	A	A
Transit Supportive Areas without service	419	618

1. Area shown in green and red Figure 4-13.
2. Area shown in green in Figure 4-13.

As shown in Table 4-14, 419 people and 618 jobs are located within TSAs that do not have transit service. These areas currently have a population and/or employment density that can support transit service and therefore should be included in future efforts to improve service routes and stop locations.

Table 4-15. Service Coverage Analysis (continued)

Area Type	Population	Employment
Transit Area Served[1]	55,132	30,225
Transit Supportive Areas Served	27,592	18,129
Additional Areas Served	27,540	12,096

1. Area shown in green and orange in Figure 4-13

As shown in Table 4-15, 55,132 people within Monongalia County, or approximately 57 percent of the total population (total population 96,300), are currently served by transit. Of the total area served, 27,540 people and 12,096 jobs are located within areas that have transit service, but currently do not have the population and/or job density necessary to support transit service.

Level-of-Service (LOS) Summary

Deficiencies within the MLTA's transit system are discussed in three areas: service frequency, service hours, and service coverage.

- Service Frequency: MLTA's fixed-route service currently operates at LOS E throughout the day with respect to frequency. Although the LOS E is typical of a city with a population of less than 50,000, if headways are decreased, service will become more appealing to a broader range of users, and ridership should increase.
- Service Hours: MLTA's fixed-route service currently operates at LOS E throughout the day with respect to hours of service. Service at this level is generally used only by those who have no other transportation alternative, such as WVU students. Increasing the hours of service will make bus service usable for a broader range of trip purposes. In contrast, an insufficient service span can cause unwanted time constraints on daily activities or trips because of the limited time available in which to make trips.
- Service Coverage: The current population and employment service coverage is LOS A. The area located north of WV 705, which is not currently served by transit, may require additional transit routes or additional transportation facilities in order to be served. This area, however, is currently undeveloped.

4.7 Pedestrian System

The region's pedestrian system consists primarily of sidewalks and off-street multi-use trails. There is added complexity due to Morgantown's topography, the separation of WVU's principal campuses, and the high degree of non-motorized travel demand typical of university cities.

Very little data has been collected or analysis has been performed on the pedestrian system outside of the City of Morgantown. Thus, most information in the LRTP on the pedestrian system is focused on the City of Morgantown. Similar deficiencies and needs exist in adjacent urban areas.

Morgantown's plan articulates a vision of what its pedestrian system should do for the community as well as the goal the community aspires to achieve. The principal accomplishments of these efforts thus far have been to better understand the nature of pedestrian safety conditions and to prioritize projects.

Inventory of Existing Pedestrian Conditions and Facilities

Morgantown's efforts to improve pedestrian infrastructure in the City are not based solely on a general interest in promoting walking as a means of travel—they are based largely on a significant demand for this infrastructure as evident by current travel patterns. Based on a 2000 survey by the West Virginia Department of Transportation, Division of Highways, Morgantown had the highest percentage of persons walking to work in the state. According to the survey, 16.8 percent of Morgantown residents walk to work, compared to a State average of 2.5 percent. Many residents also walk for exercise and enjoy the use of multi-use paths and trails, such as those along the Monongahela River and Deckers Creek. The existing pedestrian facilities and standards in Morgantown are described below.

Sidewalks/Other Pedestrian Facilities. Generally, many of Morgantown's downtown streets and major thoroughfares in other parts of the City include sidewalks, though their configuration in the street cross-section varies. The 2030 Regional Transportation Plan includes a map of sidewalks and paved shoulders along urban arterials from 2005. As noted in this map, there are sidewalks on several arterials, particularly in the downtown area and near WVU. Certain neighborhoods in Morgantown have buffered sidewalks and narrow street widths, including South Park, Greenmont, Chancery Hill, and sections of Woodburn, Wiles Hill, First Ward and Evansdale. Other areas (such as neighborhoods near Dorsey Avenue, Willowdale Road, and

Sabraton) lack pedestrian connections to downtown or local schools. The Morgantown Pedestrian Safety Plan (2010) also notes the following problems with existing pedestrian infrastructure:

- Non-connecting sidewalks;
- Narrow sidewalks adjacent to high speed traffic;
- Need for sidewalk replacement and repair;
- Lack of sidewalks on pedestrian corridors;
- Lack of crosswalks; and
- Inadequate provisions for pedestrian safety.

Trails. As reported in the Morgantown Pedestrian Safety Plan, *Prevention* magazine listed Morgantown as the city in West Virginia with the highest proportion of its population who walk for exercise. This may be due to the variety of multi-use trails providing both recreational and commuting opportunities.

The Caperton Trail and the Decker's Creek Trail provide nearly ten miles of paved pathways throughout the City, mainly running along the Monongahela River and through southeast Morgantown. Several of the City's parks include natural surface trails, with approximately five miles of trails at White Park, two miles at University Farm, ten miles at Cooper Rock, five miles at Snake Hill Wildfire Management Area, and additional trails on unregulated private land.

While these park-based trails are not likely to be used for true transportation or commuting purposes, they do add to an overall inventory and may offer an opportunity to increase the non-motorized infrastructure network by serving as key links between developed areas and attractions that are difficult to connect with purely on-street facilities.

Current Policies and Standards for Pedestrian System Additions

As mentioned previously, many of Morgantown's streets feature sidewalks; however, the design and configuration of these sidewalks varies, as does their general condition. According to observations in Morgantown's Pedestrian Safety Plan, sidewalks built since 1940 are generally narrower and feature less buffer space from vehicular traffic. This was confirmed by field observation in areas of Central Morgantown where many principal thoroughfare streets feature relatively narrow sidewalks that are attached to the roadway curb. In addition, while some sidewalks are in good condition, many of the City's sidewalks have not been sufficiently maintained and have fallen into disrepair.

Morgantown requires infrastructure contributions from private developers along with any new construction project, similar to many other local governments. While there has been a great deal of sidewalk construction completed as part of new multi-family and commercial developments across the City in recent years, prior to 2006 several new construction projects successfully sought exemptions from the City Code requirements to include sidewalks as part of project plans. As a result, few contributions were made to support Morgantown's infrastructure. Morgantown's Pedestrian Safety Plan, discussed more extensively in the following section, defines a stronger apparatus of sidewalk and crosswalk policies as a top priority for the City.

Pedestrian Safety

The WVU Injury Control Research Center analyzed crash data from 1998 through 2008, identifying 226 reported pedestrian injuries occurring between January 1998 and June 2008. The following intersections have the highest number of reported pedestrian injuries (noted in parentheses):

- Spruce & Walnut (9)
- High & Willey (8)
- S. University & Pleasant (8)
- University & College (8)
- N. Willey & Prospect (7)
- Spruce & Pleasant (5)
- University/Beechurst/Fayette (5)
- Beechurst & Campus (5)
- Chestnut Ridge/Van Voorhis (5)
- High & Walnut (4)
- High & Fayette (4)
- University & Prospect (4)

In addition, police report data from 2005 through 2011 identifies a total of 144 crashes within the City limits involving pedestrians. Of these crashes, 35 occurred on City streets, 15 on private roads or parking lots, and 94 on County, State, or US routes.

What is noteworthy about these two sets of statistics is the relatively consistent number of average yearly accidents involving pedestrians, between 20 and 25 per year. This suggests that particularly problematic locations or corridors likely experience consistent patterns of accident activity.

When these accidents are considered in the context of corridors, the following feature the greatest number of incidents for both pedestrians and bicyclists combined (number of crashes provided in parentheses):

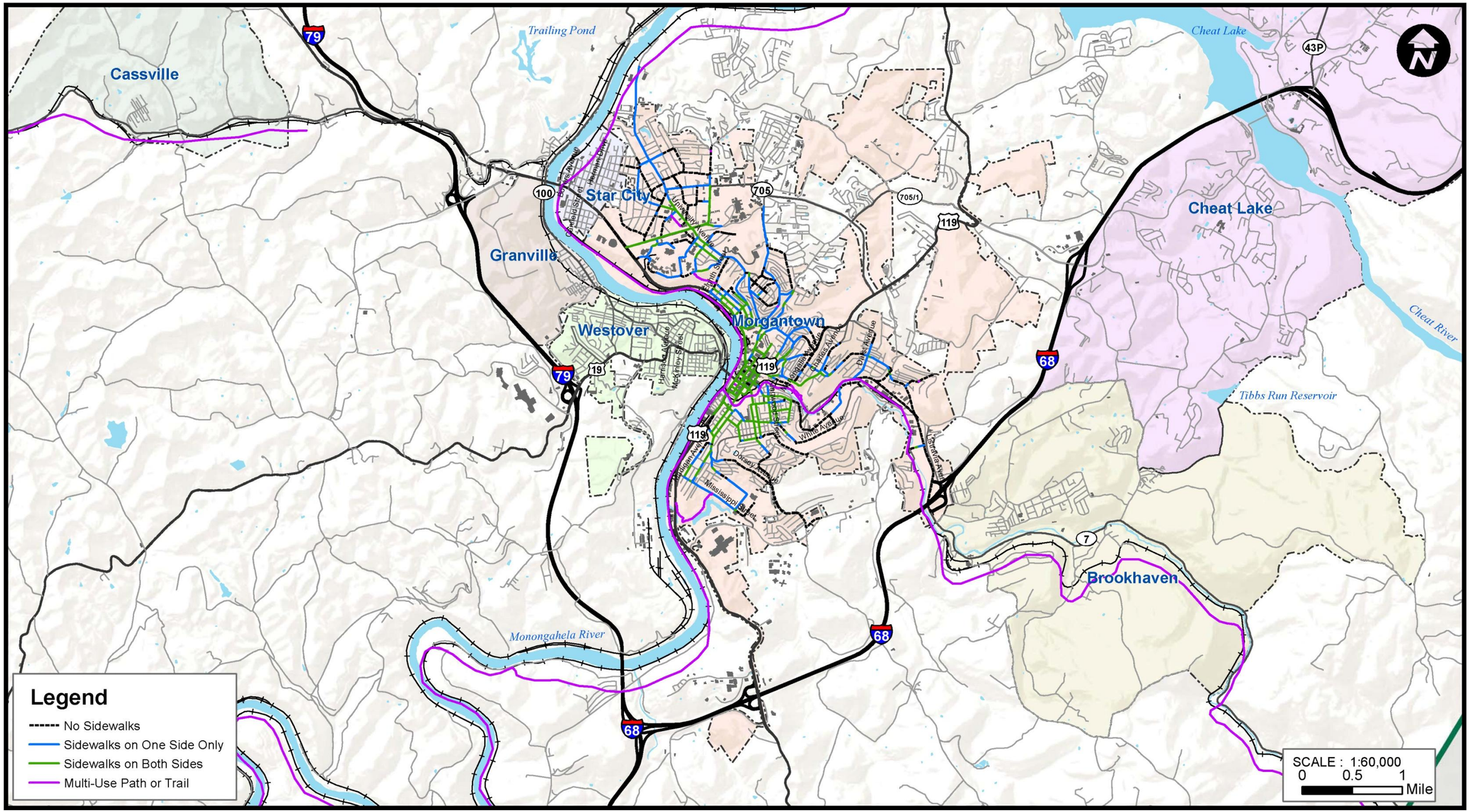
- University (26)
- Willey (14)
- Spruce (8)
- Beechurst (12)
- S University (1)
- Don Knotts (4)
- Walnut (2)
- Richwood (2)
- Dorsey (1)
- WV 705 - Patteson (3)
- Van Voorhis (5)
- Chestnut Ridge Road (4)

Pedestrian Infrastructure Plan

The Pedestrian Infrastructure Plan identifies steps to improve the walkability of the City and sets forth a general master plan for a connected network based on prioritized improvement projects. For planning purposes, the Infrastructure Plan establishes a hierarchy of facility types and classes, defining sidewalks located along arterial and collector streets as connecting network sidewalks (CNS), which are essential to present and future safe, connective pedestrian travel. CNS-level capital project opportunities are the highest priority for building connective pedestrian infrastructure throughout Morgantown, due presumably to their alignment along heavily-used routes connecting different areas of the city.

Second in importance are neighborhood access sidewalks (NAS), which are vital feeders to the CNS, intended to connect residential neighborhoods to the rest of the city. Figure 4-14 illustrates the CNS system along with the city's rail trails and pedestrian greenways.

Figure 4-14. Connecting Network Streets, Rail Trails, and Pedestrian Greenways



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4.8 Bicycle System

Like for the pedestrian system, there is very little available information related to the bicycle system outside of the City of Morgantown.

Morgantown has taken significant steps in the past few years to support progress towards improving bicycling in the city, including the creation of a Bicycle Board in 2006, the development of the Greater Morgantown Bicycle Plan (2012), and the adoption of a "Complete Streets" policy.

As with its recent steps to plan for and pursue pedestrian projects, its principle bicycle efforts thus far have been the formal creation of this Board and Plan, both of which have focused on learning and understanding best practices, identifying needs and safety challenges, and issuing more specific recommendations to Morgantown elected officials. The efforts of the Bicycle Board, particularly the educational efforts, have led to Morgantown's 2012 designation as a Bronze Level Bicycle Friendly Community by the League of American Bicyclists.

Inventory of Existing Bicycle Conditions and Facilities

The region currently has limited bicycle infrastructure, in part because of the challenges noted in the Greater Morgantown Bicycle Plan (2012) with the hilly geography and limited rights-of-way on roadways. However, the City has some trails for cycling and other bike facilities, which are detailed below.

Roadways. City streets do not have paved shoulders, and few of the state routes do. There are no on-street bicycle lanes in the region. Although this suggests that a formal inventory of bicycle-specific facilities may not be feasible, the Morgantown Bicycle Board has developed a working "Commuter Map" of on-road routes typically used by cyclists to connect locations. Streets are color-coded based on their bikeability, according to the following codes[1]:

- Green – Pleasant: Low motor traffic volume and slow speed;
- Blue – OK: Moderate motor traffic and slow to moderate speed;
- Brown – Scary: Moderate to heavy motor traffic and moderate speed; and
- Red – Dangerous: Heavy, high speed motor traffic.

[1] Credit to Morgantown Municipal Bicycle Board

The Bicycle Board notes that streets that are not colored are not necessarily worse, just not yet rated on the map. The "Commuter Map" is shown in Figure 4-15. This map illustrates several roadways rated "Pleasant" or "OK" in the vicinity of WVU and the downtown area. There are few highly-rated roadways connecting these areas to the residential areas in Morgantown, or connecting the three sub-campuses of WVU.

Trails. The region has a variety of off-street shared use trails for biking that provide both recreational and commuting opportunities. The Caperton Trail and the Decker's Creek Trail provide nearly ten miles of paved pathways throughout the City, mainly running along the Monongahela River and through southeast Morgantown. Several of Morgantown's parks include natural surface trails, with approximately five miles of trails at White Park, two miles at University Farm, ten miles at Cooper Rock, five miles at Snake Hill Wildfire Management Area, and additional trails on unregulated private land. The Morgantown trails are illustrated in Figure 4-16.

End of Trip Facilities. Morgantown has numerous bicycle parking racks throughout the City. The Bicycle Board has mapped some of the existing bike parking, which is shown in Figure 4-17. West Virginia University also provides bicycle racks at many of its buildings, also shown in Figure 4-17. Bike service centers are noted in the figure as well.

In 2010, City Council approved funding to implement a plan for bicycle parking rings on downtown parking meters. The City has not adopted design standards for bicycle rack facilities or development standards requiring new bicycle rack facilities as part of new retail, commercial, or residential developments.

Figure 4-15. Regional Bicycle Commuter Map

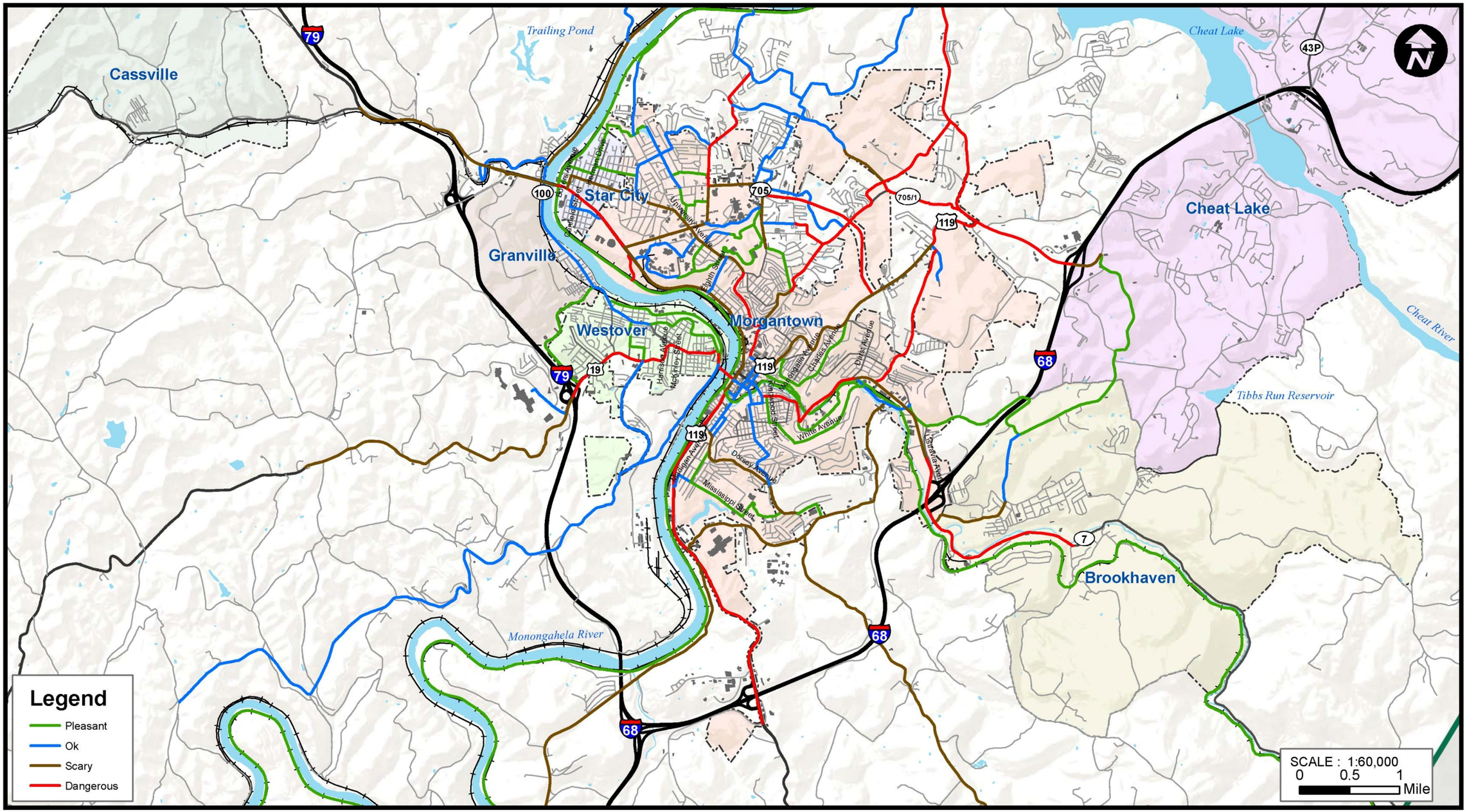


Figure 4-16. Regional Trails

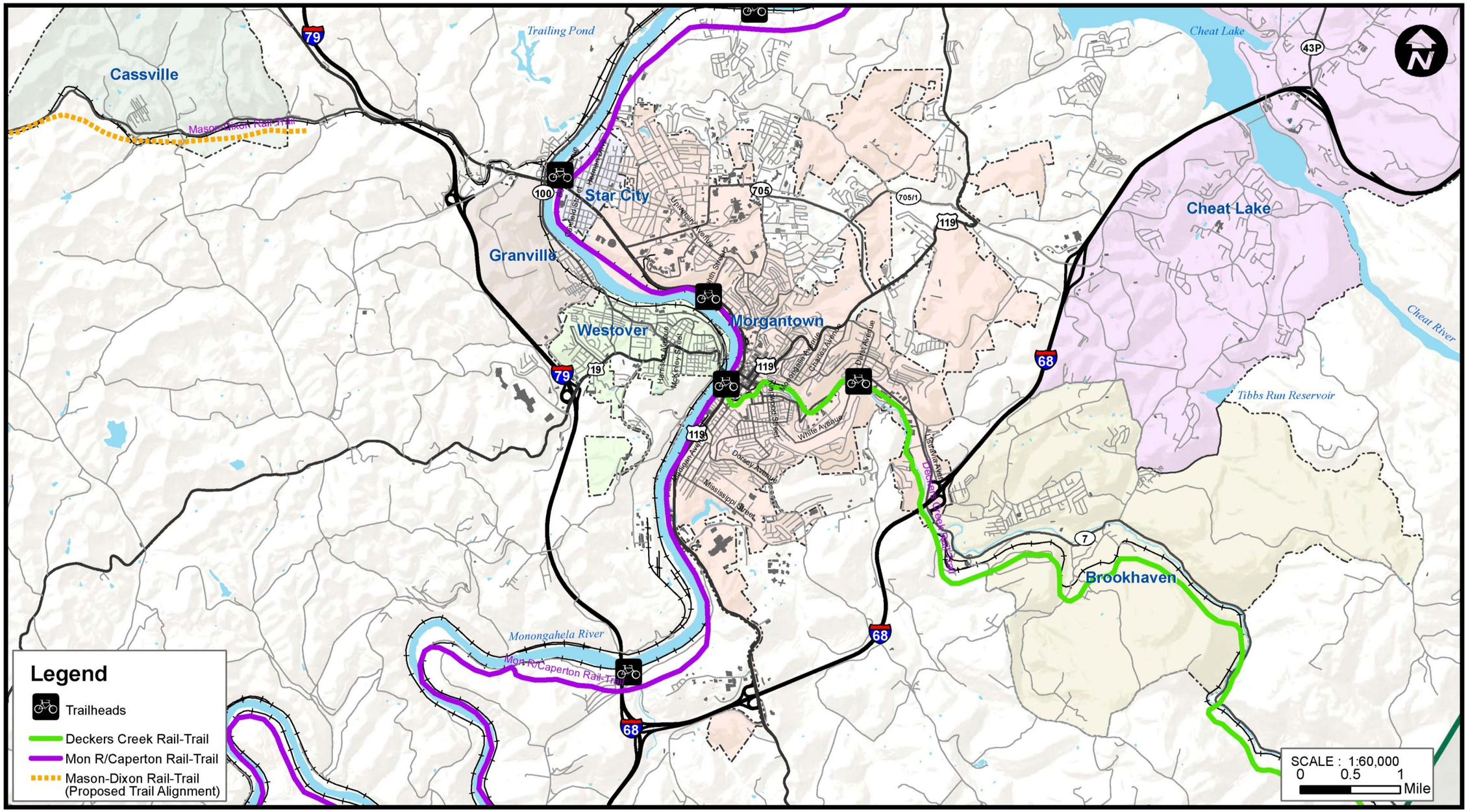
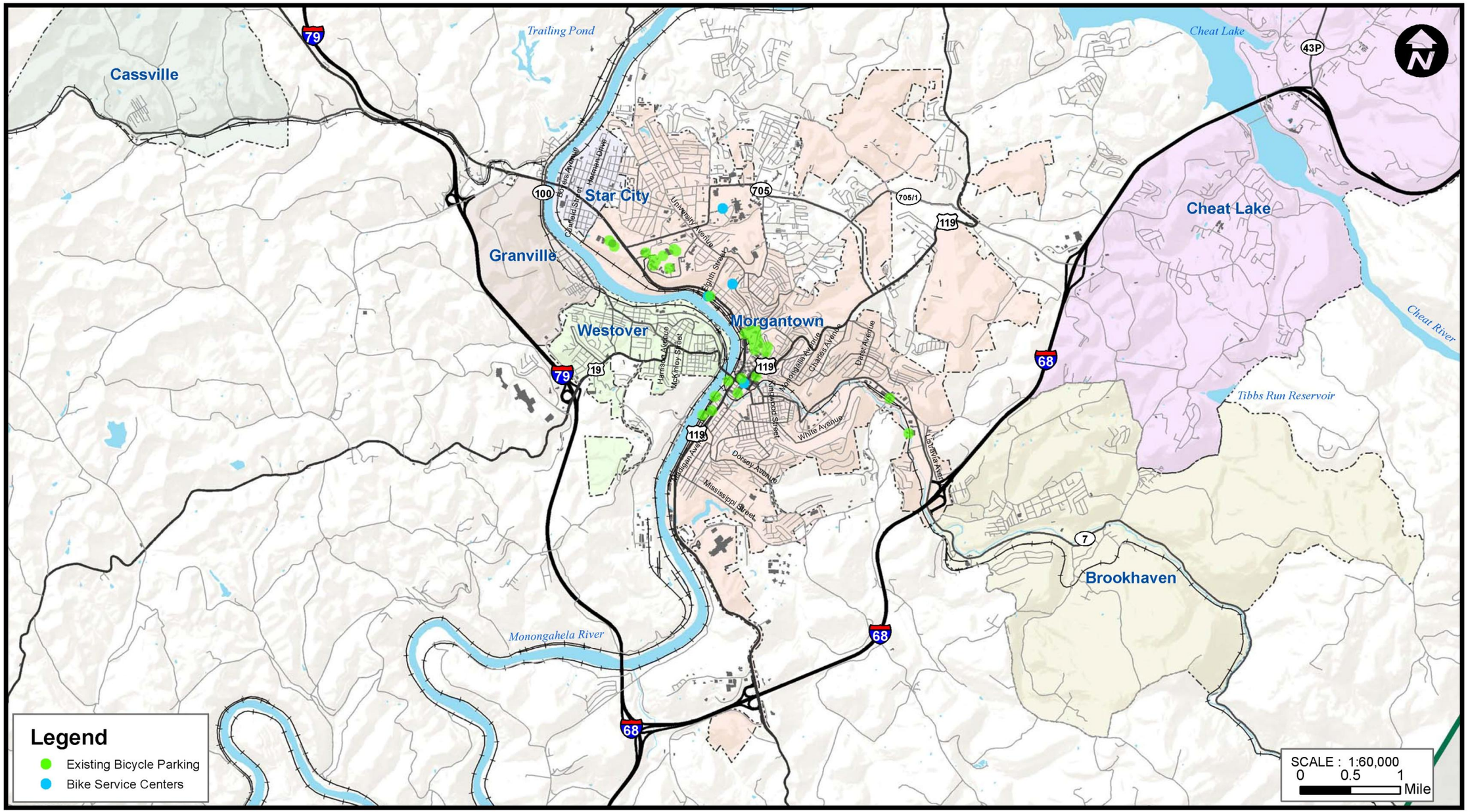


Figure 4-17. Bicycle Parking & Service Centers



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Existing Bicycle Trip Generators/Attractors

The Morgantown Bicycle Board has developed a list of principal destinations for cyclists. These are mapped in Figure 4-18, along with other destinations that are likely to attract bicyclists, such as schools, commercial centers, and trailheads.

WVU's approximately 30,000 students generate a large number of trips. The campus is divided into three sub-campuses, creating the need for some students to commute between the Downtown Campus (on the northern fringe of Morgantown), the Evansdale Campus (located a mile and a half north of the Downtown Campus), and the Health Sciences Campus (located near Mountaineer Field). Bicycle facilities in the vicinity of WVU and between campuses could help encourage students, staff and faculty to commute by bike.

The downtown business district of Morgantown includes numerous shops, restaurants, and other attractions. Bicycle facilities between residential areas and the downtown business district would increase accessibility for bicyclists.

Bicycle Safety

The Morgantown Bicycle Board has collected data for bicycle related crashes. There have been nine reported bicycle crashes in the last five years (2007-2011) in Morgantown, which are mapped in Figure 4-19 and listed in Table 4-16. Based on accounts from the Bicycle Board, the current process for reporting bicycle crashes is very tedious and lacks support. Therefore, this number could under represent the true number of bicycle collisions and may not reveal all bicycle-related safety concerns.

Table 4-16. Reported Bicycle Crashes within Morgantown (2008-2011)

Location	Date	Type Involved	Sidewalk Cycling?	Report Number
Dalton St.	5/2/2007	Bicycle	Unknown	2007-15369
Sabraton Ave	8/11/2008	Bicycle	Unknown	2008-26434
US-119	9/18/2008	Bicycle	Y	2008-25297
Jones Ave & Sharon Ave	8/31/2009	Bicycle	N	2009-75462
209 Chestnut St	11/13/2009	Bicycle	Y	2009-98715
1632 Sabraton Ave	11/18/2009	Bicycle	N	2009-100369
Unlisted	4/25/2011	Bicycle	N	2011-42129
High St & Fayette St	8/16/2011	Bicycle	Y	2011-84039
Beechurst Ave & 6th St	8/23/2011	Bicycle	Y	2011-87348

As noted in Table 4-16, at least four of the reported crashes involved cyclists riding on the sidewalk. This suggests a lack of roadway bicycle facilities or comfort among bicyclists for riding on the road. The Greater Morgantown Bicycle Plan notes that, besides being illegal, riding on the sidewalk in high-traffic locations can actually place bicyclists at greater risk, particularly at intersections. It suggests that bicycle routes with low traffic volume, bike lanes on arterial streets, and completely separated trails can benefit cyclists that would otherwise ride on the sidewalk.

Figure 4-18. Bicycle Trip Generators

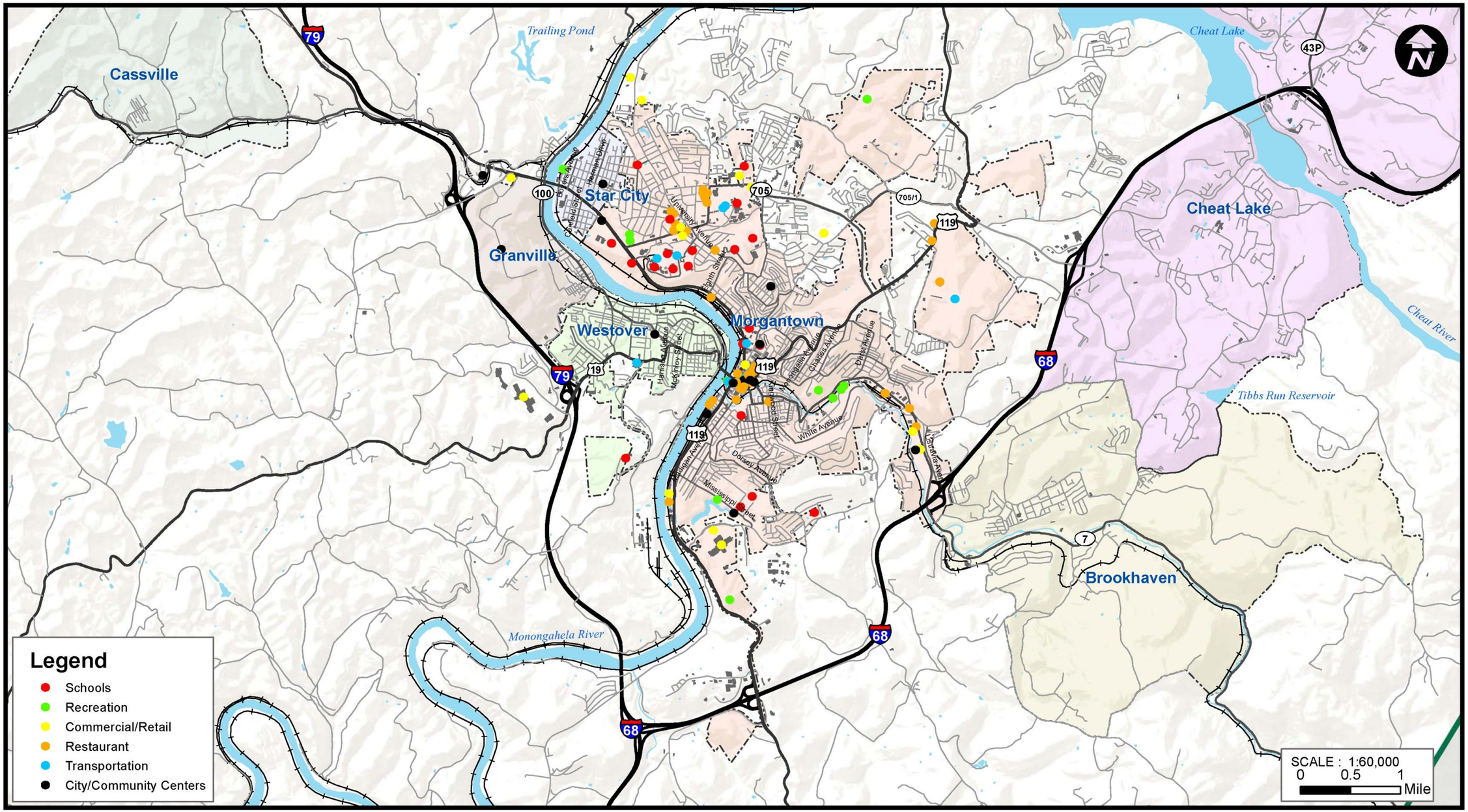
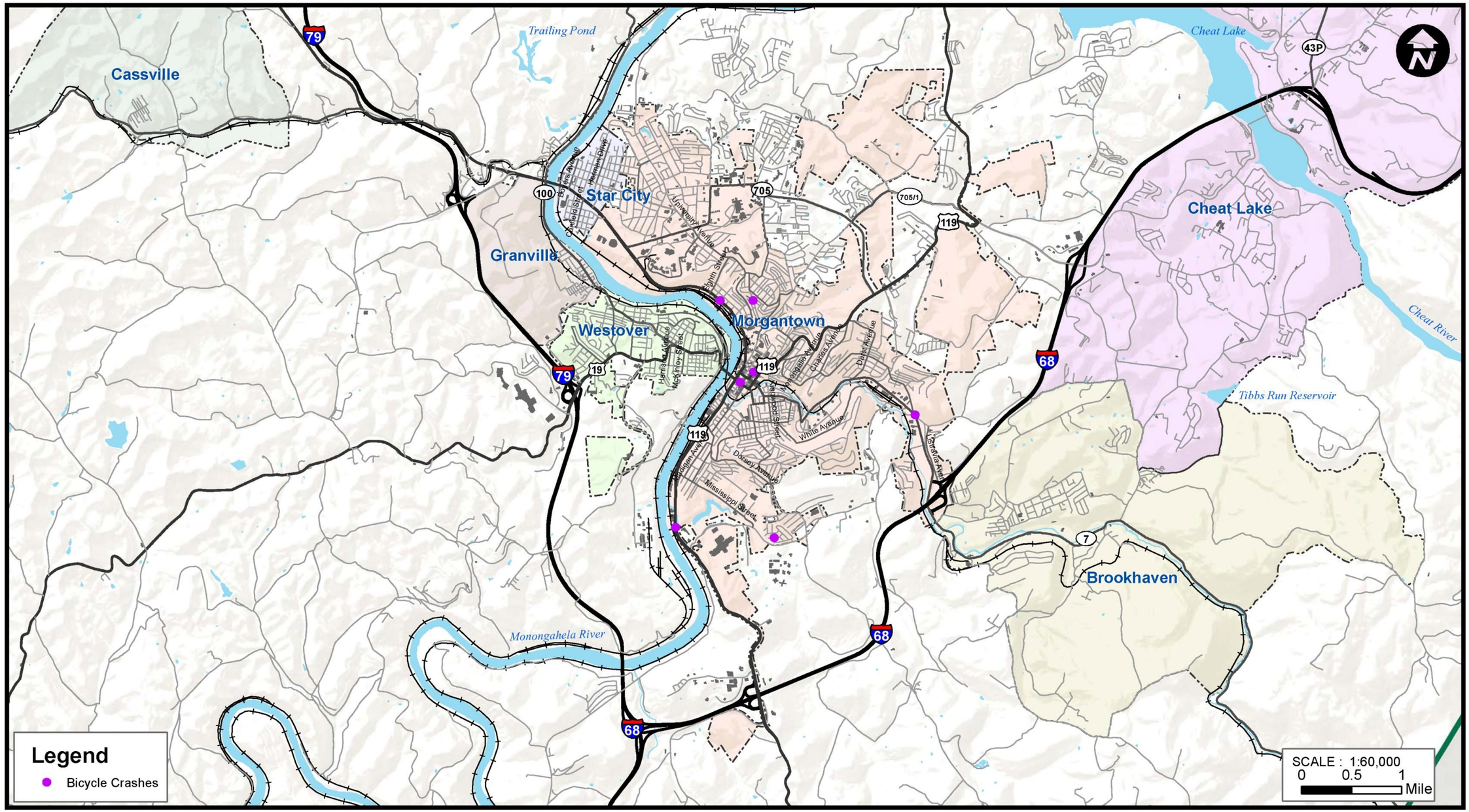


Figure 4-19. Reported Bicycle Crashes within Morgantown (2007-2011)



Bicycle system needs, opportunities, and constraints

As indicated throughout this section, Morgantown has made significant progress toward improving bicycling in the city, including the creation of a Bicycle Board, the development of the Greater Morgantown Bicycle Plan, and the adoptions of a "Complete Streets" policy by the City and the MPO. Also indicated throughout this section:

- There are numerous opportunities within Morgantown to create an environment where residents can enjoy bicycling safely and fearlessly anywhere, anytime, and for any reason.
- Morgantown currently has a variety of recreational biking opportunities, with several miles of trails available along the river and in local parks.
- All of Morgantown's existing roadways currently lack bicycle lanes.
- Many existing roadways also lack paved shoulders, pavement markings, and signs.
- There are limited bicycling facilities in the city to help cyclists reach desired destinations (such as WVU, downtown, commercial centers, trail heads, and residential areas).
- A lack of right-of-way, narrow roadways, and hilly topography creates unique challenges for Morgantown in developing a robust bicycle network.

The creation of the Bicycle Board and Greater Morgantown Bicycle Plan represent significant progress in working towards improving conditions for cycling in the region. The plan includes specific action items the City can take to work towards making Morgantown a Bicycle Friendly Community (BFC). It specifically focuses on action items that contribute to education, enforcement, engineering, encouragement and evaluation (the 5-Es) objectives.

To better identify opportunities to increase bicycle use and reduce crashes, it recommends measuring bicycle use, bicycle crashes, bicycle injuries and bicycle-related citations. In addition to this data, the plan includes an action item to "establish a bicycle route map for the City and classify all streets in terms of their bicycle friendliness." The Bike Board has started this map (see previous Figure 4-15); however, there is further work required to complete this map.

4.9 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 (NS) owns both lines while CSX has the right to operate on the lines. Figure 4-20 displays the primary 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 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 coal mines: 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 coal mines. Blacksville No. 1 ceased mining operations in 1995, however, one railroad source notes that the rail lines carry fly ash to the mine for disposal in its mineshafts. The line serving the mines continues north to Brownsville, Pennsylvania.

More than 29 million tons of freight were shipped over rail lines in Monongalia County in 2003. Table 4-18 provides a summary of the products and volume of freight that were shipped. Along the Monongahela River line, nearly 6,400 railcars carried 610,000 tons of coal and pulpwood through the county. From the three coal mines in northwestern Monongalia County, NS and CSX moved nearly 289,000 rail cars and 28.7 million tons of coal.

There is one abandoned rail line in Monongalia 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.

Table 4-17. Freight Traffic on Monongalia County Rail Lines in 2003

Railroad	Product Transported	Number of Cars (Yearly)	Freight Tonnage (Yearly)
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		**294,980**	**29,332,900**

Source: West Virginia State Rail Authority

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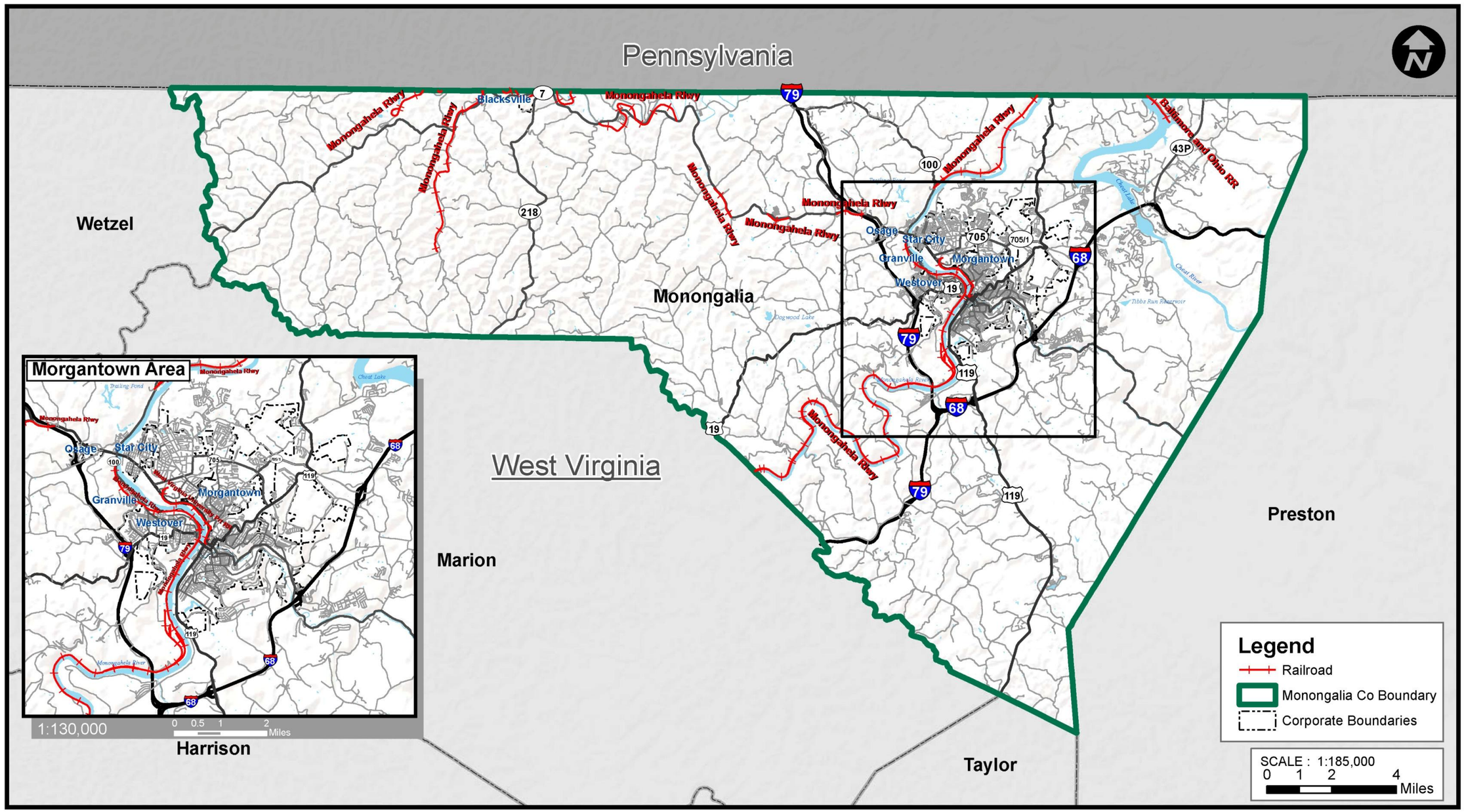
Figure 4-20. Rail Lines Map



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4.10 Air Travel

The Morgantown Municipal Airport is located on Hartman Run Road. Silver Air, Inc., operating as United Airlines Express, offers air-carrier service to Dulles International Airport in Washington, DC. Silver Air took over the service in 2012. In December of 2012 four daily flights were offered, Monday through Friday, one daily flight on Saturday, and three flights are offered on Sunday.

Other air service for the region is provided by Pittsburgh International Airport (approximately 80 miles away), and North Central West Virginia in Bridgeport, WV (approximately 32 miles away).

4.11 River Ports

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 4-17, there are 13 active ports and seven 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), Pittsburgh District, 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 USACE collects data about the volume of traffic and goods that travel through the locks and dams. As shown in Table 4-18, 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 4-18. 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	Location		
Laurita Energy Dock	95	Left	West Van Voorhis	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 4-19. Level of Freight Shipped Through Monongahela River Locks and Dams in Monongalia County (2004)

			Lock and Dam		
			Morgantown	Hildebrand	Opekiska
River Location (Mile Marker)			102	108	115.4
Number of Barges		Upbound	816	362	386
		Downbound	820	358	384
Freight Tonnage by Product	Coal	Upbound	4,500	9,300	4,500
		Downbound	377,400	372,600	378,400
	Petroleum	Upbound	0	0	0
		Downbound	2,100	0	0
	Crude Materials	Upbound	131,700	25.600	55,600
		Downbound	495,100	0	0
Total Tonnage			1,010,800	407,500	438,500

Source: U.S. Army Corps of Engineers

Note: Upbound = South direction
Downbound = North direction

4.12 Public Input

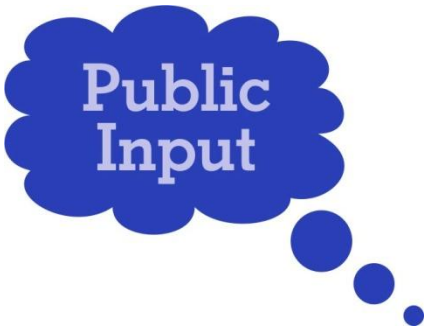
During the *Crossroads* regional visioning process, stakeholders and the public provided valuable input regarding the existing transportation system. Below is a summary of some key points that were received. It should be noted that the ideas expressed in this summary reflect the opinions and perceptions of individuals interviewed and may not be representative of all individuals, or factually accurate.

Business growth and housing development have outpaced the transportation system. This situation has created an environment where the system is incomplete, inadequate, disjointed, and overwhelmed. There are congestion problems due to limited capacity and lack of efficiency.

Transportation system lacks adequate way-finding. This was mentioned for vehicular, pedestrian, and bicycle traffic.

Major transportation issues were consistently defined as:

- Pedestrian traffic at Grumbein's Island impeding vehicular traffic
- Peak congestion periods
- Topography
- Inadequate pedestrian facilities
- Only two N-S corridors and two E-W corridors



- Funding
- Transit schedule and frequency
- Lack of specified bus stops
- County/Cities cooperation/ coordination and politics in the area including at the State level
- Lack of County zoning
- Parking downtown, parking during events, and on street parking that restricts municipal services
- Truck traffic through the CBD
- WVDOH should consider/improve signal synchronization and potential reversible lane locations
- No enforcement at dangerous intersections for pedestrians who cross illegally, or illegal parking
- Negative media representation
- Vehicular mentality
- Lack of adequate biking facilities

Major Congestion Areas. In each interview the Monongahela Boulevard/Beechurst Avenue/University Avenue/Don Knotts Drive corridor, the WV-705 corridor, and Mileground were repeatedly mentioned as highly congested locations. The public input confirms many of the results of the level of service analysis described in Section 4.5 of the LRTP.

Major Safety Concerns. Safety concerns revolved around the specific dangerous intersections listed below as well as pedestrians intermingling with motor vehicles. Grumbein's Island was mentioned most frequently.

- Grumbein's Island
- US 119 at Stewartstown Road
- WV 705 at Stewartstown Road
- Van Voorhis Road at West Run Road
- US 119 at West Run Road
- Cheat Road at Tyrone Avery Road
- Tyrone Road at Tyrone Avery Road
- Don Knotts Blvd at US 119
- Sabraton Road at Greenbag Road
- Mileground at Trinity Church
- Anywhere along WV 705 corridor

While these intersections do not show up as safety concerns in the crash analysis, it should be noted that several of the intersections listed

above are part of the high-crash corridor locations and, as such, will be reviewed in further detail during the transportation planning process.

Transit is Key. Consistently the public and stakeholders felt that transit is an integral part of the overall system and worked well to incorporate pedestrians and bicyclists. Most participants thought transit worked very well in the area except for a few details. They would like to see improved frequency in service, specific bus stop locations, and a schedule that benefits every day workers, not just students.

Lack of Funding. The failed service/user fee developed by the MPO was mentioned several times, along with WVDOH's unwillingness to provide money for projects the locals prefer. Finding a way to have developers contribute to projects was brought up repeatedly as a need.

Transportation Demand Management. Transportation Demand Management (TDM) is supported by the public. It was noted that there is an opportunity for better coordination among all the major employers and the need for additional park-and-ride locations. It was also noted that TDM measures have been implemented in the area by individual employers such as WVU with its WE GO! program, and the National Energy Technology Laboratory (U.S. Department of Energy) and Mylan Pharmaceuticals with their provisions for flex time. The MPO is currently working to expand TDM through van pooling with a Congestion Mitigation and Air Quality Improvement (CMAQ) grant. The public believes that TDM is the most cost effective measure for reducing congestion available and it should continue to be an important part of the MPO's tool kit.

CHAPTER 5 – REGIONAL GROWTH FORECASTS

5.1 Introduction

Land use and socioeconomic conditions are inextricably linked with transportation. These factors drive the demand for transportation infrastructure, and the efficiency and safety of how these facilities operate. A primary objective of a Long Range Transportation Plan (LRTP) is to plan for a transportation system that encourages and leads to regional growth and development that is supported by its citizenry.

An extensive visioning process that involved a large number of area stakeholders and the general public established the regional vision for future growth in the region. These publically desired development and redevelopment patterns, not just a continuation of past trends, were used to geographically allocate forecasted changes in socioeconomic conditions to the region. LRTP *Chapter 2 – Regional Vision* describes in detail the framework for future growth that was developed through the visioning process. The desired framework is illustrated in Figure 2-1.

In addition to growth patterns, another important input to the plan is the quantity of anticipated growth and development expected over the 28 year horizon of the LRTP. Socioeconomic forecasts are a key input into the transportation demand modeling process which is described in *Chapter 6 – Transportation Demand Model Development*. Reasonable estimates of transportation demand and traffic volumes are needed to identify where future capacity and operational deficiencies in the system will occur. The modeling is used to evaluate how well proposed improvements might address those deficiencies.

5.2 Socioeconomic Trends

Historic Population

Monongalia County is among a small number of West Virginia counties that have experienced a stable growth pattern over the last 20 to 30 years. According to U.S. Census Bureau data, from 1970 through 2010, population in the state of West Virginia increased from 1,744,000 to 1,853,000, or by 6.3 percent. In the same period, population in Monongalia County increased from 63,700 persons in 1970 to 96,189 persons in 2010, an increase of 51 percent.

When compared to the historical change in population for the surrounding counties in West Virginia and southern Pennsylvania, Monongalia County is the only county in the surrounding seven-county region that has observed continuous growth over the last five census

periods. Table 5-1 displays the historical population and change for Monongalia and the surrounding Counties.

Table 5-1. Historical Regional Population (1970 to 2000)

County	Population					Percent Change Per Decade			
	1970	1980	1990	2000	2010	1970-80	1980-90	1990-2000	2000-10
Monongalia	63,700	75,000	75,500	81,900	96,300	+17.7%	+0.7%	+8.5%	+17.6%
Marion, WV	61,400	65,800	57,200	56,600	56,400	7.2%	-15.0%	-1.1%	-0.04%
Preston, WV	25,500	36,500	29,000	29,300	34,000	+43.1%	-20.5%	+1.0%	+16.0%
Taylor, WV	13,900	16,600	15,100	16,100	16,900	+19.4%	-9.0%	+6.6%	+0.5%
Wetzel, WV	20,300	21,900	19,300	17,700	16,600	+7.9%	-11.9	-8.3%	-6.2%
Greene, PA	36,100	40,500	39,600	40,700	38,700	+12.1%	-2.2%	+2.8%	-4.9%
Total	154,700	159,400	145,300	148,600	136,600	+3.0%	-8.8%	+2.3%	-8.1%

Source: U.S. Census Bureau

5.3 Population Forecasts

Population in this region is expected to continue to grow at a relatively high rate. The Bureau of Business and Economic Research (BBER) at West Virginia University (WVU) published a document entitled: *Population Projection for West Virginia Counties* in August 2011 that forecasts the area's population to be 129,800 in 2035. Extrapolating the projections results in a population forecast of 138,000 in 2040, an approximately 43 percent increase from 2010 (1.44 percent per year).

5.4 Housing and Employment Forecasts

Breaking down future growth in terms of both households and jobs is also essential to the travel forecasting process. Changes in travel patterns are a function of the type, location, and density of land uses in the region.

Housing

The housing projections used for the LRTP update were calculated using demographic forecasts but were informed by real estate market factors. The overall methodology is heavily dependent on 30-year countywide population projections provide by the BBER at WVU. These population projections, coupled with trends and forecasts in average household size (U.S. Bureau of the Census and Claritas, Inc.) and WVU enrollment forecasts, yielded countywide household projections. Long-term household size was calculated based on a linear regression model. Countywide housing demand was projected based on household growth and trends in vacancy and replacement factors.

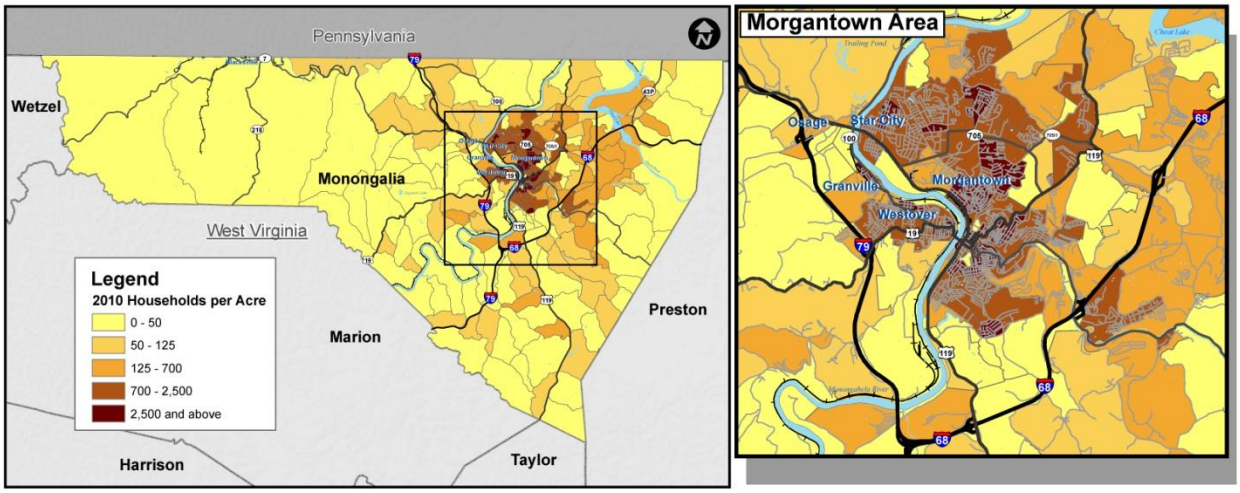
The basis for deciding where in the region to allocate the future growth in households was the Vision Framework Map and Principles as described in *Chapter 2 – Regional Vision*. That vision includes a housing policy that allows a regulatory and incentive environment to encourage housing patterns consistent with community preferences identified through the visioning process.

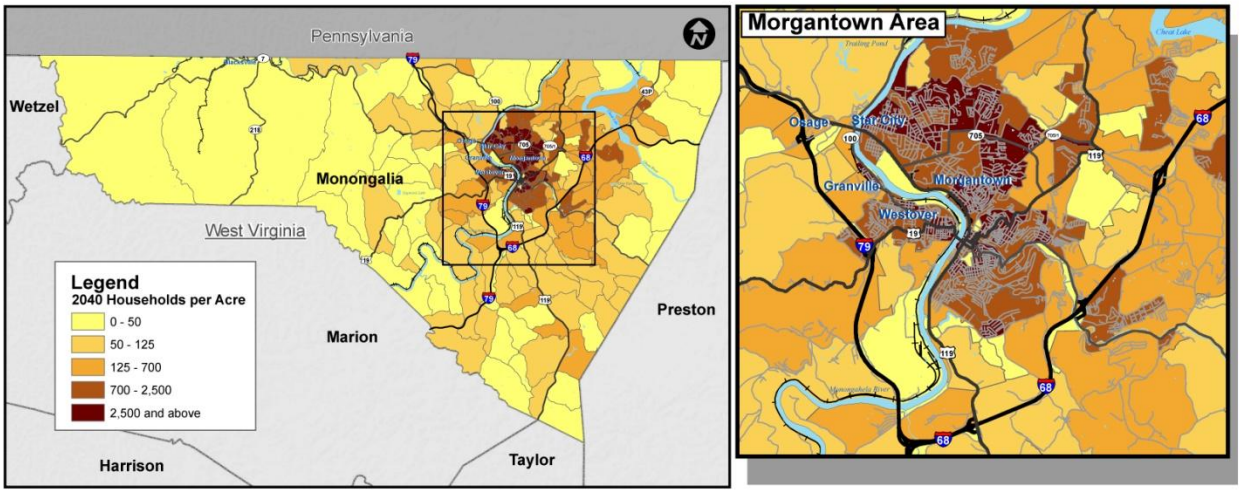
Such policies would, for example, encourage infill development and higher densities in central neighborhoods, discourage "sprawl" in outlying areas which are difficult to serve with infrastructure, and promote mixed-use (housing and job-inducing) development in key corridors or nodes.

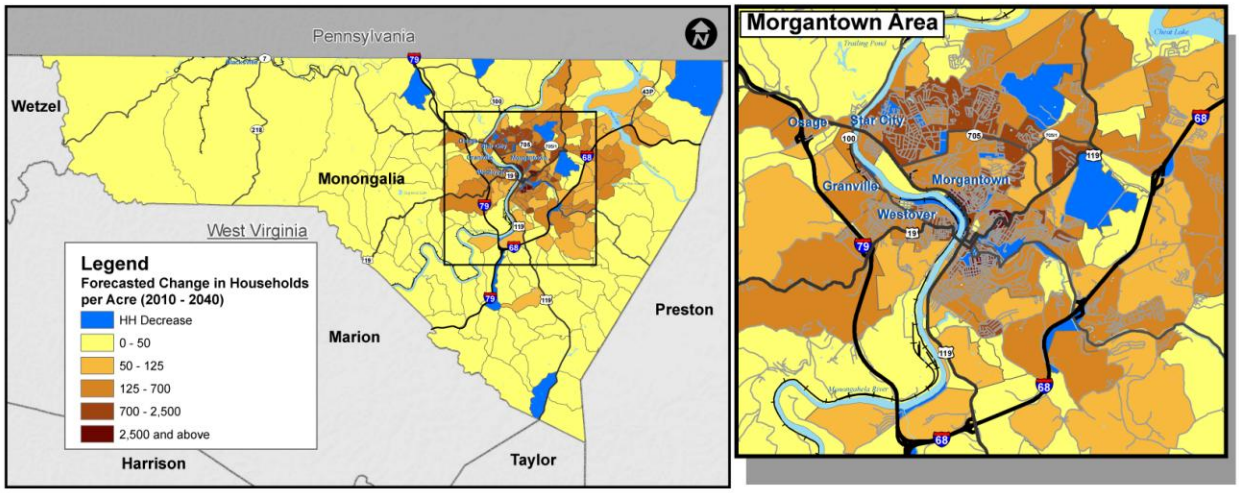
Once housing demand (in development units) was distributed by sub-area and planning period, then the number of households was recalculated for each sub-area and planning period. Housing demand is greater than households because it allows for vacancy and other factors.

The following graphics (Figure 5-1) illustrate the forecasted changes in housing in the region's urbanized area from 2010 to 2040. See Appendix B for further details related to housing forecasts

Figure 5-1. Forecasted Changes in Housing 2010 to 2040







Retail Jobs

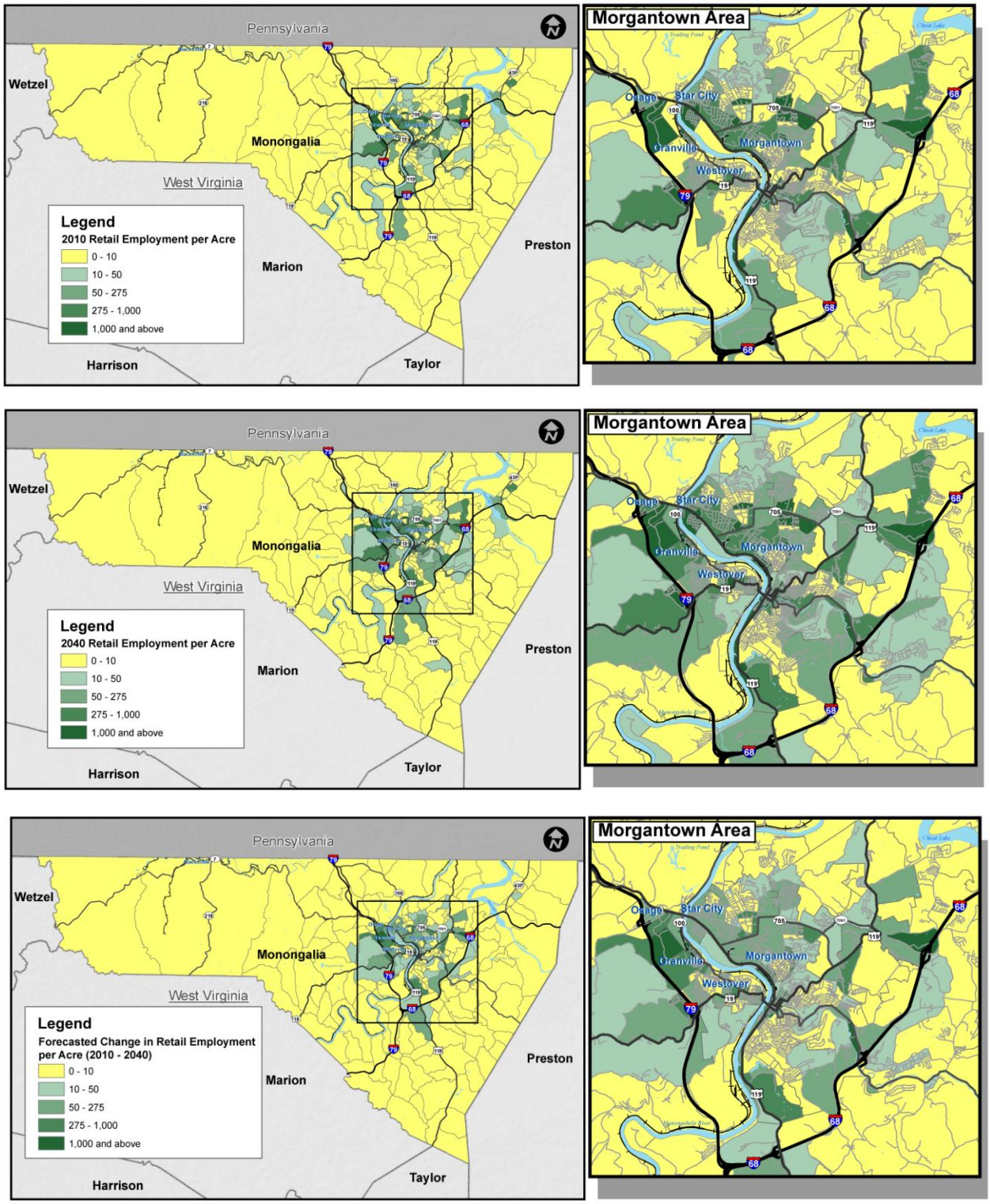
County-wide demand for retail services was projected based on household and income growth, yielding expenditure potentials by type of good or service. Allowances were also made for vacancy factors. Projected retail demand was apportioned and distributed by sub-area similarly to housing. However, other factors also affected the apportionment of retail space, including destination potential driven by transportation access, exposure, centrality, identity, and other factors.

County enterprise and assessment data, coupled with City of Morgantown inventory information, was valuable in confirming existing retail business uses and employment as a baseline for projections. It should be noted that growth or decline in retail demand at certain locations may be slowed or accelerated, but not necessarily reversed through land use policy decisions by local governments.

Once retail demand (in square feet) was distributed by sub-area and planning period, then retail employment was projected for each sub-area and planning period. Importantly, retail space (and therefore employment) includes more than just the businesses included within the Retail Trade sector (North American Industry Classification System [NAICS]), but also includes restaurants and other businesses that would normally be found in retail space and therefore constitute a retail land use. As such, retail employment forms only part of the broader category of economic activities included in retail space.

The following graphics (Figure 5-2) illustrate the forecasted changes in retail jobs in the region's urbanized area from 2010 to 2040. See Appendix B for further details related to retail job forecasts.

Figure 5-2. Changes in Retail Jobs 2010 to 2040



5.5 Non-Retail Employment Forecasts

The office and industrial employment projections contained herein were calculated using employment projections informed by real estate market factors. The overall methodology is heavily dependent on 20-year Workforce Investment Area (WIA) employment projections by employment classification provided by Workforce West Virginia.

The employment projections, coupled with trends in local employment by industry (U.S. Bureau of the Census) and absorption data yielded countywide office and industrial projections. Long-term employment projections were calculated based on a linear regression model.

Like the housing forecasts, the basis for deciding where in the region to allocate the future growth in jobs was the Vision Framework Map and Principles as described in *Chapter 2 – Regional Vision*. Projected office demand was apportioned and distributed by sub-area assuming a future regulatory and incentive environment encouraging employment patterns consistent with the community preferences identified through the planning process.

Such policies would, for example, encourage infill development and increased densities in central neighborhoods, with a particular focus on strengthening the job base within the Morgantown central business district (CBD). This policy would also discourage office/commercial "sprawl" in outlying areas not served by public utilities and services, and promote mixed-use (housing and job-inducing) development in key corridors or nodes.

Office Jobs

Countywide office demand was projected based on employment growth in office-related economic sectors (and the office component of other sectors), using survey data generated by the Building Owners and Managers Association (BOMA). Demand also was considered in light of local and regional office development and absorption trends and other factors. Once office demand (in square feet) was distributed by sub-area and planning period, then the number of total jobs was recalculated for each sub-area and planning period.

Industrial Jobs

County-wide industrial demand was projected based on employment growth in industrial-related sectors, using in-house data generated through surveys and interviews with industrial businesses. Demand was

also considered in light of local and regional industrial development and absorption trends, availability of developable industrial land, and other factors.

Projected industrial demand was then apportioned and distributed by sub-area using the same method as for office space. However, other factors also affected the apportionment of industrial space, including local and regional marketing of industrial parks and potential driven by transportation access. County enterprise and assessment data, coupled with City inventory information, was valuable in confirming existing industrial business uses and employment as a baseline for projections.

Once industrial demand (in square feet) was distributed by sub-area and planning period, then industrial employment was projected for each sub-area and planning period.

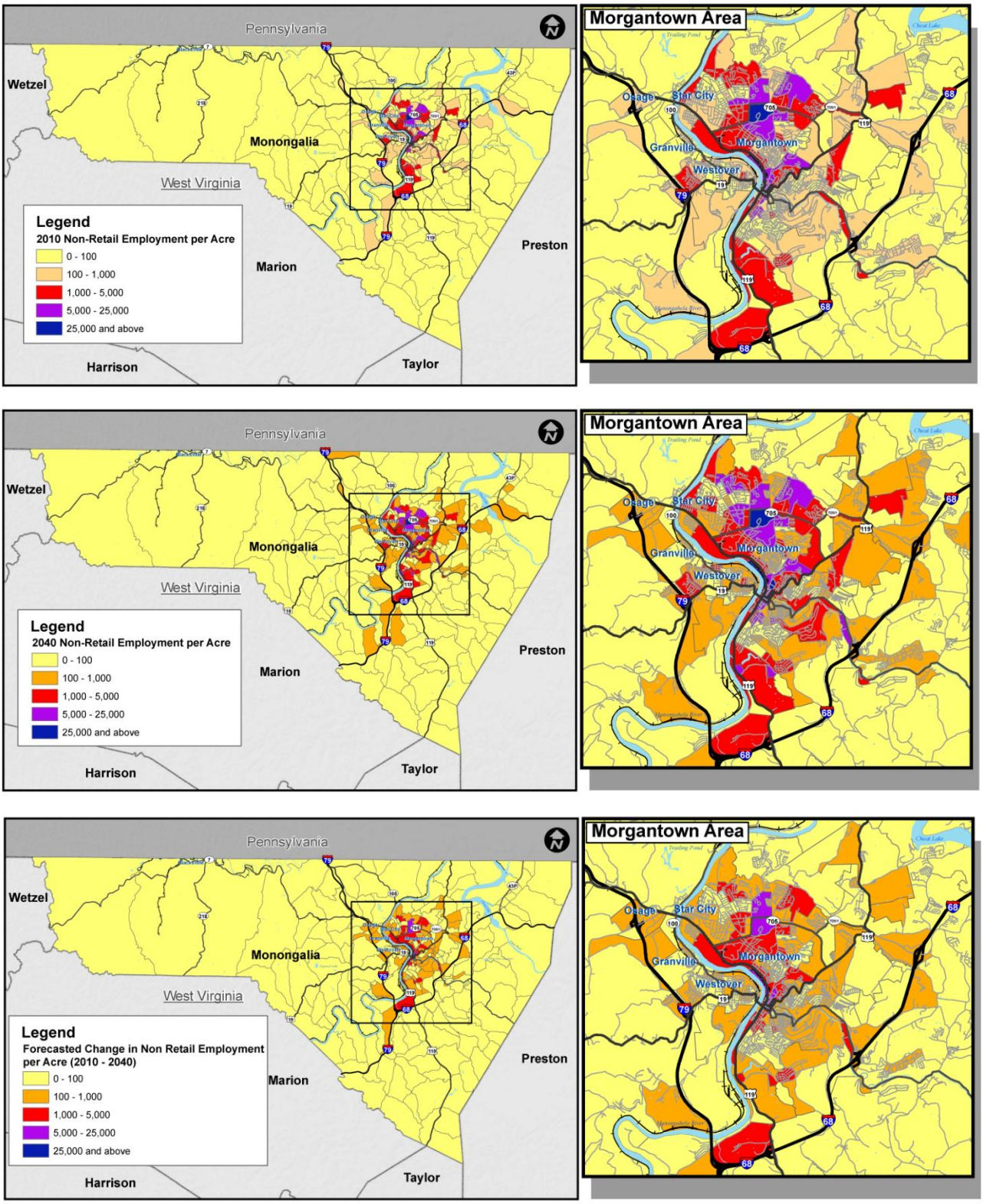
The following graphics (Figure 5-3) illustrate the forecasted changes in non-retail jobs in the region's urbanized area from 2010 to 2040. See Appendix B for further details related to non-retail job forecasts.

NOTES ON SOCIOECONOMIC FORECASTS

The projections included herein represent a best effort in the absence of real estate, market trend data, countywide baseline population and housing inventories, long-term demographic and employment forecasts (other than population), office and industrial real estate market trend data, county-centered baseline employment inventories, and long-term county-centered employment forecasts.

The projections are heavily dependent on WVU population forecasts and the State's Workforce West Virginia employment forecasts, but every effort has been made to incorporate other sources where possible, including U.S. Bureau of the Census (demographic, housing, and employment trends, employment by industry trends), U.S. Internal Revenue Service (migration data), the MPO travel demand model (current traffic analysis zone [TAZ] apportionments), Monongalia County (assessment database of employers), City of Morgantown (inventory of existing Morgantown uses), local real estate brokers and realtors (existing real estate market inputs), local businesses (market sources, sales, etc.), and others.

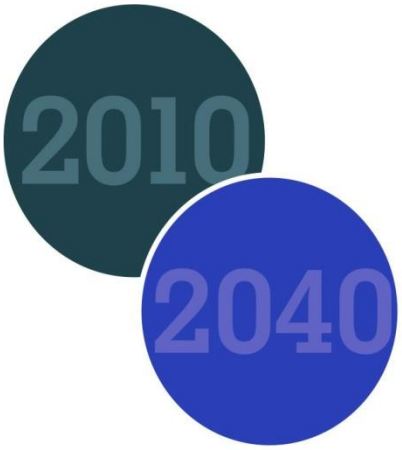
Figure 5-3. Forecasted Changes in Non-Retail Employment 2010 to 2040



CHAPTER 6 –TRANSPORTATION DEMAND MODEL DEVELOPMENT

6.1 Introduction

Transportation demand modeling is the technical process of determining how much demand for transportation services (i.e. traffic or trips) the region should expect in the future, based on changing conditions. This includes the socioeconomic trends described in *Chapter 5 – Regional Growth Forecasts*, and proposed changes to the transportation system in the future. The Morgantown Monongalia Metropolitan Planning Organization's (MMMPO's) tool for developing such traffic forecasts is a transportation demand model created using *TransCAD* software.



The first step in the modeling process for the Long Range Transportation Plan (LRTP) update is to develop a base year model (year 2010) that replicates travel data in the region for that year. The second step is to develop a future year model (year 2040) that reflects anticipated changes in socioeconomic conditions and committed major changes to the transportation system (i.e. the widening of Mileground Road).

This chapter provides a technical summary of the update and refinement of the MPO model for the purposes of the LRTP update.

6.2 Model Application Flow

Background

The original MMMPO model was created in 2006 using the *QRS II* software package and had a base year of 2000. At that time, a 2030 future year model was used in the development of *the Greater Morgantown Regional Transportation Plan* (2007).

In 2010, the model was translated to its current *TransCAD* software package. Trip generation rates, trip distribution rates, auto occupancy rates, park and ride rates, transit, etc., remained unchanged.

Furthermore, it was determined early in this LRTP update process that the model structure was considered sound and should not be changed. In order to create the 2010 model from the 2000 model, several updates, aside from the model structure, had to be incorporated. These updates include: socioeconomic data, zone structure, network, and miscellaneous input files. A discussion of the socioeconomic data changes and forecasts is included in *Chapter 5 – Regional Growth Forecasts*.

MMMPO includes Monongalia County in its entirety for its planning area. The model for the region has 326 internal and 14 external traffic analysis zones (TAZs). Figure 6-1 represents the zone and network structure.

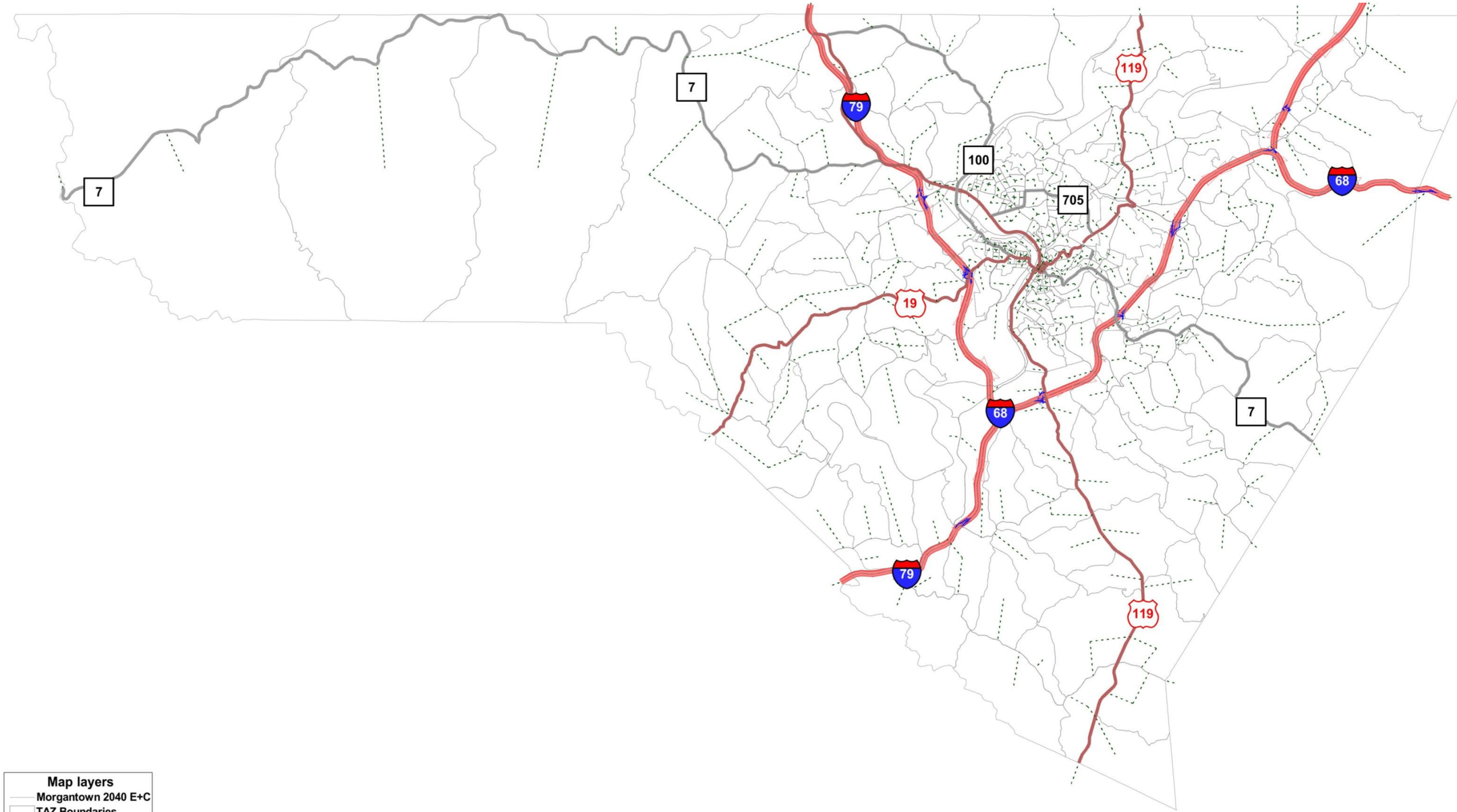
The model is a traditional three step model that includes Trip Generation, Trip Distribution, and Highway Assignment with a feedback loop. Mode Choice is not a formal step included in the modeling process of the MMMPO model.

As transit plays a key role in evaluating the area-wide transportation system improvements of this LRTP, a methodology outside the model stream was developed to allow consideration of these types of projects (see Appendix D). Similarly, biking and walking improvements are also a key component of the LRTP transportation system, but the model is not capable of evaluating their impact on travel demand. The bicycle and walking projects were not evaluated in the same context as the roadway and transit improvements.

Input File Updates

The MMMPO model uses the number of households, retail employment, and non-retail employment by zone to determine number of trips and how they are allocated. The 2010 household model data was developed using data gathered from the Census Bureau at census block level and then aggregated into the traffic analysis zone (TAZ) structure of the model. Retail and non-retail job data was provided by the West Virginia Division of Highways (WVDOH) by business address and by North American Industry Classification System (NAICS) code. This information was geocoded using zip codes and street addresses and then aggregated to the TAZ level. The largest employer locations were verified manually.

Figure 6-1. Model Zone and Network Structure



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The 2040 socioeconomic data inputs were developed using the methodology outlined in *Chapter 5 – Regional Growth Forecasts* and in Appendix B.

Table 6-1 shows the population, households, and employment totals used in the 2010 and 2040 model runs and the forecasted growth over the 30-year period.

Table 6-1. Model Input Totals and Forecasted Growth

	2010	2040	Growth	Percent Growth
Population	96,189	138,069	41,880	43.5%
Retail Jobs	11,461	16,151	4,690	40.9%
Non-Retail Jobs	40,217	57,721	17,504	43.5%
Total Employment	51,678	73,872	22,194	43.0%

The socioeconomic data is used to generate trips on the transportation system. These trips represent the travel that people will make from one location to another. To facilitate the generation of these trips, this model utilizes four trip purposes: Home Based Work (HBW), Home Based Non-Work (HBNW), Home Based University (HBU), and Non-Home Based (NHB) trips. A brief description of each is provided below:

- Home Based Work (HBW) – Trips between home and work or work and home without a stop in the middle
- Home Based Non-Work (HBNW) – Trips between home and any non-work location
- Home Based University (HBU) – Trips between home and one of the WVU campuses for the purpose of either going to school or work
- Non-Home Based (NHB) – Trips that do not start or end at the driver's home

The increase in number of households, retail jobs, and non-retail jobs detailed in Table 6-1 creates an increase in the number of people who use the system. The three input socioeconomic data sets modify the internal to internal trips (people who travel completely within the system), internal to external trips (people who travel from within the system to outside), and external to internal trips (people who travel from outside the system to inside).

Additionally, the model incorporates an External to External (E-E) trip table. The previous model had a 2000 and a 2030 input file for the E-E

trip table. To create the new 2010 E-E trips, a straight line projection of the growth in trips was generated between 2000 and 2030. For 2040, the straight line growth projection was then extrapolated for an additional 10 years. A comparison of the person trip growth between the updated 2010 and 2040 is shown in Table 6-2.

Table 6-2. Person Trips Growth (Includes both internal and external trips)

Trip Purpose	2010 Person Trips	Percent of 2010 Person Trip Total	2040 Person Trips	Percent of 2040 Person Trip Total	Growth in Person Trips from 2010 to 2040	Percent Growth from 2010 to 2040
Home Based Work (HBW)	108,338	24%	188,393	27%	80,055	74%
Home Based Non-Work (HBNW)	197,504	44%	302,429	44%	104,925	53%
Home Base University (HBU)	18,053	4%	25,920	4%	7,867	44%
Non-Home Based (NHB)	120,609	27%	170,689	25%	50,080	42%
Total	444,504	100%	687,431	100%	242,927	55%

Network Changes

The original zone structure reflected the 2000 census block boundaries. Some of these block boundaries changed with the 2010 Census. As much of the input data required for 2010 was gathered from the Census Bureau's website block data as part of the LRTP process, the zones needed to be further modified to reflect the updated 2010 Census block boundaries.

During the calibration of the base year model, the attributes on the roadway network were evaluated for reasonableness. Where data were not contiguous or did not match ground observations or aerial photography, the network attributes were modified. The primary attributes that were evaluated included the network model speed, the daily capacity on the roadway, and the functional classification.

Validation Checks

TMIP
Better Methods. Better Outcomes.

The Federal Highway Administration (FHWA), through their Travel Model Improvement Program (TMIP), has provided a set of guidelines for evaluating model performance. These guidelines are documented in the *Travel Model Validation and Reasonableness Checking Manual-Second Edition* dated September 2010 and were used where the model data set allowed.

Typically, FHWA does not recommend "pass-fail" validation techniques as they can lead to over confidence of the modeled results. Rather, the validation techniques are meant to provide an impression for how well the model performs. Furthermore, localized studies that use the

regional model should be refined within the study area during the project level modeling process.

Once the 2010 inputs were updated, the model was run and compared to existing traffic data as a means of checking model validity. Additional information regarding the run parameters under which the model was run can be found in the "2010 Morgantown Monongalia Metropolitan Planning Organization Model Performance," dated October 2, 2012 and attached in Appendix C. The previously mentioned memo also details the checks performed and the resulting comparisons.

6.3 2040 Existing Plus Committed (E+C) Network

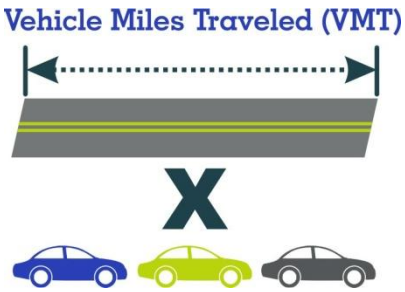
Before the LRTP transportation improvements could be evaluated, a basis for comparison had to be generated. This is accomplished by using a model run that considers future year inputs, but not the LRTP transportation improvements.

Everything in the model stream is updated to reflect the future year, including a roadway network which incorporates only those transportation improvements that have already been funded, the future socioeconomic data, and adjustments to the E-E trips mentioned previously. In the case of MMMPO's network, there are only two transportation improvements that needed to be included in the 2040 E+C network.

- Mileground Improvements – part of a plan to relieve traffic congestion, improve safety, and provide better accessibility
- The Mon-Fayette Expressway extension to the county border

6.4 Forecasted 2040 Average Daily Volumes on the E+C Network

The volumes in Figure 6-2 are a reflection of the 2040 forecasted traffic volumes on the E+C network. These volumes do not consider additional improvements to the transportation system.



6.5 Changes in Vehicle Travel

Vehicle Miles Traveled (VMT) is a measure of the level of travel within an area. It is calculated by multiplying the length of a link by the number of vehicles traveling on that link. The regional VMT comparison, represented by the total in Table 6-3, shows a growth in the 2010 VMT of 77 percent. Person trips, on the other hand, grew by a total of 55 percent.

Table 6-3. Vehicle Miles Traveled Comparison

Facility Type	2010 VMT	2040 E+C VMT	Percent Growth
Arterials	1,278,411	2,218,959	74%
Freeways	1,180,492	2,140,963	81%
Ramps	51,339	84,450	65%
Total	2,510,242	4,444,372	77%

6.6 Level of Congestion

The forecasted volumes on the transportation network can also describe a level of congestion. For this model, capacities are assigned to each link in the network which creates a base line for how many vehicles can travel on that link. Model locations where links have a large volume to capacity (V/C) ratio are locations where the model is forcing larger vehicle flows through the area. Figure 6-3 highlights the V/Cs for the 2040 E+C model run.

6.7 Mode Split

Transit plays a key role in evaluating the area-wide transportation system improvements of the MMMPO LRTP. In order to reflect how future transit scenarios would impact the congestion on the roadways, a methodology outside the model stream was developed. A detailed description of this process can be found in the "Transit Scenario Methodology" memo dated November 27, 2012 and included in Appendix D.

Figure 6-2. 2040 Forecasted E+C Average Daily Volumes

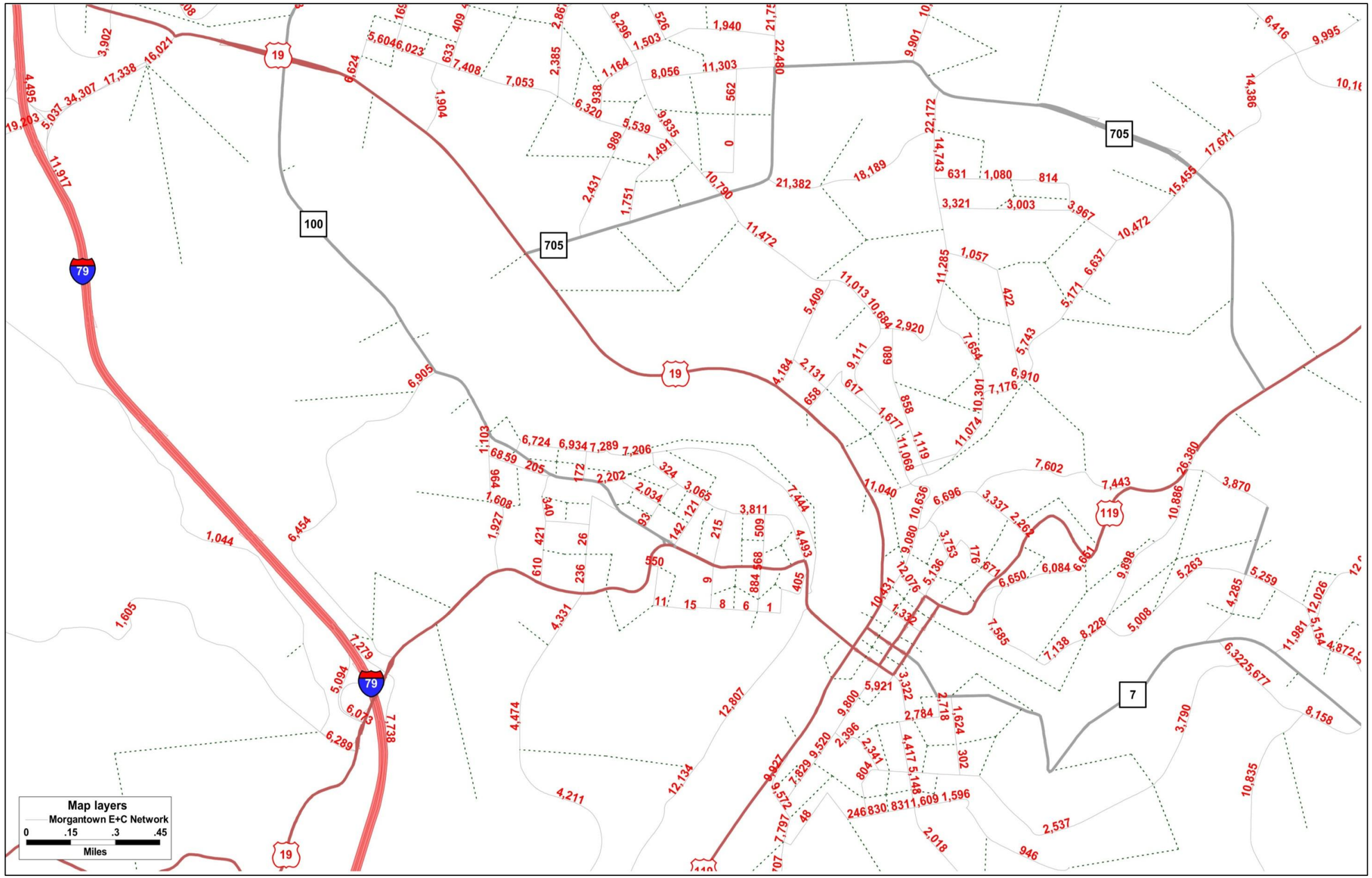
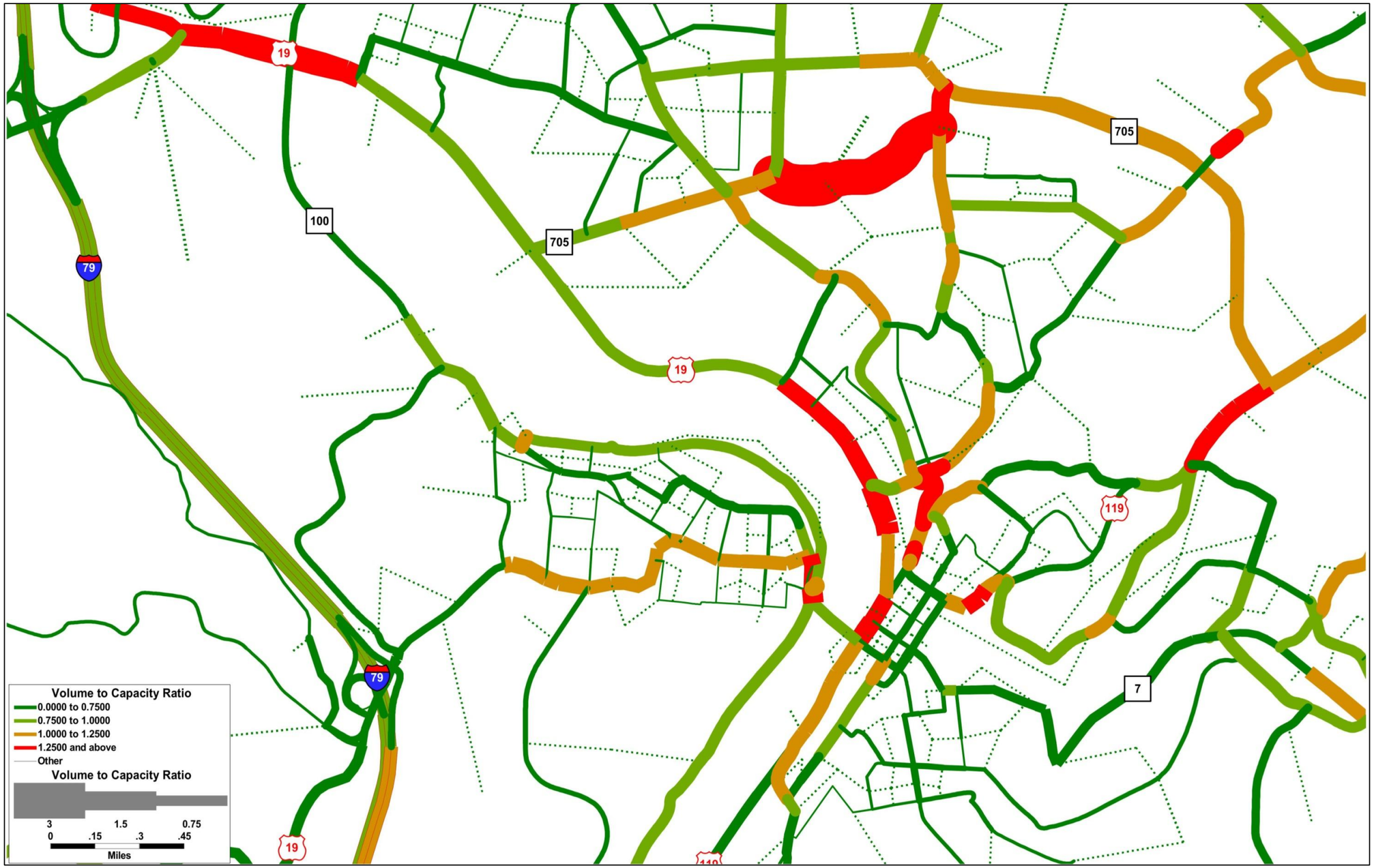


Figure 6-3. 2040 Forecasted E+C Volume to Capacity Ratios



CHAPTER 7 – MULTIMODAL ALTERNATIVES ANALYSIS

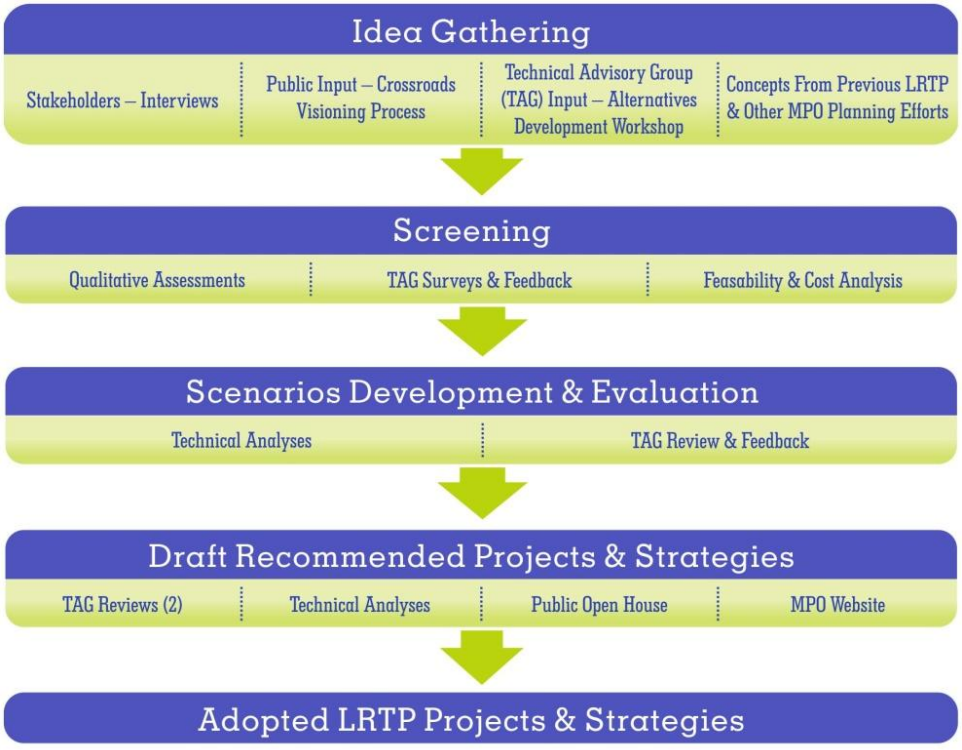
7.1 Introduction

The three pillars of the Long Range Transportation Plan's (LRTP's) projects and strategies are:

- The community's vision, goals, and objectives as established through the Crossroads effort and the LRTP's Goals and Objectives
- The system's current and future deficiencies and needs established through the analysis of the existing conditions
- The region's vision for future growth established through the Crossroads process and regional forecasts for growth in population, housing, and employment.

7.2 Alternatives Development and Evaluation Process

The process to develop and evaluate potential improvements and strategies for the LRTP update included significant public and stakeholder input and technical analyses. The graphic below illustrates the overall process of evaluating options and developing the recommendations of this plan.



Idea Gathering

The initial steps in the alternatives development process were to explore as many ideas as possible. Ideas for improvements and strategies were gathered from stakeholder interviews and public meetings as part of the Crossroads effort; a day-long TAG workshop on June 28, 2012 and follow-up surveys; a thorough review of the 2007 LRTP including TAG surveys; review of other MPO planning documents; and additional stakeholder input.

Screening

The concepts and ideas were screened by the consultant team. Those concepts that did not address the LRTP goals and objectives, lacked support or interest from the TAG, or that were determined to be unrealistic or not feasible, were removed from consideration.

Scenarios Development and Evaluation

The remaining concepts were then assembled into two scenarios of improvements to allow the TAG to once again review and assess improvement concepts and strategies, this time in the context of a potential overall plan. The scenarios were not intended to be alternative plans, but were developed to compare and contrast the individual projects and to provide a means to collect additional input from the TAG related to specific projects and strategies.

A TAG workshop was held on September 26, 2012 to discuss and evaluate the scenarios. A questionnaire was completed both in small groups at the meeting, and individually by those wishing to provide their personal feedback.

Draft Recommended Projects and Strategies

TAG feedback on the scenarios and additional technical analysis was considered and a final draft list of potential projects and proposed planning strategies was advanced. A more detailed evaluation of each project was undertaken, from which the first draft of the LRTP recommended projects and strategies was developed and provided to the TAG for review and comment. This includes a TAG meeting held on November 15, 2012.

The draft prioritized the projects, putting them into tiers, with Tier 1 representing the projects proposed to be included in the fiscally constrained LRTP (see sidebar).

Based on input from the TAG including general comments received, discussion and a prioritization exercise at the meeting, and based on further analysis, a second draft of the LRTP projects and strategies was circulated to the TAG for review. After considering comments received, a third draft was prepared, posted on the MPO website, and presented at a Public Open House meeting on December 5, 2012. Upon consideration of public comments received during and after the open house, the projects and planning strategies were presented to and adopted by the MPO Policy Board on December 17, 2012.

What is a Fiscally Constrained LRTP?

By federal law, the projected cost of proposed projects included in an LRTP cannot exceed the amount of funding that is forecasted to be available over the life of the plan. Chapter 8 of this plan describes the funding forecasts that are used to establish the fiscal constraint of this plan. Transportation funding in the region comes primarily from state and federal revenues generated by the sales tax on fuel, which in recent years has been on the decline, while the cost of construction continues to increase. Transportation improvement programs across the U.S. have been greatly affected by this trend.

7.3 Evaluation Criteria

The evaluation criteria included on the next page were used to help prioritize the projects; however, it should be noted that the prioritization was not solely a "by the numbers" exercise. Judgment by the planning team was necessary to ensure that a realistic and logical plan resulted with complementary projects that would enhance the system and meet the established vision, goals, and objectives. The table on the following page includes the criteria used to assist the planning team with its final recommendations.

Table 7-1. Project Evaluation Criteria

Goals Score			
Score = Number of LRTP Goals Directly Supported; divided by 2			
Regional Mobility Score			
4 – Project expected to impact a large number of users	3 – Project expected to impact a large to moderate number of users	2 – Project expected to impact a moderate to small number of users	1 – Project expected to impact a small number of users
Feasibility Score			
4 – Project appears to be feasible ■ low level of engineering complexity / risk ■ no anticipated major public opposition ■ minimal private property impacts ■ minimal anticipated negative environmental impacts	3 – Project is likely feasible with one or more of the following true: ■ moderate level of engineering complexity ■ potential for some moderate public opposition ■ moderate level of property impacts ■ moderate level of environmental impacts possible	2 – Project may or may not be feasible, or may be only partially feasible with one or more of the following true: ■ high level of engineering complexity / risk ■ potential for significant public opposition ■ high level of property impacts ■ high level of environmental impacts possible	1 – Project not likely to be feasible with one or more of the following true: ■ very high level of engineering complexity / risk ■ potential for widespread public opposition ■ very high level of property impacts ■ very high level of environmental impacts possible
TAG Preference Score			
Quartile results from Transportation Advisory Group (TAG) Project Ranking Exercise on 11/15/2012 (lowest quartile = 1 star, 2nd quartile = 2 star, etc.). Twenty members of the TAG participated. The TAG is made up of the MPO Policy Board and standing committees of the MPO which include representatives of state and local government, WVU, Mountain Line Transit Authority, and concerned citizens.			

CHAPTER 8 – FUNDING THE LONG RANGE TRANSPORTATION PLAN

8.1 Overview

In 1991, the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) 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. ISTEA and the subsequent re-authorization bills, TEA-21 in 1998, SAFETEA-LU in 2005, and MAP-21 (Moving Ahead for Progress in the 21st Century) adopted in 2012, all required MPOs to demonstrate that projects and program activities included in the transportation plan could reasonably be expected to receive funding in both the long-term and the near-term Transportation Improvement Program (TIP) for their area.

Federal legislation requires that each MPO develop a 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 a fiscally constrained TIP is one of several prerequisites necessary for the continued receipt of federal assistance for transportation projects and programs.

8.2 Funding Programs/Sources

Quantifying the transportation financial resources anticipated to be available is an important element of the Long Range Transportation Plan (LRTP). 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. This section also will provide estimates of the funding levels that may be expected from these sources.

The two primary funding sources for transportation improvements in West Virginia are the state and federal government. This chapter discusses the programs these governments have available and how future income from these sources was projected for the MMMPO's LRTP.

Federal Funding Sources

The primary source of funding on the federal level is the highway trust fund, which historically has been funded by the gasoline tax. Federal funds are allocated by the type of service they provide – highway construction and maintenance, and transit service.

Previously, federal transportation authorizing legislation SAFETEA-LU had many distinct funding categories. The recently adopted MAP-21 reduced the number of transportation funding programs to the following five major programs. Typically federal funds require a 20 percent match from the State or another sponsor agency. The following are major programs that may fund projects in the MMMPO area.

National Highway Performance Program (NHPP) Funds are for designated roads serving major population centers, border crossings, and intermodal facilities. Use of the funds is tied to measurable performance goals established by the recipient agency. The NHPP 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, National Highway System (NHS) routes include:

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

The federal cost share for an NHPP 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.

Surface Transportation Program (STP) Funds are a flexible funding source that may be used to preserve or improve conditions on any federal aid facility. Eligible activities include:

- Construction, reconstruction, rehabilitation, resurfacing, restoration, and operational improvements for roads and bridges including making changes to STP-eligible facilities needed to accommodate other transportation modes
- Transit capital 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

Congestion Mitigation and Air Quality (CMAQ) Funds are allocated from the State's NHPP fund allocation (see above). These funds are typically targeted for operational improvements and other improvements that may positively impact air quality. Selected projects may be funded 100 percent by CMAQ funds. A certain percentage of CMAQ funds in West Virginia (currently 40%) must be distributed to areas that do not meet current National Ambient Air Quality Standards (NAAQS). The remaining funds are considered "flexible" and may be used anywhere in the State.

Eligible projects for CMAQ funds include:

- Transportation activities in an approved State Implementation Plan (SIP)
- Transportation control measures as defined in the Clean Air Act Amendments (CAAA)
- 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

Highway Safety Improvement Program (HSIP) Funds are tied to a data-driven safety needs assessment of eligible facilities. HSIP funds are intended to significantly reduce 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 20 percent local/state match to the federal dollars. Selected activities are eligible for 100 percent federal funding.

Transportation Alternatives (TA) Program. This program encompasses funding for items such as bicycle and pedestrian facilities, scenic byways, and safe routes to school programs which previously had their own programs.

Activities eligible for TA 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.

This program replaces several funding programs and includes many of the eligible funding elements from those programs. TA 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 activities under the TA Program include:

- On- and off-road pedestrian and bicycle facilities

- Infrastructure projects for improving nondriver access to public transportation and enhanced mobility
- Community improvement activities and environmental mitigation
- Recreational trail program projects
- Safe Routes to School projects
- The planning, design or construction of boulevards and other roadways largely in the right-of-way of former interstate system routes or other divided highways

Appalachian Development Highway System (ADHS). 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.

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.

No new funds were authorized for the ADHS Program in MAP-21, but funds authorized in earlier federal transportation bills remain available until expended. However, to spur completion of the designated ADHS, MAP-21 provides the following:

> For fiscal years 2012 through 2021, the federal share for a project to construct a highway or access road on the ADHS with ADHS Program funds that a State received in FY 2012 or a previous year, or funds received during the same timeframe for a specific ADHS project, route, or corridor shall be 100 percent.
>
> For fiscal years 2012 through 2021, the Federal share for a project to construct a highway or access road on the ADHS with apportioned funds other than those described above will also be 100 percent.

Toll credits may be used to meet any non-federal share requirement for a project using ADHS Program funds. Toll credits are earned when the

State, a toll authority, or a private entity funds a capital transportation investment with toll revenues earned on existing toll facilities (excluding revenues needed for debt service, returns to investors, or the operation and maintenance of toll facilities).

Transit Funding Sources

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

- Federal Transit Administration (FTA) Section 5307 funds
- FTA Section 5309 funds
- FTA Section 5311 funds
- Local matching funds
- Farebox revenue

Section 5307 Funds. MAP-21 consolidated several smaller programs into the Section 5307 Program. Section 5307 now includes the Job Access and Reverse Commute Program. Section 5307 provides public mass transportation for cities with populations of more than 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 (ADA) and the Clean Air Act (CAA) Amendments. 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 Fixed Guideway and Capital Investment Grants . The transit capital investment grants (49 USC 5309) provide 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
- Costs incurred in arranging innovative financing for eligible projects

Funds were previously allocated on a discretionary basis, however, MAP 21 stipulated that the FTA must issue new policy guidance on the criteria for awarding these funds.

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

Section 5310 Enhanced Mobility for Seniors and Individuals with Disabilities. This program provides formula funding to increase the mobility of seniors and persons with disabilities. Funds are apportioned on each state's share of the targeted populations and large urbanized areas with populations over 200,000. Projects selected for funding must be included in a locally developed, coordinated public transit-human services transportation plan. At least 55 percent of the program funding must be spent on capital projects. The remaining 45 percent may be used for projects that exceed the requirements of the ADA.

Section 5311 Funds Rural Area Formula Grants. Section 5311 has stayed essentially the same under MAP-21 with the exceptions noted below. The goals of the Rural Area Formula program are:

1. To enhance the access to health care, shopping, education, employment, public services, and recreation for people in nonurbanized areas
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 nonurbanized transportation to the maximum extent feasible

Funding is apportioned by a statutory formula that is based on the latest U.S. 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.

Section 5311 also incorporates a newly instituted performance planning program based on new planning requirements under MAP-21. Also, Projects formerly funded by the Job Access Reverse Commuting (JARC) program are eligible for Section 5311 funding under MAP-21.

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 Amendments (CAAA)
- 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.

Section 5337 State of Good Repair Grants. MAP-21 establishes a new grant program to maintain public transportation systems in a state of good repair. This program replaces the fixed guideway modernization

program (Section 5309). Funding is limited to fixed guideway systems (including rail, bus rapid transit, and passenger ferries) and high intensity bus (high intensity bus refers to buses operating in High Occupancy Vehicle (HOV) lanes.) This program is the primary source of Federal funding for maintenance and upgrades of WVU's Personal Rapid Transit (PRT) system. Projects are limited to replacement and rehabilitation or capital projects required to maintain public transportation systems in a state of good repair. Projects must be included in a transit asset management plan to receive funding.

The new formula comprises: (1) the former fixed guideway modernization formula; (2) a new service-based formula; and (3) a new formula for buses on HOV lanes. Nationally authorized funding for this program is $2.1 billion in FY 2013 and $2.2 billion in FY 2014.

Section 5339 Bus and Bus Facilities Program. A new formula grant program is established by MAP 21 under Section 5339. This program replaces the previous Section 5309 discretionary Bus and Bus Facilities program. This capital program provides funding to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities. Nationally authorized funding is $422 million in FY 2013 and $428 million in FY 2014. Each year, $65.5 million will be allocated, with each state receiving $1.25 million and each territory (including Washington, D.C. and Puerto Rico) receiving $500,000. The remaining funding will be distributed by a formula based on population, vehicle revenue miles and passenger miles. This program requires a 20 percent local match.

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.) are for the exclusive use of WVDOT for maintaining and expanding the transportation system. These dedicated revenues are deposited into the State Road Fund, which is WVDOT's operating fund for maintaining State roadways.

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 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 Vehicle 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; or
2. The present market value at the time of transfer or purchase, if the vehicle is used.

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 (PSC).
- 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. This includes farm equipment, implements of husbandry, well-drillers, cranes, and wood-sawing equipment.
- Class R (House Trailers) or 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's 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) – IFTA is a 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 that include:

    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 that exceeds 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 $2.34 per gallon, times the rate of five percent. Current tax (2012) is equivalent to $0.129 per gallon, the minimum amount to be collected, resulting in a total State gasoline tax of $0.334 per gallon (2012).

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 WVDOT by the legislative branch of State government.

Investment and Interest Income. The Board of Treasury Investments (BTI) is authorized to invest in obligations of the U.S. Treasury and U.S. 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 WVDOT. Miscellaneous revenue sources typically include revenue from interest on investments, map sales, permits, etc., and have historically been small in comparison to the other revenue sources. However, due to several legislative changes, miscellaneous revenue now accounts for a larger share of State Road Fund monies. The most significant change is a legislatively mandated yearly transfer of revenue from the State's General Fund to the State Road Fund, which is intended to offset costs incurred by the WVDOH when its contractors pay State sales tax on construction materials. The amount of the transfer will vary yearly depending on the size and scope of the Agency's construction program, but adds several million dollars to the State Road Fund annually ($13.1 million in FY 2012).

In FY 2010, in an effort to stabilize WVDOH's paving program, which had been impacted by the severe economic downturn, the Legislature transferred $27.3 million from the Motor Fuel Shortfall Reserve Fund to

the State Road Fund. As a result of the mandated funding transfers, the amount of miscellaneous revenue collected increased by $10.7 million from FY 2009 to FY 2010.

In FY 2011, there were no such supplementary transfers; however, in FY 2012 the legislature transferred $15 million from the Lottery Revenue to the State Road Fund to once again bolster WVDOH's paving program. As such, in FY 2012, miscellaneous revenue was significantly higher than the preceding year and accounted for $45.8 million of the State Road Fund's revenue.

8.3 Funding Projections

In order to ensure continuity and consistency in funding forecasts, the WVDOH prepares funding estimates for each of the State's MPOs to use in the update of their LRTPs. These estimates are based on historical data on vehicle miles of travel, percentage of the State's roadways and bridges for each MPO, and changing demographics. For a full discussion of the methodology used, please see the document "Calendar Year 2012 Long Range Revenue Estimates for Use in MPO Long Range Transportation Plans - WVDOH January 2012."

WVDOH forecasted the following funding stream for transportation projects until the year 2037.

Table 8-1. MMMPO LRTP 25-Year Improvement Funding Forecast (in 2011 dollars)

VALUES AS OF 1/15/11 AND PRESENTED IN THOUSANDS

FY	TOTAL STATE REVENUE	NON IMPROVEMENT EXPENDITURES	STATEWIDE IMPROVEMENT FUNDS	ELIMINATED IMPROVEMENT FUNDS	ELIMINATED EARMARKED FUNDS	STATEWIDE IMPROVEMENT FUNDS FOR MPO LRTP'S	GMA LRTP IMPROVEMENT FUNDING @ (4.30%)
2013	$1,111,900	$499,846	$612,054	$471,282	$0	$140,773	$6,054
2014	$1,028,074	$499,846	$528,229	$406,736	$0	$121,493	$5,225
2015	$978,166	$499,846	$478,321	$368,307	$0	$110,014	$4,731
2016	$937,754	$499,846	$437,908	$337,189	$0	$100,719	$4,331
2017	$902,582	$499,846	$402,736	$310,107	$0	$92,629	$3,984
2018	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2019	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2020	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2021	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2022	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2023	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2024	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2025	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2026	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2027	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2028	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2029	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2030	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2031	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2032	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2033	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2034	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2035	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2036	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
2037	$991,695	$499,846	$491,850	$378,724	$0	$113,125	$4,865
25-YR TOTALS	$24,792,382	$12,496,138	$12,296,244	$9,468,108	$0	$2,828,136	$121,626

Factors considered in Table 8-1 include both state and federal funds, as well as roadway maintenance and other noncapacity activities. It should be noted that these estimates were prepared prior to the adoption of the MAP-21 legislation and as such were performed in a conservative manner. Given that MAP-21 is only a two-year authorization the assumption of this plan is that conservative funding levels will continue into the foreseeable future. It is important to note that the State's forecast only goes to the year 2037 while the planning horizon for this plan is the year 2040. For the purposes of developing a fiscally constrained plan, it was assumed that the revenue streams for the years 2038 through 2040 would be the same as 2037, or $4,865 million a year. This adds an additional $14.595 million to the funds available for improvements within the MPO's jurisdiction. This brings the total amount of funding anticipated to be available to the MPO to $136.221 million for the Tier 1 projects included in this Plan.

It should be noted that while the base plan only seeks to implement Tier 1 Projects, the planning process has identified that there will be a need for more improvements to the transportation system than can be provided at the current funding level. The MPO has been investigating additional funding sources is discussed in Chapter 12.

CHAPTER 9 – PROJECTS AND STRATEGIES

9.1 Introduction

The following projects and strategies update the *Greater Morgantown Regional Transportation Plan* (March 2007) to reflect changing regional needs, growth projections, and forecasted funding levels for transportation projects. This chapter is the culmination of a year-long planning process. This chapter of the Long Range Transportation Plan (LRTP) is presented in two parts:

- **Planning Strategies** – Guide the planning efforts of the Morgantown Monongalia Metropolitan Planning Organization (MMMPO) over the next five years.

- **Projects** – A list of priority fundable projects (Tier 1) based on state forecasts of available transportation funding over the 28-year term of the plan. Other valuable projects are identified (Tiers 2-5) that should be pursued if local and/or other revenue sources become available.

The projects and strategies are rooted in the community's vision for the region captured through a comprehensive regional visioning process called "Crossroads — It's time to chart our future," which engaged a diverse group of stakeholders, citizens, and community leaders to identify the needs, aspirations, and the preferred direction of future growth for Monongalia County (see Chapter 2).

The development of these strategies and projects was guided by a Transportation Advisory Group (TAG), which is made up of the MPO's Policy Board and standing committees including representatives of state and local governments, West Virginia University (WVU), Mountain Line Transit Authority, local business leaders, and concerned citizens (see Chapter 1).

These projects and strategies will be used as a tool to address the region's needs as the area continues to grow and develop. The LRTP projects will provide the basis for the region's Transportation Improvement Program (TIP), a short-range capital improvement program for implementing highway, transit, and bikeway projects.

9.2 Planning Strategies

These strategies are intended to guide the MPO's planning efforts during the five-year period until the next LRTP update. These activities are important to reaching the goals and objectives of the 2013-2040 LRTP. Some of these activities are stand-alone planning efforts, but many are precursors or support activities to projects identified in the "LRTP Projects List" (see Table 9-1).

This list of LRTP strategies and timeframes is aggressive! The identified timeframes are provided as a recommendation, but many factors will impact the timeframes of these strategies. The actual implementation of these strategies is at the discretion of the MPO Policy Board through the development of the Unified Planning Work Program (UPWP).

To successfully accomplish these planning strategies, MPO staffing levels must be considered. It may be necessary to expand staff to include a multimodal/complete street coordinator to assist the various ad hoc committees that are suggested. Additionally, an MPO transportation studies coordinator may be needed to scope and monitor the suggested studies, and depending on the qualifications of the coordinator, to performing some of the studies identified. An additional strategy to accomplish these planning efforts is to retain the services of qualified professional firms specializing in these services to guide and perform some of the planning efforts.

Priority 1 Strategies

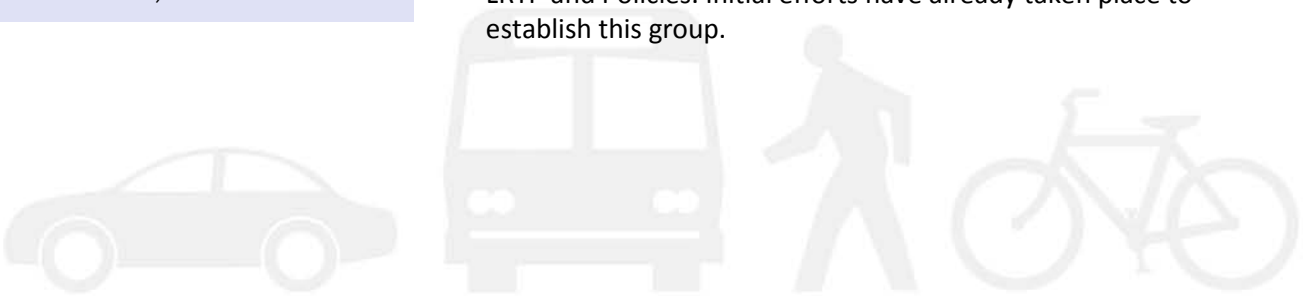
Leadership: Committee Chair and MPO Executive Director

Timeframe: Begin 2013

First Action: Establish committee membership and roles and schedule regular meetings.

Related to all LRTP capital projects (see Section 9.3).

1. **Local Transportation Funding/Legislative Committee** – Establish a group of concerned citizens, elected officials, local transportation funding and legislative experts to meet regularly and develop an action plan to increase local agency (non-state/federal) transportation funding sources, and to maximize state/federal transportation funding expenditures in the region. A key component of this strategy is for this committee to engage state legislature for changes to state laws. This would allow greater flexibility for local agencies to raise local funds for projects to implement the MPO's LRTP and Policies. Initial efforts have already taken place to establish this group.



2. **Regional Sidewalk Connectivity Plan** – Expand the Connecting Network Sidewalks (CNS) from the Morgantown Pedestrian Safety Plan to include all urban portions of the region and select rural/suburban portions of the region where pedestrian traffic is anticipated to develop. This should include a 10-year action plan to implement improvements necessary to complete the CNS. Implementation of the plan will rely heavily on the identification of additional funding. Thus, this strategy should be closely coordinated with the Local Transportation Funding/Legislative Committee's (see Planning Strategy #1) efforts to identify local funding opportunities to advance the Regional Pedestrian Safety and Sidewalk Connectivity Program (Project #39).

   An ad hoc committee should be formed to lead this effort. The committee could be an extension of the Morgantown Pedestrian Board. The committee should establish priorities and initial projects should be identified that can be completed under the Americans with Disability Act (ADA) Connectivity Initiative (Project #2), Safe Routes to School (SRTS) Initiative (Project #43), or part of other transportation projects in the region.

   Leadership: Committee Chair and MPO Staff

   Timeframe: Begin 2013

   First Actions: Form committee and identify high-priority projects.

   Related to LRTP capital projects 2, 39, and 43 (see Section 9.3).

3. **Safe Routes to School (SRTS) Initiative** – Develop a working group to help interested local schools develop SRTS Travel Plans and to apply for state and federal funding assistance for school route improvements. The working group will need to work closely with the Local Transportation Funding /Legislative Committee to identify funding sources for local matching contributions which are anticipated to be 20 percent of project costs under WVDOH policies related to MAP-21. This working group could be an extension of the Regional Sidewalk Connectivity Plan committee. However, members should include those who can adequately represent the needs of local schools.

   Leadership: Working Group Leader and MPO Staff

   Timeframe: Begin 2013

   First Action: Form working group to research best practices and begin outreach efforts to local schools.

   Related to LRTP capital projects 2, 39, and 43 (see Section 9.3).

4. **Regional Bike Plan** – Building on the Morgantown Bicycle Plan, develop a "Regional Connecting Bike Route Network" (same concept as the CNS) and a 10-year implementation plan that identifies specific signage, markings, spot roadway improvements, trail improvements, etc., that meet the current state of the practice. Funding options to implement the plan should be explored. The plan should also include an education program and campaign to promote cycling, and enhance awareness of traffic laws and appropriate operational practices to improve safety. A local law enforcement plan and officer education program to help curb bicyclist, pedestrian, and automobile driver behavior that is dangerous for cycling should also be part of the plan.

   Leadership: Committee Chair and MPO Staff

   Timeframe: Begin 2013

   First Action: Form ad hoc committee and determine scope and approach to plan development.

   Related to LRTP Project #40 (see Section 9.3).

An ad hoc committee of local bicycling advocates, technical experts, and public safety experts should be formed to lead this effort. The committee could be an extension of the Morgantown Bicycle Board. It may be highly beneficial to retain the services of a qualified consultant with experience in the development of bikeway plans, to assist in the plan preparation. A registered Professional Engineer should be engaged in the development of facility type and traffic control elements of the plan to ensure the plan will be implementable in terms of meeting current laws and design standards.

Leadership: WVDOH

Timeframe: Ongoing

First Action: Identify next priority corridor.

Related to LRTP capital project 38 (see Section 9.3).

5. **Region-wide Traffic Signal Upgrades** – Complete the study of all signalized intersections in the region. Develop an aggressive short-term plan to upgrade all signals to utilize state-of-the-art vehicle detection and vehicle responsiveness systems, corridor and system timing optimization, and a central system control. Integrate priority timings for the bus system, where feasible.

Leadership: MPO and WVDOH Staff

Timeframe: In place beginning 2013

First Action: Develop or obtain software tools to analyze crash data.

Related to most LRTP capital projects (see Section 9.3).

6. **Regional Crash Data and Analysis Program** – Develop a program to improve crash data collection and analysis procedures, and to develop an annual regional high-crash and priority improvement list. The system developed would be capable of: locating crashes, summarizing crash types and severity, calculating crash rates, and prioritizing high crash locations. This planning strategy, in combination with Planning Strategy #7, should form the basis for Project #38 – Intersection Capacity and Safety Improvement Program.

Leadership: MPO and WVDOH

Timeframe: Begin 2013 with Annual Update

First Action: Complete initial priority list and choose 3 to 5 priority locations and perform studies.

Related to most LRTP capital projects (see Section 9.3).

7. **Regional Transportation Systems Management Plan** – Develop a region-wide plan to minimize delay, vehicle emissions, and congestion; and maximize the capacity of the transportation system, through a series of intersection and other spot improvements. The intent of this plan is to identify localized high-benefit projects with relatively low negative impacts that can be implemented expeditiously. This approach can help avoid needed improvement being delayed by larger corridor needs and issues.

   The operational analysis could initially be based on peak hour traffic forecasts developed using intersection turning movement traffic counts and the regional travel demand model assignments. The

analysis should eventually evolve to a regional micro-simulation model (like *TransModeler*) to better automate the process and integrate it with the regional *TransCAD* model. The pursuit of improvement projects should not be delayed by model development. The best available methods should be used to start this process immediately and update the analysis annually.

Based on prioritization from the operational analysis (and crash analysis from Planning Strategy #6), three to five priority locations should be identified each year for detailed and site-specific alternative feasibility studies (primarily intersections). The locations where solutions can be identified that have significantly greater benefits than costs should be immediately programmed for improvements. There may be a need to include a public and stakeholder involvement process to vet the identified priority locations and proposed improvements. The prioritization list should be updated each year based on updated data and analysis.

8. **Monongahela River Crossing Study –** Perform a comprehensive study to select a preferred location for a new bridge crossing of the Monongahela River to provide additional capacity and travel options from the downtown and West Virginia University (WVU) campus areas to I-79 (see LRTP Project #6). The study should include an extensive stakeholder and public involvement process and should be conducted in accordance with National Environmental Policy Act (NEPA) requirements. Retaining a qualified consultant to perform the study and facilitate the process should be considered.

Leadership: WVDOH

Timeframe: Begin 2014

First Action: Prepare scope for study.

Related to LRTP capital project 6 (see Section 9.3).

9. **Regional Transit Plan** – Conduct a comprehensive study that objectively evaluates transit needs in the region, services provided by the Mountain Line Transit Authority (MLTA) and WVU transit systems, and other transit services in the region. The plan should develop short-term and long-term strategies to increase regional ridership and provide effective overall transit service in the region. It will be critical to work collaboratively with the Local Transportation Funding Legislative Committee, WVU, and WVDOT to develop funding strategies for system expansion, since it is expected that significant federal and/or state funding sources will not be available to improve or expand the region's transit system.

Leadership: MPO

Timeframe: Begin 2014

First Action: Work jointly with MLTA, WVU, and MPO TTAC to develop the scope for the study.

Related to LRTP capital projects 26, 31, 32, 35, 41, and 42 (see Section 9.3).

The potential value of bus system improvement is highlighted by analysis that was performed as part of this LRTP process, which considered the potential impact of the transit improvements included in LRTP Project #42 (discussed in Section 9.3). See Section 9.5 for a summary of this analysis and Appendix D for analysis details.

Priority 2 Strategies

Leadership: MPO Subcommittee

Timeframe: Begin 2014

First Action: MPO assemble Subcommittee. Subcommittee establish procedures.

Related to most LRTP capital projects (see Section 9.3).

10. **Complete the Streets Initiative** – Develop an action plan to increase and leverage local funding sources, and coordination and implementation processes, for local agencies to partner on projects with WVDOH to share costs related to complete street enhancements. This initiative will establish a process and framework to ensure bicycle, pedestrian, and transit needs are considered as part of every highway/street project.
A subcommittee should be formed of local bicycle, pedestrian, and transit advocates. The subcommittee should include the chairpersons of the Morgantown Bicycle Board and the Pedestrian Safety Board, and a representative from the MLTA board to lead this initiative.

    This committee will initiate projects and review all transportation projects with respect to adherence to the Regional Sidewalk Connectivity Plan (Planning Strategy #2), SRTS Initiative (Planning Strategy #3), the Regional Bike Plan (Planning Strategy #4), and MPO's Complete Streets Policy. It will recommend how to best fund projects to accomplish complete streets goals. A liaison to the Local Transportation Funding/Legislative Committee (Planning Strategy #1) should be identified to help coordinate funding opportunities**.**

Leadership: MPO

Timeframe: Begin 2015

First Action: MPO to begin collaboration process.

Related to LRTP capital project 46 (see Section 9.3).

11. **Regional Parking Management Plan** – Develop a "Park Once" policy for the urban area. Develop a plan to manage parking and to incentivize rideshare/carpooling/walking/biking/transit to minimize parking (which encourages auto traffic) in congested areas. Collaboration between and commitments by local municipalities and WVU will be critical to success. The MPO can facilitate the discussion and policy development through its Transportation Demand Management (TDM) program, but implementation will likely rest on local agencies and WVU.

12. **Regional Bicycle and Pedestrian Data Collection Program** – Modify the current traffic data collection program to also include bicycle and pedestrian data. Such data is important to make good decisions related to the bicycle and pedestrian transportation network.

    This planning strategy will take significant effort. Bicycling and pedestrian volume and crash data is not as easily collected as automobile data since bicycles and pedestrians are harder to detect with count equipment and do not follow as clearly defined paths as automobiles do (except on multiuse trails). Thus, bicycle and pedestrian data most often must be collected either manually in the field or by reviewing video.

    The MPO and WVDOH should investigate the best techniques available. Any manual traffic counts performed as part of any other studies should include bicycle and pedestrian volumes. Also bicycle and pedestrian data collection should be considered as part of Planning Strategies #2, #3, and #4.

Leadership: MPO and WVDOH

Timeframe: Begin 2014

First Action: MPO to work with WVDOH to establish a data collection plan.

Related to most LRTP capital projects (see Section 9.3).

Priority 3 Strategies

13. **Regional Multimodal Travel Forecasting Model Development** – Expand current TransCAD regional travel forecasting model to include transit, bike, and pedestrian trip generation and assignments to better reflect the nature of travel in the greater Morgantown area. Given the relatively high level of non-auto trips in the region, a multimodal model (*TransCad* and/or *TransModeler*) could lead to better transportation decision-making in the region. It may be necessary to retain the services of a qualified consultant to assist in the development of the model and may require the addition of a full-time MPO staff member to run and maintain the model.

Leadership: MPO

Timeframe: Begin 2015

First Action: MPO develop modeling goals, objectives and a development scope.

Related to all LRTP capital projects (see Section 9.3).

14. **Access Management Plan** – Complete a study of key corridors in the region to identify current access management deficiencies using national guidance such as the Transportation Research Board's *Access Management Manual*. Include data-driven prioritization based on related crashes and congestion. Explore options and develop recommendations for local policy for access control, planning, design, and retrofits.

    Identify priority locations and a 10-year implementation plan. This effort would focus primarily outside of the Tier 1 project corridors (described later in this chapter). The plan should include the

Leadership: WVDOH & MPO

Timeframe: Begin 2015

First Action: WVDOH prepare study of key corridors. MPO explore policy options

Related to LRTP capital project 44 (see Section 9.3).

identification of priority locations for improvements based on benefit, cost, and impact analysis.

Leadership: MPO

Timeframe: Begin 2016

First Action: Identify key stakeholders and potential partners (see Section 9.3).

15. **Regional Vehicle Recharging Station Strategy –** Investigate regional needs related to electric vehicle recharging infrastructure. Develop a strategy to work with private and public entities to provide charging stations in the region.

9.3 Projects

Project List

The LRTP Project List (Table 9-1) includes the recommended projects to be pursued in the future with project prioritization by tier. Each LRTP project is listed with an estimated project cost and the results of the scoring under the four criteria described in Chapter 7. The project locations are illustrated in Figure 9-1 and detailed project descriptions for each project begin on Page 9-13 of this chapter. Project tiers are defined as follows:

Tier 1 - Recommended for Funding with Forecasted Available State and Federal Funds

The first tier contains projects that could be funded with the currently forecasted state and federal funding for the region between now and the 2040 plan horizon. This tier consists of the projects that are of the highest priority to the region and that should be advanced as soon as practicable. This tier represents the Fiscally Constrained Plan (see sidebar).

Tiers 2 through 4

These projects are of high value to the region but could not be funded within the plan funding constraints. The highest priority unfunded projects are identified as Tier 2, the next highest priority are in Tier 3 and the lowest priority are in Tier 4.

Alternative Funding Dependent

These projects are considered of high value to the region but cannot realistically be funded from traditional state and federal funding resources. Other funding avenues such as local taxes and fees, private funding, tax increment financing (TIF) districts, federal grant programs, and other potential funding sources must be explored for these projects.

Project Map

Figure 9-1 illustrates the locations of each of the projects.

Fiscally Constrained Plan

To be included in any tier shown in Table 9-1, a project must have been deemed potentially feasible and supportive of the established transportation goals and objectives of the region. However, there is not enough forecasted transportation funding to implement all of these valuable projects.

Transportation funding forecasts prepared by the State of West Virginia (see Chapter 8) currently project approximately $136 million in funds available for improvement projects (exclusive of operations and maintenance expenditures) over the next 28 years.

Because of declining gas tax revenues, no federal funding increases in MAP-21, and no identified stream of local transportation funding in this region, funding for this plan period is significantly less than the *2007 RTP*, which was $233 million.

Additionally, the rising cost of construction results in even fewer fundable projects for the dollar now versus 2007.

The projects listed in Tier 1 are considered the "fiscally constrained" LRTP projects.

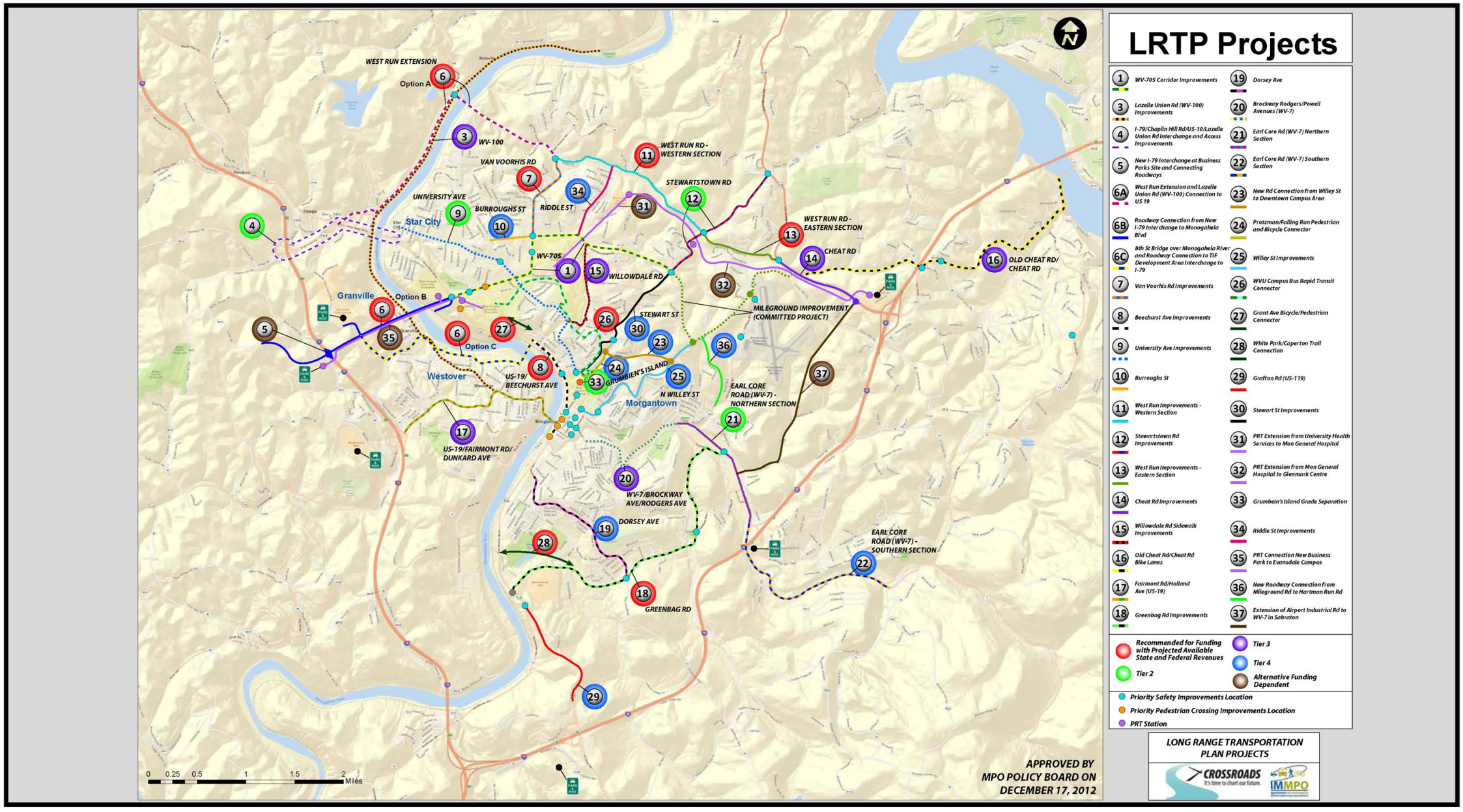
Table 9-1. LRTP Projects List

Tier	Project #	Project / Corridor	Planning Level Cost Estimate		Project Evaluation			
					Goals Score	Regional Mobility Score	Feasibility Score	TAG** Preference Score
Recommended for Funding with Forecasted Available State and Federal Funds - Tier 1	2	ADA Connectivity Initiative	$2,000,000		★★★	★★★★	★★★★	NS***
	6	New Bridge over Monongahela River and Roadway Connection to I-79	$45,000,000		★★★½	★★★★	★★	★★★★
	7	Van Voorhis Road Improvements	$10,000,000		★★★	★★★★	★★	★★★★
	8	Beechurst Avenue Improvements	$7,000,000		★★★	★★★★	★★★	★★★★
	11	West Run Improvements - Western Section	$12,000,000		★★★	★★★	★★★★	★★★★
	13	West Run Road Improvements - Eastern Section	$3,000,000		★★★	★★★	★★★★	★★★★
	18	Greenbag Road Improvements	$15,000,000		★★★½	★★	★★★	★★★★
	26	North-side Connector Bus Rapid Transit	$1,000,000		★★★	★★★★	★★★★	★★★
	27	Grant Avenue Bicycle / Pedestrian Connector	$900,000		★★★	★★★	★★★	★★★★
	28	White Park / Caperton Trail Connection	$50,000		★★★	★★★	★★★	★★
	38	Intersection Capacity and Safety Improvement Program	$31,000,000		★★★	★★★★	★★★★	★★★★
	40	Regional Bikeway Plan Implementation Program	$5,000,000		★★★	★★★	★★★★	★★★★
	43	School Route Improvements (K-8)	$2,000,000		★★★	★★★★	★★★★	★★★
	45	Downtown Morgantown Signalization and Street Changes	$2,000,000		★★★½	★★★	★★★★	★★★★
		Tier 1 LRTP Fundable Total	**$135,950,000**					
Tier 2	4	I-79 / Chaplin Hill Road / US-19 / Lazelle-Union Road Interchange Access	$22,000,000		★★★	★★★★	★★★	★★
	9	University Avenue Improvements	$20,000,000		★★★	★★★★	★★	★★★★
	12	Stewartstown Road Improvements	$12,000,000		★★★	★★★	★★★★	★★★
	21	Earl Core Road (WV-7) North of I-68	$9,000,000		★★★½	★★★★	★★★	★★
	33	Grumbein's Island Grade Separation	$10,000,000		★★★	★★★★	★★★	★★★
	41	New Park and Ride Lots	$1,000,000		★★★	★★★	★★★	★★★★
	46	Transportation Demand Management Program Expansion	$10,000,000	$350K/yr	★★★	★★★★	★★★★	★
		Tier 2 Total	**$84,000,000**					
Tier 3	1	WV 705 Improvements	$55,000,000		★★★	★★★★	★★	★★★
	3	Lazzelle-Union Road (WV-100)	$22,000,000		★★½	★★★	★★★★	★★★
	14	Cheat Road Improvements	$6,000,000		★★★	★★★	★★★★	★★
	15	Willowdale Road Sidewalk Improvement	$4,000,000		★★★	★★★	★★★★	★★
	16	Old Cheat Road / Cheat Road Bike Lanes	$7,000,000		★★★	★★	★★★★	★★
	17	Fairmont Road / Holland Avenue (US-19)	$11,000,000		★★★½	★★★★	★★	★★
	20	Brockway Rogers / Powell Avenues (WV-7)	$6,000,000		★★★	★★★★	★★★	★
		Tier 3 Total	**$111,000,000**					
Tier 4	10	Burroughs Street	$4,000,000		★★½	★★★	★★★	★
	19	Dorsey Avenue Sidewalk Improvements	$4,000,000		★★★	★★	★★	★★
	22	Earl Core Road (WV-7) South of I-68	$9,000,000		★★★	★★★★	★★	★
	23	New Road Connection from Willey Street to Downtown Campus Area	$6,000,000		★★½	★★★	★★	★★
	24	Protzman / Falling Run Pedestrian and Bicycle Connector	$1,000,000		★★★	★★★	★★★★	★
	25	Willey Street Improvements	$13,000,000		★★★	★★★★	★	★
	29	Grafton Road (US-119)	$5,000,000		★★½	★★	★★★	★
	30	Stewart Street Improvements	$11,000,000		★★★	★★★	★★	★
	34	Riddle Street Improvements	$4,000,000		★★★	★★★	★★	★
	36	Mileground Road / WV-705 Connector to Hartman Run Road	$17,000,000		★★★	★★★	★★	★★
	44	Access Management Improvement Program	$10,000,000		★★½	★★★	★★★	★★
		Tier 4 Total	**$84,000,000**					
Alternative Funding Dependent	5	New I-79 Interchange at Business Park Site and Connecting Roadways	$43,000,000	TIF	★★★	★★★	★★★	★★★
	31	PRT Extension from University Health Sciences to Monongalia General	$57,000,000	Grant	★★★	★★★★	★	★★
	32	PRT Extension from Monongalia General Hospital to Glenmark Centre	$103,000,000	Grant	★★★	★★★	★	★★
	35	PRT Connection New Business Park to Evansdale Campus	$80,000,000	Grant	★★★	★★★★	★	★★★
	37	Airport Industrial Road extension to WV-7	$12,000,000	Private	★★	★	★★	★
	39	Regional Pedestrian Safety and Sidewalk Connectivity Program	$33,000,000	Local	★★★	★★★★	★★★★	★★★
	42	Enhanced Bus Service	$88,000,000	Local	★★★	★★★★	★★★★	★★★
		Alternative Funding Dependent Total	**$416,000,000**					

* Assumes 100% State/Federal funding sources and is based on current funding projections for the LRTP horizon (through 2040) of approximately $136,000,0000.

** Transportation Advisory Group (members of the MPO standing committees).
*** Not Scored - Proposed from input gathered at the Transportation Advisory Group 11/15/12 Meeting.

Figure 9-1. LRTP Project Map



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Project Descriptions

MAPPED PROJECTS

Project/Corridor	Description	
1 **WV-705 Corridor (Patteson/ Van Voorhis/ Chestnut Ridge) Improvements**	**Location:** WV-705 from Monongalia Boulevard to Stewartstown Road **Purpose:** Improve traffic/people carrying capacity in the region's most heavily traveled corridor. **Improvements:** ■ Add one lane of through capacity in each direction – The additional lane could be a High Occupancy Vehicle (HOV) lane that only buses and automobiles with 3 or more occupants could legally use (2 occupants or less would have to use other 2 general purpose lanes). The purpose of the HOV lane is to add vehicular capacity in this over-capacity corridor in a way that also gives a distinct travel time advantage to transit and vanpooling/carpooling. This would maximize total person trips that can be handled in the corridor. ■ Upgrade existing sidewalks where needed to provide continuous attractive facilities for pedestrian traffic and to create an enhanced environment for transit users. ■ Improved pedestrian crossings. ■ Provide improved bike facilities either in the form of bike lanes or shared HOV lanes. ■ Improve access management in areas where currently deficient. ■ Increase automobile capacity at key intersections with priority given to buses/HOV. This could involve improvement to side streets. ■ Provide bus stops and shelters at key locations. **First implementation action:** A preliminary engineering study of the corridor to comprehensively evaluate the benefits, feasibility and cost of these improvements – crash data, peak hour traffic forecasts, bike and pedestrian facility needs and options, right-of-way and access impacts, pedestrian crossing locations, and other factors should be evaluated. The study process should engage key stakeholders, property owners, and users (the public) to obtain input and to build local buy-in and support of the recommendations of the study. The study could identify a phased approach where intersection capacity improvements, widening in key areas, key access improvements, signalization improvements, and bus queue jumps could be prioritized and constructed over several years. **Key implementation factors:** Local acceptance, acceptable property impacts, acceptable impacts to access, pedestrian crossings, and construction feasibility. Careful planning of pedestrian crossings with the widened roadway is a critical consideration. Grade separated options should be considered.	Estimated Cost $55,000,000 Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,4,5,7 FHWA Planning Factors Supported 1,2,3,4,5,6,7,8

2 **ADA Compliance Projects**	**Location:** Region-wide Purpose: To complete accessible walkway connections to provide safer and more convenient routes for pedestrian travel, particularly for those with disabilities. **Improvements:** ■ Repair and replace existing deficient sidewalks. ■ Construct sidewalk connections in key locations. ■ Improve curb ramps. ■ Improve key pedestrian crossings. **First implementation action:** Determine priority locations and apply for funding. **Key implementation factors:** Local agreement on priority locations.	Estimated Cost $2,000,000 Primary Travel Modes Improved Pedestrian LRTP Goals Directly Supported 1,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7,8
3 **Lazzelle Union Road (WV-100) Improvements**	**Location:** US-19 to PA state line. **Purpose:** To provide a bike commuter and recreational route west of the Monongahela River. To improve roadway for freight movement/truck traffic. **Improvements:** ■ Repair truck damage to pavement. ■ Widen roadway to provide bike lanes or other bike accommodations. **First implementation action:** Detailed engineering review and cost estimates. **Key implementation factors:** Addition of bike lanes should be achieved as an enhancement to a maintenance project when repairing the roadway pavement.	Estimated Cost $22,000,000 Primary Travel Modes Improved Auto Bicycle LRTP Goals Directly Supported 1,2,3,4,6 FHWA Planning Factors Supported 1,2,4,5,6,8
4 **I-79/Chaplin Hill Road/US-19/Lazzelle Union Road Interchange and Access Improvements**	**Location:** The system includes: ■ The interchange of I-79 and Chaplin Hill Road. ■ The intersection of Chaplin Hill Road and University Town Center Boulevard. ■ The intersection of Monongahela Boulevard (WV-7/US-19) and Chaplin Hill Road. ■ The intersection of Monongahela Boulevard and Boyers Avenue. **Purpose:** To improve traffic capacity and safety. **Improvements:** ■ Reconfiguration of the interchange	Estimated Cost $22,000,000 Primary Travel Modes Improved Auto Transit LRTP Goals Directly

	■ Grade separation of Chaplin Hill Road from University Town Center Road ■ Lane additions to increase capacity ■ Upgrade of Monongahela Boulevard and Chaplin Hill Road intersection ■ Upgrade of US-19 and Boyers Avenue intersection ■ Signal system coordination and optimization ■ Integrate bicycle/pedestrian improvements **First implementation action:** Perform comprehensive preliminary engineering study to evaluate alternatives to improve this interchange and access system. New and innovative options for the interchange and connectivity should be explored to minimize construction costs and negative impacts in the study area. **Key implementation factors:** Optimal solution could vary significantly based on other factors such as potential land use and interchange changes (TIF district improvements) and the potential connection from the interchange to Patteson Boulevard.	Supported 1,3,4,7,8 FHWA Planning Factors Supported 1,2,3,4,5,6,7,8
5 **New I-79 Interchange at Business Park Site and Connecting Roadways**	**Location:** Approximately halfway between the existing I-79 interchanges at Chaplin Hill Road and Fairmont Road (US-19) **Purpose:** To support economic development and to provide an additional point of access to I-79 (reduce demand at current interchanges). **Improvements:** ■ New interchange in conjunction with the proposed business park development ■ Access roadways including a connection to University Town Center ■ New access roadway located west of I-79 through new business park connecting to Chapel Hill Road ■ Park and ride lot **First implementation action:** Interchange Justification Study to evaluate design needs of new interchange and internal roadways. **Key implementation factors:** Legislative approval of TIF and coordination with local agencies for roadway connections.	Estimated Cost $43,000,000 TIF District Primary Travel Modes Improved Auto Transit LRTP Goals Directly Supported 1,2,3,4,5,8 FHWA Planning Factors Supported 1,2,3,4,5,6

6 ***Option A*** **New Bridge over Monongahela River and Roadway Connection to I-79** *West Run Extension and Lazelle Union Road (WV-100) Connection to US 19*	**Location:** Extension of West Run Road along a new alignment west from Van Voorhis Road to Lazelle Union Road (WV-100), including a new bridge over the Monongahela River. **Purpose:** To provide an additional traffic capacity from/to I-79 from/to the heavy employment areas north of WV-705. **Improvements:** ■ New 4-lane roadway with access limited to 4 locations: at its termini with Van Voorhis Road and Lazelle Union Road, and at two access points spaced approximately 2,000 feet apart between the termini. ■ Widen Lazelle Union Road to 4-lanes plus turn lanes at key locations between new bridge and US-19. Access limited to 3 full-movement access points approximately 2,000 feet apart between US-19 and the proposed West Run Road extension. ■ Include parallel bike/pedestrian facilities (Potential: multiuse path on one side and sidewalk on the other side). **First implementation action:** A preliminary engineering study to verify the number of lanes needed, to determine the optimal alignment to minimize negative impacts, and to determine optimal intersection types and configurations for peak hour traffic operations. The study could identify a phased approach where only two lanes and interim intersection types are built initially, with right-of-way obtained for the ultimate needs in the corridor. **Key implementation factors:** Local acceptance, acceptable environmental impacts, ability to obtain needed right-of-way, design of intersection with Lazelle Union Road.	Estimated Cost $71,000,000 Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,4,5,8 FHWA Planning Factors Supported 1,2,3,4,5,6
6 ***Option B*** **New Bridge over Monongahela River and Roadway Connection to I-79** *Direct Roadway Connection from New I-79 Interchange to Monongahela Boulevard*	**Location:** From proposed business park access roadway (that connects directly to new interchange) to Monongahela Boulevard at Patteson Boulevard. **Purpose:** To provide an additional portal into the urban core area to relieve traffic from current portals from I-79. To reduce traffic on the Monongahela Boulevard and Beechurst Corridors. To provide a multimodal connection to the park and ride at new interchange to reduce vehicular demand into the core. **Improvements:** ■ New 4-lane roadway ■ New bridge over Monongahela River ■ Parallel bike lanes, sidewalks and/or multi use path ■ Aesthetic gateway design **First implementation action:** Alignment study to evaluate traffic capacity design needs and to choose an alignment and bridge location that minimizes negative property impacts and environmental impacts.	Estimated Cost $49,000,000 Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,4,5,8 FHWA Planning Factors Supported

	Key implementation factors: Local acceptance of impacts, cost, impacts to WVU property, and operations at Coliseum.	1,2,3,4,6
6 ***Option C*** **New Bridge over Monongahela River and Roadway Connection to I-79** *8th Street Bridge over Monongahela River and Roadway Connection to TIF Development Area Interchange to I-79*	**Location:** From Beechurst Avenue at 8th Street to new interchange at I-79 **Purpose:** To provide additional connection between I-79 to Morgantown and WVU campus. To reduce traffic volumes on Beechurst Avenue south of 8th Street and on Westover Bridge, and on Monongahela Boulevard at Patteson Drive. **Improvements:** ■ New bridge over Monongahela River ■ Reconstructed intersection at Beechurst Avenue and 8th Street ■ New intersection at extended 8th Street and Riverside Avenue ■ Improve roadways including improved intersections, sidewalks, and bike lanes ■ Riverside Avenue from new intersection with 8th Street to intersection with Dunkard Avenue ■ Dunkard Avenue from Riverside Drive to Dents Run Boulevard ■ Dents Run Boulevard to roadway connection to TIF development roadways ■ Bus stops and shelters at key locations ■ New roadway connection between Dents Run Boulevard to TIF development **First implementation item:** Alignment and feasibility studies for the bridge and new roadway connection. Engineering study of needed turn lane additions and intersection upgrades, sidewalk locations, lane widening. Engineering study of geometric improvements to Riverside Avenue, Dunkard Avenue, and Dents Run Boulevard, including property impacts and costs. **Key implementation factors:** Environmental feasibility, local acceptance of impacts, property acquisition.	Estimated Cost $32,000,000 Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,4,5,6,8 FHWA Planning Factors Supported 1,2,3,4,5,6,7,8
7 **Van Voorhis Road Improvements**	**Location:** From WV-705 to West Run Road **Purpose:** To provide improved multimodal connectivity from the campus area to the residential areas to the north in a way that incentivizes transit usage and reduces automobile demand. **Improvements:** ■ Improve traffic lanes (pavement, drainage, width) ■ Provide bicycle and pedestrian connectivity from WV-705 to White Oak Drive ■ Provide bus-only lane southbound with priority traffic signal phase for buses at WV-705 intersection ■ Provide bus stops at key locations	Estimated Cost $10,000,000 Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly Supported

	First implementation action: Preliminary engineering study of feasibility of bus lane and appropriate length, options for providing bicycle and pedestrian connectivity such as: 15 foot wide lane on northbound side, sidewalk on one or both sides, and/or a parallel multiuse trail. Logical limits of improvements based on walkable/bikeable slopes should also be verified. **Key implementation factors:** Coordination with MLTA to ensure utilization of proposed bus lane.	1,2,3,5,6,7 FHWA Planning Factors <u>Supported</u> 2,4,5,6,7,8
8 **Beechurst Avenue Improvements**	**Location:** From Foundry Street to 8th Street **Purpose:** To improve automobile capacity and travel time and maintain pedestrian and bicycle traffic through corridor **Improvements:** ■ Additional lanes/turn lanes to improve capacity ■ Access management ■ Replace sidewalks ■ Provide bus stops with shelters at key locations **First implementation action:** Perform a planning and preliminary engineering study of corridor that will include an assessment of capacity and safety needs, a detailed review of existing right-of-way, and the use and value of adjacent properties. The study must evaluate a comprehensive set of potential alternatives that maximizes traffic capacity and maintains acceptable bicycle and pedestrian movement through the corridor. Access management options should be explored. The study should include an extensive public/stakeholder/property owner involvement process that identifies potential partnership opportunities in redeveloping properties along the corridor and providing needed right-of-way. To-scale mapping based on ground survey and right-of-way research must be included. **Key implementation factors:** Identifying a cost feasible alternative that has acceptable impacts to adjacent properties, increases automobile capacity in the corridor, and maintains acceptable levels of service for bicycles and pedestrians.	<u>Estimated Cost</u> $7,000,000 Primary Travel Modes <u>Improved</u> Auto Transit Pedestrian LRTP Goals Directly <u>Supported</u> 1,2,3,5,6,7 FHWA Planning Factors <u>Supported</u> 2,4,5,6,7,8
9 **University Avenue Improvements**	**Location:** From Boyers Avenue to Fayette Street **Purpose:** To provide a bicycle and pedestrian focused corridor and improve traffic capacity. **Improvements:** ■ Provide completed sidewalks on both sides of street for entire length ■ Provide 15-foot lanes in uphill direction for bicycle climbing by widening and/or restriping: ■ Boyers Avenue to Congress Avenue ■ Mulberry Street to Laurel Street	<u>Estimated Cost</u> $20,000,000 Primary Travel Modes <u>Improved</u> Auto Transit Bicycle Pedestrian

	■ Koontz Ave to Patteson Boulevard ■ Include bicycle route signing and marking in corridor ■ Improve pedestrian crossings throughout corridor ■ Improve automobile capacity (turn lanes, improved intersections, etc.) and safety (pedestrian crossings, sight distance, etc.) at key intersections (i.e. law school, Patteson Blvd., Collins Ferry) ■ Provide identifiable bus stop locations and shelters at key locations **First implementation action:** Perform preliminary engineering study to identify (through data and analysis) the optimal solution for the corridor including traffic forecasts and capacity analysis, pedestrian and bicycle safety and flow needs, right-of-way and cost impacts of solutions, etc. **Key implementation factors:** Property impacts and costs related to widening of roadway/right-of-way.	LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6,7,8
10 **Burroughs Street**	**Location:** From Collins Ferry Road to WV-705/Van Voorhis Road **Purpose:** To increase capacity to address existing capacity deficiency. **Improvements:** ■ Improve automobile capacity at intersections with Collins Ferry Road and WV-705 ■ Provide left turn lanes at key intersection/driveways ■ Limit and/or combine access points ■ Maintain and widen sidewalk on south side of street ■ Add sidewalk to north side of street **First implementation action:** Perform preliminary engineering analysis to determine most critical needs, potential solutions, and impacts in corridor. **Key implementation factors:** Acceptance of improvements by residents along corridor. Potential property impacts of widening for turn lanes and/or sidewalks.	Estimated Cost $4,000,000 Primary Travel Modes Improved Auto Pedestrian LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,3,4,5,6,7
11 **West Run Improvements Western Section**	**Location:** From VanVoorhis Road to Stewartstown Road **Purpose:** To increase traffic capacity and to improve pedestrian and bike traffic flow. **Improvements:** ■ Add capacity through key turn lane additions and intersection improvements ■ Widen lanes to 15 feet on inclines for adequate bicycle overtaking width ■ Improve geometry (sight distance, curvature, lane widths, shoulders, etc.) ■ Explore potential for parallel multiuse path in corridor	Estimated Cost $12,000,000 Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly

	First implementation action: Engineering study of needed turn lane additions and intersection upgrades, lane widening, and geometric improvements that includes property impacts and costs. Feasibility study for parallel multiuse path in corridor. **Key implementation factors:** Impacts to adjacent properties and cost.	Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7,8
12 **Stewartstown Road Improvements**	**Location:** From WV-705 to Point Marion Road (US-119) **Purpose:** To provide additional people moving capacity from I-68 to campus area and employment areas north of WV-705. **Improvements:** ■ Add one through traffic lane in each direction, from WV-705 to West Run Road ■ Provide turn lanes where appropriate ■ Implement a defined access management corridor plan ■ Rightmost lane between West Run Road and WV-705 to be HOV lane and/or provide bus queue jump at WV-705 ■ Limit access points to one full movement intersection between WV-705 and West Run Road ■ Limit access points to two full movement access points between West Run Road and Point Marion Road ■ Construct outside lanes 15 feet wide on inclines for adequate bicycle overtaking width ■ Construct sidewalk on west side of street **First implementation action:** Preliminary engineering study to determine intersection and capacity needs, access management concepts, HOV feasibility and benefits, costs, right-of-way and environmental impacts. **Key implementation factors:** Acceptance of any negative impacts versus benefits, HOV benefits and acceptability, maintaining adequate access.	Estimated Cost $12,000,000 Primary Travel Modes Improved Auto Transit Pedestrian LRTP Goals Directly Supported 1,3,5 FHWA Planning Factors Supported 1,2,4,5,6,7,8
13 **West Run Road Improvements - Eastern Section**	**Location:** From Stewartstown Road to Point Marion Road **Purpose:** To increase traffic capacity and to improve transit, pedestrian, and bike traffic flow. **Improvements:** ■ Add capacity through key turn lane additions and intersection improvements ■ Widen lanes to 15 feet on inclines for adequate bicycle overtaking width ■ Improve geometry (sight distance, curvature, lane widths, shoulders, etc.) ■ Explore potential for parallel multiuse path in corridor ■ Explore providing queue jump lanes at intersections for expedited	Estimated Cost $3,000,000 Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly

	bus service **First implementation action:** Engineering study of needed turn lane additions and intersection upgrades, lane widening, and geometric improvements that includes property impacts and costs. Feasibility study for parallel multiuse path in corridor. **Key implementation factors:** Impacts to adjacent properties and cost.	Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,8
14 **Cheat Road Improvements**	**Location:** From I-68 (Cheat Lake) interchange to West Run Road **Purpose:** Improve traffic/people carrying capacity in heavily traveled corridor. To encourage transit use, and van/carpooling from the proposed park and ride at Glenmark Centre. **Improvements:** ■ Add one lane of through capacity in each direction – the additional lane would be a HOV lane that only buses and automobiles with 3 or more occupants could legally use (2 occupants or less would have to use other 2 general purpose lanes). The purpose of the HOV lane is to add vehicular capacity in this over-capacity corridor in a way that also gives a distinct travel time advantage to transit and vanpooling/carpooling to maximize total person trips that can be handled in the corridor. ■ Explore option of far right lane as an HOV lane ■ Improve signal with Glenmark Center to provide bus priority ■ Add bike lanes **First implementation action:** Engineering study to determine required widening and potential use of existing shoulder for HOV/BRT use in lieu of widening. **Key implementation factors:** HOV benefits and acceptability.	Estimated Cost $6,000,000 Primary Travel Modes Improved Auto Transit Bicycle LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7,8
15 **Willowdale Road/ Grove Street/North Avenue Sidewalk Improvements**	**Location:** From University Avenue to WV-705 **Purpose:** To provide a convenient/inviting corridor for pedestrians. **Improvements:** ■ Complete sidewalk connections on both sides of street **First implementation action:** Preliminary engineering investigation of the preferred locations for sidewalk additions, impacts, and costs. **Key implementation factors:** Acceptability of property impacts and cost feasibility.	Estimated Cost $4,000,000 Primary Travel Modes Improved Pedestrian LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors

		Supported 2,4,5,6,8
16 **Old Cheat Road / Cheat Road Bike Lanes**	**Location:** From Cheat Lake bridge to western intersection of Cheat Road and Old Cheat Road **Purpose:** To provide a more inviting bike route for commuters from the Cheat Lake area. **Improvements:** ■ Widen roadway to provide bike lanes **First implementation action:** Engineering study to determine the required widening needs and costs. **Key implementation factors:** Identification of funding.	Estimated Cost $7,000,000 Primary Travel Modes Improved Bicycle LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6
17 **Fairmont Road / Holland Avenue (US-19)**	**Location:** Through Westover from the I-79 (Westover) interchange to the Westover Bridge **Purpose:** To improve automobile traffic capacity and safety and increase travel by pedestrians and bicyclists. **Improvements:** ■ Improve access management by reducing and consolidating access points ■ Improve intersections and traffic signal timings and coordination ■ Provide additional turn lanes where beneficial ■ Provide 15-foot wide lanes or bike lanes on inclines and other difficult areas for adequate bicycle overtaking width ■ Provide complete sidewalks on both sides of the street ■ Provide bus stops and shelters at key locations **First implementation action:** Perform preliminary engineering study to identify optimal solutions for the corridor that includes crash analysis, traffic forecasts and capacity analysis, pedestrian and bicycle safety and flow needs, identification of access management deficiencies, locations for bicycle climbing lanes, right-of-way and cost impacts of solutions, etc. **Key implementation factors:** Property impacts and costs related to widening of roadway/right-of-way.	Estimated Cost $11,000,000 Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7,8
18	**Location:** From Don Knotts Boulevard (US-119) to Sabraton Avenue (WV-7)	Estimated Cost $15,000,000

Greenbag Road Improvements	**Purpose:** To enhance route as an attractive alternative for automobiles and especially trucks (in lieu of traveling downtown). To increase travel by pedestrians and bicyclists. **Improvements:** ■ Improve intersection of Earl Core Road (WV-7) and Greenbag Road to better accommodate truck turns ■ Improve intersections in corridor ■ Widen roadway to a minimum of two 11-foot lanes with 4- to 5-foot paved shoulders including wider (15 feet wide) lanes on inclines for adequate bicycle overtaking width ■ Construct sidewalks in targeted locations (focused on key sidewalk network connections) ■ Consider bike and pedestrian safety improvements at intersection with Decker's Creek Trail ■ Provide bus stops with shelters at key locations ■ Strengthen pavement where needed ■ Include truck route signage **First implementation action:** Perform preliminary engineering study to determine most appropriate intersection configurations, pedestrian and bicycle safety and connectivity needs, locations for bicycle climbing lanes, right-of-way and cost impacts of solutions, etc. **Key implementation factors:** Property impacts and costs related to widening of roadway/right-of-way.	Primary Travel Modes Improved Auto Bicycle Pedestrian Transit LRTP Goals Directly Supported 1,2,3,4,5,6,7 FHWA Planning Factors Supported 2,4,5,6,7,8
19 **Dorsey Avenue**	**Location:** High Street to Greenbag Road **Improvements:** ■ Complete the sidewalks on at least one side of the street **First implementation action:** Preliminary engineering investigation of the preferred locations for sidewalk additions, impacts, and costs. **Key implementation factors:** Acceptability of property impacts and cost feasibility.	Estimated Cost $4,000,000 Primary Travel Modes Improved Pedestrian LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6,8
20	**Location:** Walnut Street to Deckers Creek Road (Old Rte 7) **Purpose:** To provide pedestrian and bike connectivity from Sabraton to downtown.	Estimated Cost $6,000,000

Brockway Rodgers/Powell Avenues (WV-7)	**Improvements:** ■ Improve connections to Deckers Creek Trail ■ Improve and complete sidewalk connections ■ Provide bus stops with shelters at key locations **First implementation action:** Preliminary engineering study to determine most appropriate locations to provide/improve trail connections, to improve sidewalk connectivity, and to determine right-of-way impacts and costs. **Key implementation factors:** Acceptability of property impacts and cost feasibility.	Primary Travel Modes Improved Bicycle Pedestrian Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6,7,8
21 **Earl Core Road (WV-7) Northern Section**	**Location:** Deckers Creek Boulevard (Old Rte 7)to I-68 **Purpose:** To provide pedestrian and bike connectivity from Sabraton to downtown, to improve traffic flow and safety, and to provide attractive truck access to Greenbag Road. **Improvements:** ■ Improve intersection with Greenbag Road to better accommodate trucks ■ Corridor signal optimization ■ Reduce access conflicts (consolidation of duplicate access points, redesign of driveways) ■ Add continuous sidewalks on both sides of Earl Core Road ■ Improve capacity and safety in corridor ■ Add turn lanes where appropriate ■ Improve connectivity to Deckers Creek Trail at key locations ■ Provide bus stops with shelters at key locations **First implementation action:** Preliminary engineering study that includes needed intersection capacity and safety improvements based on crash data and traffic volumes, identification of existing access management deficiencies, coordination with local property owners to optimize access design and sidewalk locations, and identification of costs and property impacts. **Key implementation factors:** Coordination with local property owners for access improvements and sidewalk installation, and potential property impacts for capacity improvements.	Estimated Cost $9,000,000 Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,4,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7,8
22	**Location:** I-68 to Deckers Creek Boulevard **Purpose:**	Estimated Cost $9,000,000

Earl Core Road (WV-7) Southern Section	Improve traffic capacity and flow. **Improvements:** ■ Consolidate and redesign driveways ■ Add turn lanes (potentially a center two-way left turn lane for entire length) ■ Add sidewalks on at least one side of roadway **First implementation action:** Preliminary engineering study that includes needed intersection capacity and safety improvements based on crash data and traffic volumes, identification of existing access management deficiencies, coordination with local property owners to optimize access design and sidewalk locations, and identification of costs and property impacts. **Key implementation factors:** Coordination with local property owners for access improvements and sidewalk installation, and potential property impacts for capacity improvements.	Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6,8
23 **New Road Connection from Willey Street to Downtown Campus Area**	**Location:** From Willey Street approximately ¼-mile south of WV-705 to Protzman Street or Falling Run Road. **Purpose:** To provide a more efficient connection between Mileground area and downtown campus for autos, buses, bicyclists, and pedestrians. Reduce traffic volumes at WV-705/Stewartstown Road Intersection. Provide a direct route to campus that bypasses downtown. **Improvements:** ■ New two-lane roadway with 11-foot wide traffic lanes ■ 10-foot wide multiuse trail on one side of roadway ■ Strict access management (no access points allowed) **First implementation action:** Alignment study to determine best alignment and termination points and treatments, environmental impacts, and costs. **Key implementation factors:** Providing the transportation connection without violating the communities desire to preserve the "Reserved Open Area" and "Limited Growth" through which the alignment would traverse (see land use concept map from Visioning process). Completing the pedestrian and bicycle connectivity to University Avenue will be important to make this project successful.	Estimated Cost $6,000,000 Primary Travel Modes Improved Auto Transit Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,5,6 FHWA Planning Factors Supported 1,2,4,6
24 **Protzman/Falling Run**	**Location:** From the western terminus of Project #23 to University Avenue. **Purpose:** To connect multiuse trail of Project #23 to the downtown campus area.	Estimated Cost $1,000,000 Primary Travel

Pedestrian and Bicycle Connector	**Improvements:** ■ 10-to 12-foot wide multiuse trail/path parallel to existing streets ■ Sidewalks adjacent to street on one side **First implementation action:** Engineering study of feasible locations for proposed improvements and impacts/costs. **Key implementation factors:** Constructability/funding.	Modes Improved Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6,8
25 **Willey Street Improvements**	**Location:** From High Street to WV-705 **Purpose:** To increase traffic capacity of Willey Street and to improve auto capacity and pedestrian and bike traffic flow from neighborhoods to downtown and the Mileground. **Improvements:** ■ Add capacity through key turn lane additions and intersection improvements ■ Add key connections to complete the sidewalks ■ Widen lanes to 15 feet on inclines for adequate bicycle overtaking width ■ Improve geometry (sight distance, curvature, lane widths, shoulders, etc.) ■ Provide bus stops and shelters at key locations. **First implementation actions:** Engineering study of needed turn lane additions and intersection upgrades, sidewalk locations, lane widening, and geometric improvements that includes property impacts and costs. **Key implementation factors:** Impacts to adjacent properties and cost.	Estimated Cost $13,000,000 Primary Travel Modes Improved Auto Bicycle Pedestrian Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6,7,8
26 **North Side Connector Bus Rapid Transit**	**Location:** From Evansdale Campus to Downtown Campus **Purpose:** To improve capacity of transit service. **Improvements:** ■ Designation of combination of WVU and City streets ■ Construct missing roadway sections required for completing the route **First implementation action:** Evaluate the potential ridership/need for the connector in coordination with WVU as part of the LRTP Planning Strategy – Regional Transit Plan, and an engineering study of the	Estimated Cost $1,000,000 Primary Travel Modes Improved Transit LRTP Goals Directly Supported

	feasibility and cost of the concept. **Key implementation factors:** Coordination between MLTA, WVU, and the City.	1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6,7,8
27 **Grant Avenue Bicycle/Pedestrian Connector**	**Location:** From end of Grant Avenue to Riverview Drive **Purpose:** To provide bicycle and pedestrian connection between Downtown and the WVU Evansdale Campus. **Improvements:** ■ Construct multiuse trail **First implementation action:** Preliminary engineering study to determine the most appropriate alignment, impacts, right-of-way needs, and costs. **Key implementation factors:** Right-of-way acquisition (if not already publicly owned).	Estimated Cost $900,000 Primary Travel Modes Improved Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,3,4,5,6
28 **White Park / Caperton Trail Connection**	**Location:** From White Park to Caperton Trail **Purpose:** To provide connectivity from White Park and adjacent neighborhoods to the regional trail system. **Improvements:** ■ Construct multiuse trail **First implementation action:** Preliminary engineering study to determine the preferred alignment, crossing treatment at Don Knotts Boulevard, impacts, right-of-way needs, and costs. **Key implementation factors:** Crossing of Don Knotts Boulevard.	Estimated Cost $50,000 Primary Travel Modes Improved Bicycle Pedestrian LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,3,4,5,6

29 **Grafton Road (US-119)**	**Location:** From Scotts Avenue to Greenbag Road **Purpose:** To increase automobile capacity to address existing capacity deficiency and to provide bike connectivity. **Improvements:** ■ Complete 4-lane roadway ■ Provide turn lanes where appropriate ■ Limit any new full access points to no closer than 2,000 feet from an existing full access point ■ Bike lanes or climbing lanes **First implementation action:** Preliminary engineering study to identify capacity and delay deficiencies in more detail, impacts, costs, and access point locations. **Key implementation factors:** Identifying the true need for this improvement in more detailed studies. Establishing access management in short-term to avoid future access problems.	Estimated Cost $5,000,000 Primary Travel Modes Improved Auto Bicycle LRTP Goals Directly Supported 1,2,3,4,7 FHWA Planning Factors Supported 1,2,4,5,6,8
30 **Stewart Street Improvements**	**Location:** From High Street to WV-705 **Purpose:** To increase traffic capacity and to improve pedestrian and bike traffic flow from neighborhoods to downtown and WV-705. **Improvements:** ■ Add capacity through key turn lane additions and intersection improvements ■ Add key sidewalk connections to complete the sidewalks ■ Widen lanes to 15 feet on inclines for adequate bicycle overtaking width ■ Improve geometry (sight distance, curvature, lane widths, shoulders, etc.) ■ Provide bus stops and shelters at key locations **First implementation action:** Engineering study of needed turn lane additions and intersection upgrades, sidewalk locations, lane widening, and geometric improvements that includes property impacts and costs. **Key implementation factors:** Impacts to adjacent properties and cost.	Estimated Cost $11,000,000 Primary Travel Modes Improved Auto Bicycle Pedestrian Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6,7,8
31 **PRT Extension from University Health Services to Mon**	**Location:** From University Health Sciences to Mon General Hospital **Purpose:** To provide high-capacity person moving connection between these locations to reduce automobile traffic demand within the core campus and employment areas. **Improvements:**	Estimated Cost $57,000,000 Primary Travel Modes Improved

General Hospital	■ Extension of PRT system ■ Station at each location ■ Assumes a system that includes wireless communications and self-powered (battery) vehicles (expansion cost greatly reduced over current technology) **First implementation action:** Alignment study to determine the most cost-effective route. **Key implementation factors:** Feasibility of construction and cost.	Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7,8
32 **PRT Extension from Mon General Hospital to Glenmark Centre**	**Location:** From Mon General Hospital to Glenmark Centre **Purpose:** To provide high capacity person moving connection between these locations to reduce automobile traffic demand to and from the core campus and employment areas from I-68. **Improvements:** ■ Extension of PRT system ■ Stations at each location ■ Assumes a system that includes wireless communications and self-powered (battery) vehicles **First implementation action:** Alignment study to determine the most cost-effective route. **Key implementation factors:** Feasibility of construction and cost.	Estimated Cost $103,000,000 Primary Travel Modes Improved Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7,8
33 **Grumbein's Island Grade Separation**	**Location:** Grumbein's Island on University Avenue **Purpose:** To separate vehicular traffic from pedestrian crossing traffic on University Avenue to improve traffic flow and reduce pedestrian/auto conflicts. **Improvements:** ■ Grade separation of roadway from pedestrian crossing **First implementation action:** Completion of traffic operations study and prepare final plans based on preliminary engineering report. **Key implementation factors:** Coordination between WVU, City, and State.	Estimated Cost $10,000,000 Primary Travel Modes Improved Auto Pedestrian Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported

		2,4,5,7,8
34 **Riddle Street/ Pineview Drive Improvements**	**Location:** From WV-705 to West Run Road **Purpose:** To improve pedestrian and bike traffic flow from neighborhoods to WV-705. **Improvements:** ■ Add sidewalk to at least one side of street ■ Widen lanes to 15 feet wide lanes on inclines for adequate bicycle overtaking width ■ Provide bus stops and shelters at key locations **First implementation action:** Engineering study of most desirable sidewalk locations and lane widening that includes property impacts and costs. **Key implementation factors:** Impacts to adjacent properties and cost.	Estimated Cost $4,000,000 Primary Travel Modes Improved Pedestrian Bicycle Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6,8
35 **PRT Connection New Business Park to Evansdale Campus**	**Location:** From proposed park and ride lot in TIF district business park to Coliseum parking lot, to Evansdale Campus. **Purpose:** To provide a transit connection to the park and ride at new interchange to reduce vehicular demand into the core. **Improvements:** ■ New PRT track integrated with the construction of the new roadway and bridge connection ■ Station at business park - park and ride ■ Station at Coliseum parking lot ■ Station near Evansdale Campus Drive ■ Connection to Engineering PRT station **First implementation action:** Preliminary engineering study of potential ridership and implementation cost and feasibility. **Key implementation factors:** Likely not feasible with current PRT system infrastructure, but could become feasible if system moves to self-powered vehicles with wireless controls. Cost then would only include cost of guideway, vehicles, and station. This estimated cost included in this description. Alternative alignments could be explored depending on the selected location of a new river crossing (see Project #6).	Estimated Cost $80,000,000 Primary Travel Modes Improved Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7

36 **New Roadway Connection from Mileground Road to Hartman Run Road**	**Location:** From intersection of WV-705 and Mileground Road to Hartman Run Road near Fulmer Street **Purpose:** To provide an efficient alternative route for traffic from the Mileground to Sabraton for all modes, including trucks. **Improvements:** ■ New 2-lane roadway with turn lanes at appropriate locations ■ Sidewalk on one side ■ Multiuse trail on one side ■ Bus stops and shelters at key locations **First implementation action:** Alignment and feasibility study for the roadway connection **Key implementation factors:** Construction feasibility, property impacts, public acceptance, and cost.	Estimated Cost $17,000,000 Primary Travel Modes Improved Auto Bicycle Pedestrian Transit LRTP Goals Directly Supported 1,2,3,4,5,6 FHWA Planning Factors Supported 1,2,4
37 **Extension of Airport Industrial Road to WV-7 in Sabraton**	**Location:** From terminus of planned industrial road east of airport to WV-7 in Sabraton **Purpose:** To provide an efficient alternative route for traffic from Cheat Road to Sabraton **Improvements:** ■ New 2-lane roadway with turn lanes at appropriate locations. **First implementation action:** Alignment and feasibility study for the roadway connection. **Key implementation factors:** Construction feasibility, property impacts, public acceptance, and cost.	Estimated Cost $12,000,000 Primary Travel Modes Improved Auto LRTP Goals Directly Supported 1,3,4,5 FHWA Planning Factors Supported 1,2,4

UNMAPPED PROJECTS

Project/Program		Description	
38	**Intersection Capacity and Safety Improvement Program**	**Location:** Numerous intersections throughout the region **Purpose:** To systematically improve capacity and/or safety at key intersections in the region. **Improvements:** ■ Short- to medium-term improvements to intersections to reduce crashes and to increase system capacity and automobile travel efficiency. The improvements could include: - Traffic signal optimization through additional and improved detection, improved control equipment and software, optimized phasing, and timing - Addition of turn lanes and/or through lanes. - Correction of geometric deficiencies - Change in traffic control (roundabout, traffic signal, stop sign, yield) - Improved pedestrian crossings - Improved bicycle accommodations The preferred improvements could but would not necessarily have to be developed as part of a larger corridor study. The intent of this plan item is to develop feasible short to medium term improvements that can be implemented quickly to improve safety and capacity. **First implementation action:** ■ Prioritization of intersections in the region based on a comprehensive study of: - Crash data including rankings based on number of crashes, crash rates, and severity (injury/fatality) rates - Existing congestion levels (delay per vehicle, backups) - Detailed safety and congestion studies of the top 5 to 10 intersections each year. These studies should evaluate crash data and operational data in detail to identify contributing factors, potential countermeasures, intersection improvement alternatives, short- and long-term needs, etc. Preferred alternatives should then be programmed and implemented. - Coordination with the findings of the Downtown Signalization Study (RTI/WVU), which is exploring options for some of the key intersections listed below. **Key implementation factors:** ■ Prioritizing locations ■ Identifying short- to medium-term solutions that also fit within the long term needs of the corridor	Estimated Cost $32,000,000 Primary Travel Modes Improved Auto Bicycle Pedestrian Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,7,8

		■ Acceptable impacts to adjacent properties Initial intersection list for safety and congestion studies: ■ Monongahela Boulevard / Patteson Drive ■ Patteson Drive / Laurel Street ■ University Avenue / Collins Ferry Road ■ University Avenue / Patteson Drive ■ Van Voorhis Road / Chestnut Ridge / Burroughs Street ■ Van Voorhis Road / Christy Street ■ Van Voorhis Road / West Run Road ■ Van Voorhis Road / Elmer Prince ■ WV-705 / Stewartstown Road ■ West Run Road / Stewartstown Road ■ Stewartstown Road / Point Marion Road ■ Point Marion Road / West Run Road ■ University Avenue / Campus Drive ■ University Avenue / Beechurst Avenue / Fayette Street ■ University Avenue / 8th Street ■ Beechurst Avenue / Campus Drive ■ Greenbag Road / Don Knotts Boulevard ■ Greenbag Road / Dorsey Avenue ■ Greenbag Road / Diamond Avenue ■ Greenbag Road / Earl Core Road ■ Tyrone Road / Tyrone Avery Road ■ Cheat Road / Tyrone Avery Road ■ Hartman Run Road / Hart Field Road (north intersection) ■ Hartman Run Road / Hart Field Road (south intersection) ■ Stewart Street / Hoffman Street / Van Guilder Street ■ Spruce Street / Walnut Street ■ Spruce Street / Pleasant Street ■ Fayette Street / High Street ■ High Street / Willey Street ■ High Street / Pleasant Street ■ Walnut Street / University Avenue	
39	**Regional Pedestrian Safety and Sidewalk Connectivity**	**Location:** Region-wide **Purpose:** To complete sidewalk connectivity to provide safer and more convenient routes for pedestrian travel. **Improvements:** ■ Repair and replace existing deficient sidewalks ■ Widen and improve key sidewalk sections ■ Construct new sidewalks in key locations ■ Improve safety at locations of high pedestrian crashes ■ Improve key pedestrian crossings Initial intersections identified for pedestrian crossing and safety improvements:	Estimated Cost $33,000,000 Primary Travel Modes Improved Pedestrian LRTP Goals Directly Supported 1,3,5,6,7

		■ Foundry Street / University Avenue (US-119) ■ Pleasant Street / University Avenue (US-119) ■ Walnut Street / University Avenue (US-119) ■ Spruce Street / Walnut Street ■ High Street / Willey Street ■ University Avenue / College Avenue ■ Willey Street / Prospect Street ■ Spruce Street / Pleasant Street ■ Beechurst Avenue / Campus Drive ■ Beechurst Avenue / 3rd Street ■ Beechurst Avenue / 6th Street ■ Chestnut Ridge Road / Van Voorhis Road ■ High Street / Walnut Street ■ High Street / Fayette Street ■ University Avenue / Prospect Street **First implementation Action:** Extend the City of Morgantown Connecting Network Sidewalks (CNS) plan to include the rest of the region. Develop an action plan that includes identifying potential funding sources, sponsoring agencies, design responsibilities, etc. **Key implementation factors:** Identifying local funding sources and defining implementation responsibilities.	FHWA Planning Factors Supported 1,2,4,5,6,7,8,
40	**Regional Bikeway Plan Implementation**	**Location:** Region-wide **Purpose:** To implement a logical and interconnected bikeway system for the region. **Improvements:** ■ Bike lanes ■ Multiuse trails ■ Bike route pavement markings ■ Bike route signage ■ Intersection of trails with roadways (i.e. crossings with Old Route 7, Green Bag Road, Summer School Road, etc.) ■ Trail lighting **First implementation action:** Complete the Regional Bikeways Plan as described in the non-mapped strategies. **Key implementation factors:** Identification of funding.	Estimated Cost $5,000,000 Primary Travel Modes Improved Bicycle LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7,8
41	**New Park and Ride Lots**	**Location:** As indicated on map **Purpose:** To provide locations for commuters and visitors to park and carpool, use transit, or bike. **Improvements:**	Estimated Cost $1,000,000 Primary Travel Modes

		■ Sign existing parking areas (public-private partnership) that are underutilized on weekdays during work hours ■ New construction not expected **First implementation action:** Approach private owners and discuss terms. **Key implementation factors:** Reaching agreements with owners. Promote and increase awareness of the locations and advantages of utilizing them.	Improved Auto Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,4,5,6,7,8
42	**Enhanced Bus Service**	**Location:** Region-wide **Improvements:** ■ Provide 10 to 15 minute headways for the following three identified transit routes (see Figure 9-2 for illustration of routes): - East-West Corridor - North-South Corridor - West Run, Mountaineer Station Loop ■ Provide identifiable and attractive bus stop locations ■ Provide convenient connections to Mountaineer Station and Walnut Street PRT Station (requires some construction) **First implementation action:** Identify funding sources beyond current federal sources. **Key implementation factors:** Public support for additional local funding. Develop an appropriate implementation phasing plan. See Section 9.5 for a summary of modeling analysis performed on the potential transportation system impacts of this project and Appendix D for details related to the traffic modeling related to the analysis.	Estimated Cost $88,000,000 - $3M/yr for operations - $4M capital cost for connections to PRT Stations and bus stop improvements Primary Travel Modes Improved Auto Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7,8
43	**School Route Improvements**	**Location:** All K-8 schools **Purpose:** To enhance safety and personal health of school children. To reduce automobile trips due to a greater number of children walking and/or biking to school. **Improvements:** Would primarily focus on elementary schools and	Estimated Cost $2,000,000 80% State/Federal 20% Local

		improvements could include: ■ Sidewalk improvements ■ Traffic calming and speed reduction improvements ■ Pedestrian and bicycle crossing improvements ■ On-street bicycle facilities ■ Off-street bicycle and pedestrian facilities ■ Secure bicycle parking facilities ■ Traffic diversion improvements in the vicinity of schools **First implementation action:** Establish SRTS plan by working with safe routes to school committee (see non-capital improvements strategy). The Pedestrian Safety Board's plan can be used as a significant resource since it addresses pedestrian needs in the vicinity of many schools. Apply for Transportation Alternatives (MAP-21) funding. **Key implementation factors:** Prioritization and funding of improvements. Identification of local matching funds (potential 20% match required).	Primary Travel Modes Improved Bike Pedestrian LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 2,4,5,6,8
44	**Access Management Improvements**	**Location:** Region-wide **Purpose:** To improve multimodal safety, capacity, and to improve property values and attractiveness of development areas. **Improvements:** ■ Removal and consolidation of excess access points ■ Improved driveway designs ■ Addition of turn lanes at key locations ■ Medians to restrict turning movements ■ U-turn locations **First implementation action:** Complete Access Management Study (see non-mapped strategies). **Key implementation factors:** Coordination with property owners and stakeholders during the study phase.	Estimated Cost $10,000,000 80% State/Federal 20% Local Primary Travel Modes Improved Auto Bicycle Pedestrian Transit LRTP Goals Directly Supported 1,2,3,5,6 FHWA Planning Factors Supported 2,4,5,6,7,8
45	**Downtown Morgantown Signalization and Street Changes**	**Location:** Morgantown Central Business District (CBD) **Purpose:** To improve multimodal safety, capacity, and the attractiveness of downtown area.	Estimated Cost $2,000,000 80% State/Federal

		Improvements: ■ Improved signal system ■ Improved multimodal traffic flows and circulation ■ Improved multimodal safety ■ Improved streetscape **First implementation action:** Complete ongoing traffic study and selection of preferred improvements. **Key implementation factors:** Coordination with property owners and stakeholders during the study phase.	20% Local Primary Travel Modes Improved Auto Bicycle Pedestrian Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,7,8
46	**TDM Program Expansion**	**Location:** Region-wide **Purpose:** Reduce the total number of automobile trips in the region (goal of 3% reduction in peak hours) through aggressive Transportation Demand Management (TDM) to reduce congestion and the need for costly infrastructure improvements. **Improvements:** ■ Expand the Commuter Choices program as a formal transportation management association (TMA) ■ Form strategic partnership between WVU and Commuter Choices ■ Facilitate access to current transit service, both in terms of geographic proximity and with fare payment incentives, to allow MLTA services to play a greater role in meeting commuter transportation needs ■ Develop land use policies and zoning regulations that offer parking reductions, intensity bonuses, or other development incentives to applicants who commit to funding TDM, transit, or other alternative commuting strategies for a given period of time. ■ Develop educational programs targeted at the commuting population of the Morgantown region that illustrate benefits of TDM **First implementation action:** Identify program funding. Explore taxes or surcharges on public and private parking infrastructure. Levying transportation impact fees on new development to fund multimodal options and services. Explore private and public grants. **Key implementation factors:** Public agency and private entity buy-in and support.	Estimated Cost $10,000,000 10% State/Federal 90% Local Primary Travel Modes Improved Auto Transit LRTP Goals Directly Supported 1,2,3,5,6,7 FHWA Planning Factors Supported 1,2,4,5,6,7,8

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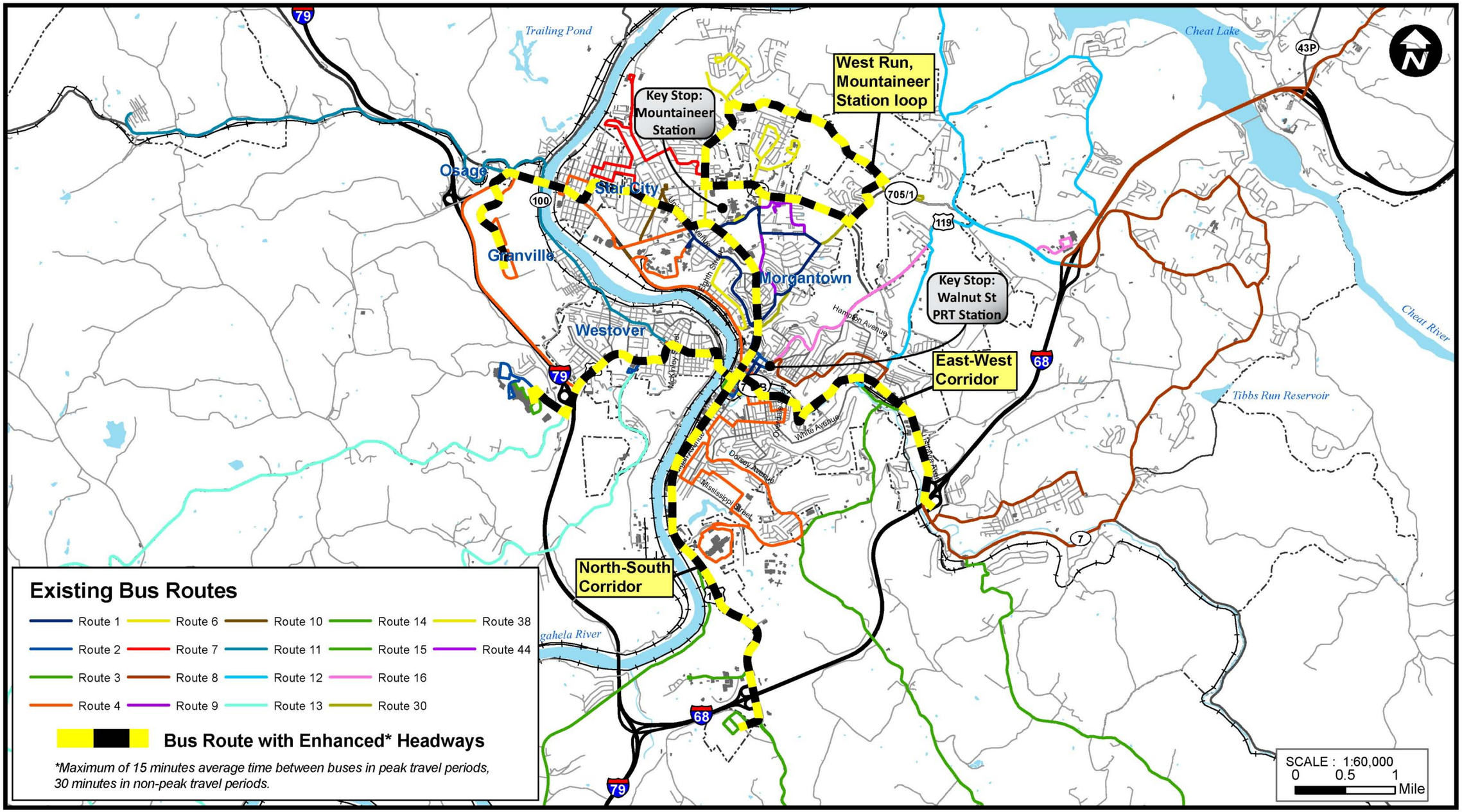
Figure 9-2. Enhanced Bus Service



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9.4 Roadway Network Performance of Fiscally Constrained Plan

The regional Transportation Demand Model (TDM), as described in *Chapter 6 – Transportation Demand Model Development* was used to evaluate the anticipated performance of the LRTP transportation system. Table 9-2 illustrates the forecasted (year 2040) performance of the region's proposed roadway network that includes the LRTP projects. The results show a positive impact due to the proposed Tier 1 projects. Figures 9-2 and 9-3 illustrate the resulting roadway levels of service as was defined in Chapter 4 for existing conditions.

Table 9-2. 2040 Measures of Effectiveness from Transportation Demand Model Analysis

	E+C* Network	LRTP Network	% Reduction
Vehicle Miles Traveled in the Network	4,444,000	4,355,000	-2%
Vehicle Hours Traveled in the Network	828,000	806,000	-3%

*Existing plus committed (see Chapter 6).

It should be noted that the sophistication and sensitivity of the current TDM does not allow for an analysis of the impact of strategies and projects not related to capacity for automobile improvements. For example, the reduction in vehicular traffic due to a more robust pedestrian and bicycle network is not technically included in the analysis.

Included in the model are the impacts of projects 6, 7, 8, 11, 13, 18, and 38. In an effort to approximate an average impact of LRTP Project #6, an additional one lane of capacity in each direction from the proposed new interchange at I-79 (LRTP Project #5) to Monongahela Boulevard at Patteson Boulevard was assumed in the model. The impact of Project #6 will obviously vary greatly depending on the final alignment and number of through lanes in the project.

9.5 Transit Improvement Impacts (Project #42)

Appendix D describes the modeling processes used to evaluate the potential impacts of improving the transit system for Project #42, which is described in Section 9.3 and illustrated in Figure 9-2. The analysis indicates that the implementation of the three proposed bus route enhancements could increase overall Mountain Line Transit Authority (MLTA) ridership by over 20%. Of the three proposed enhanced routes,

the West Run Circulator appears to be the most effective and alone could increase overall MLTA ridership by 10%. See table below for summary of ridership forecasts.

Table 9-3. Ridership Forecasts for Transit Enhancements in Project #42 (Daily Trips)

Vehicle Trip Type	Transit Scenarios								
	No Build – No Additional Transit	East-West Route	Percent Change Compared to No Build	West Run Circulator	Percent Change Compared to No Build	North-South Route	Percent Change Compared to No Build	All Three Routes Combined	Percent Change Compared to No Build
Non-transit Trips	476,518	476,449	-0.01%	476,212	-0.06%	476,285	-0.05%	475,851	-0.14%
Transit Trips	3,042	3,111	2.27%	3,348	10.06%	3,276	7.69%	3,709	21.93%
All Trips	479,560	479,560	0.00%	479,560	0.00%	479,561	0.00%	479,560	0.00%

The analysis also showed that in the 2040 horizon year of the plan, the implementation of the three enhanced bus routes (assuming no other improvements to the system) could reduce vehicle miles traveled (VMT) in the system by 1000 miles per day, and vehicle hours traveled (VHT) in the system by 10,000 hours per day. Using the Internal Revenue Service's (IRS's) current mileage reimbursement rate of $0.56 per mile and $12 per travel hour (lost personal time) as an estimate of user costs the following table illustrates the potential annual benefits of implementing Project #42.

Table 9-4. Estimated User Benefits of Project #42 (in 2013 dollars for 2040 traffic forecasts)

Reduction in vehicle miles traveled per day 1000 miles	Cost per mile $0.56	Daily benefit $560	Annual benefit* $140,000
Reduction in vehicle hours of travel per day 10,000 hours	Cost per hour $12	Daily benefit $12,000	Annual benefit* $3,000,000
		Estimated Total Annual Benefit	**$3,140,000**

*Assumes proposed enhanced service operates approximately 250 days per year.

Table 9-4 does not include additional benefits of reduced vehicle emissions and improved accessibility/quality of life for non-automobile travelers.

Figure 9-3. LRTP 2040 Roadway (Region-view) Levels of Service

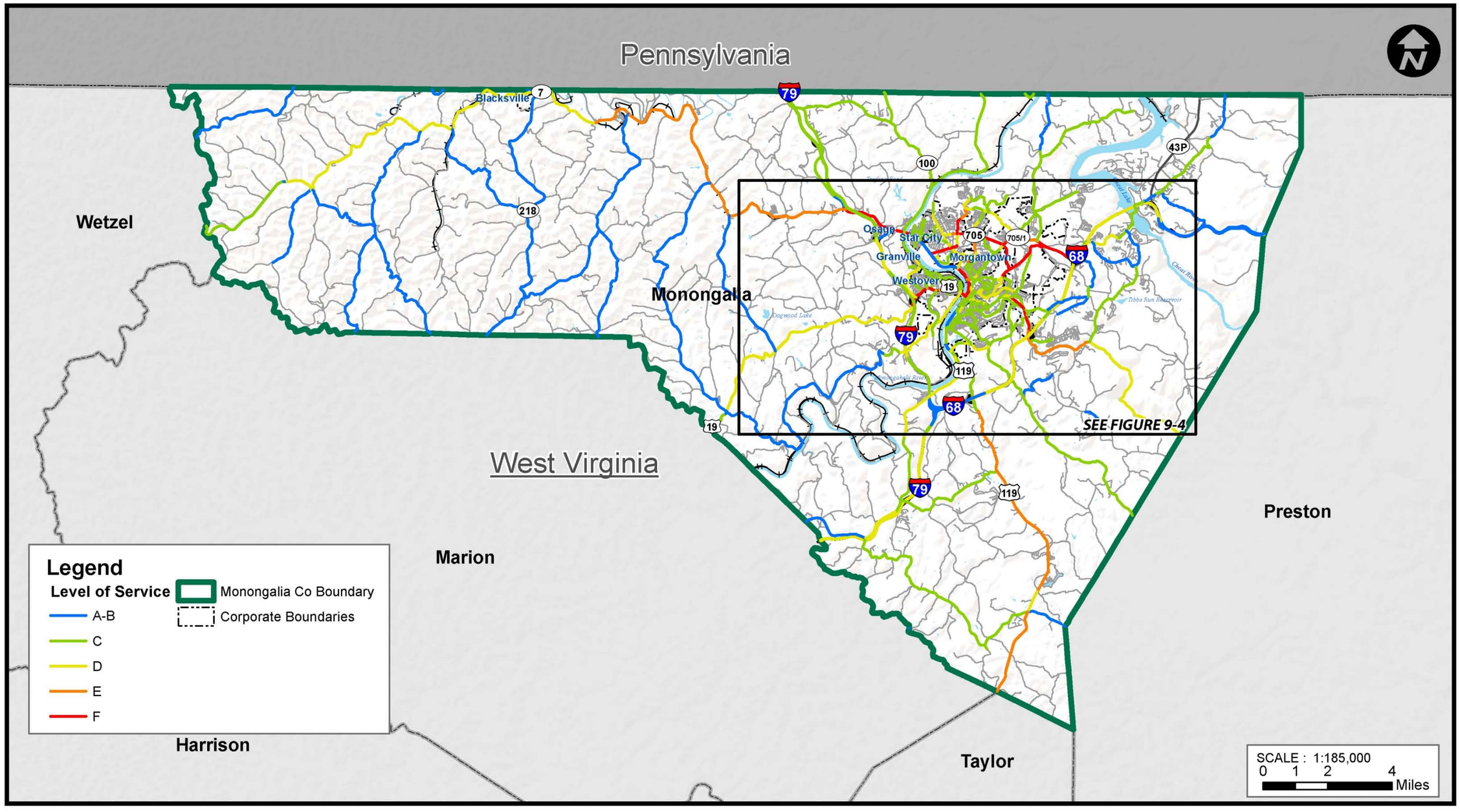
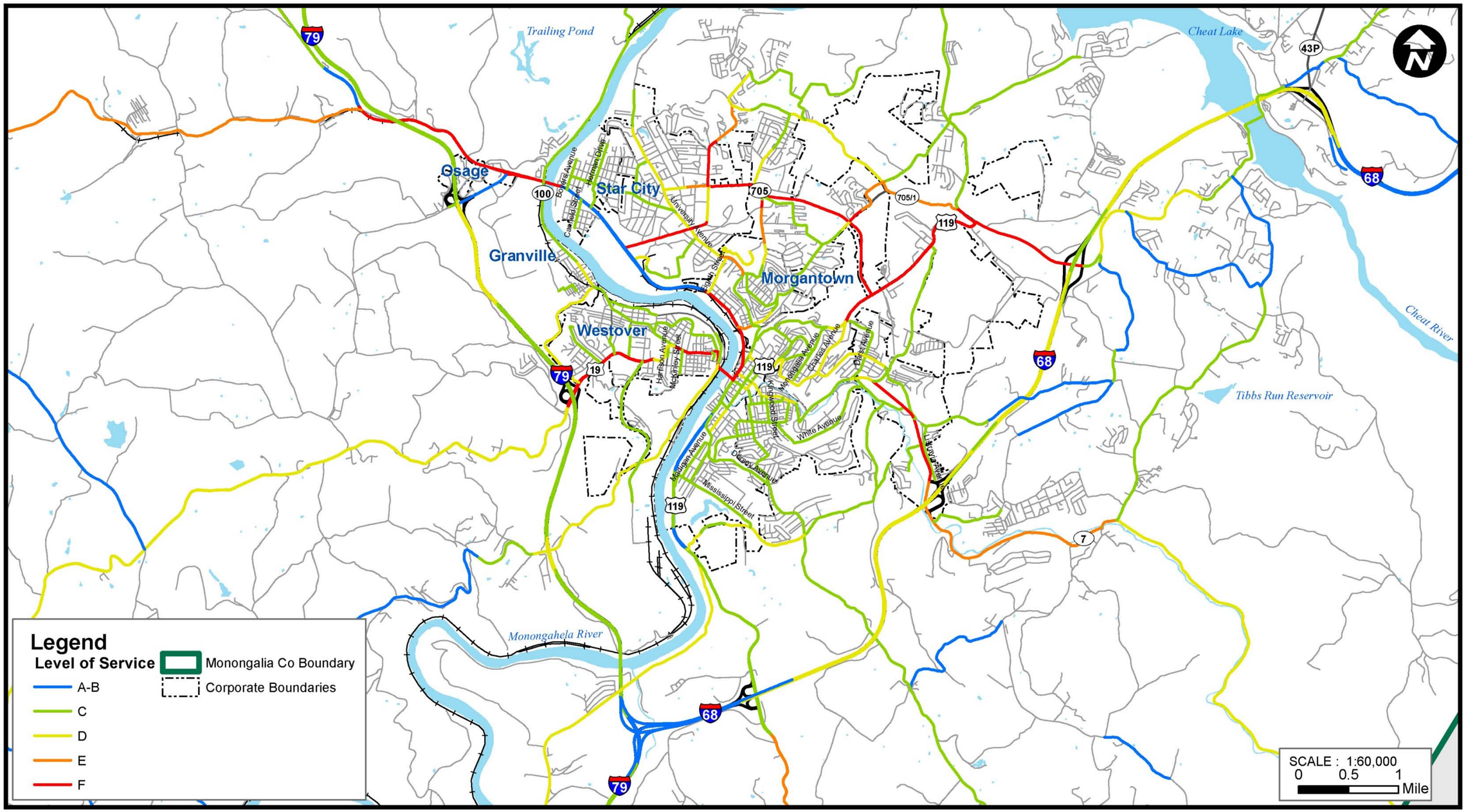


Figure 9-4. LRTP 2040 Roadway (Urban Area Inset) Levels of Service



CHAPTER 10 – SYSTEM MANAGEMENT

10.1 Overview

A requirement of the Long Range Transportation Plan (LRTP) 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, and 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 West Virginia Department of Transportation (WVDOT). Thus, management systems employed by the WVDOT were documented and any management program gaps in the applicable systems were addressed.

10.2 Safety Management

The WVDOT developed a Safety Management System and instituted it into the operations of the West Virginia Division of Highways (WVDOH). 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:

- Inter-agency 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 priorities 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 WVDOH Safety Coordinator to establish a recommended yearly program.

Currently, the WVDOH 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 for all roadways other than some municipal 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.

10.3 Pavement Management

The WVDOT-DOH Pavement Management System (PMS) is operational but is continually being updated and revised. Through the system implementation, pavement condition data was collected on all paved interstate, U.S. highway, WV State highway, and county signed routes in 2008-2009. Data has been collected on some portion of the system each year since, at a minimum, to meet the requirements of the Highway Performance Monitoring System routes (HPMS).

The WVDOH uses the International Roughness Index (IRI), which is a measure of ride comfort, and data on pavement rutting, faulting, and cracking. All data is collected with GPS controls, which allow direct measurement of the roadway and roadside features using the GPS data. The GPS controlled pictures are taken at 0.004 mile (≈21-foot) intervals. The IRI and indexes calculated on IRI, rutting, faulting, and cracking are summarized on 0.1 mile (528 feet) intervals.

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

Other information may be collected with the pavement condition data system such as sign inventory, profile grade, width, offset to signs and obstructions, driveway locations, bridge widths and location, etc. This information is valuable in establishing conditions at the time of the survey and can be used for several functions beyond the pavement management system.

10.4 Bridge Management

There are a total of approximately 6,820 bridges throughout the state, with WVDOT owning approximately 6,700 and cities and counties owning 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

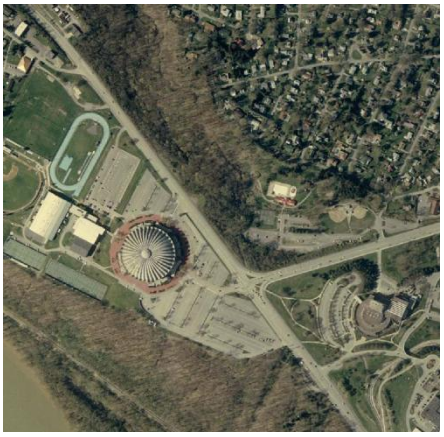
Each of the bridges is inspected every two years (note new bridges may be on a four-year cycle) and based on the condition, an updated estimate is made regarding repairs or renovations. If appropriate, an estimated cost of replacement is provided. As part of the statewide inspection program, the WVDOH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

The bridge condition data collected, in combination with the local District Bridge Engineer's knowledge, are used in reviewing and preparing the bridge portion of the annual WVDOH work program. The candidate projects identified are included in the six-year Statewide Transportation Improvement Program (STIP).

The WVDOH is in the process of adding bridge element level inspection data to the condition data (a requirement of MAP-21). After several years of collecting this data, WVDOH plans to begin to add the use of

sophisticated bridge management software components to the work process to help determine candidate bridges for funding.

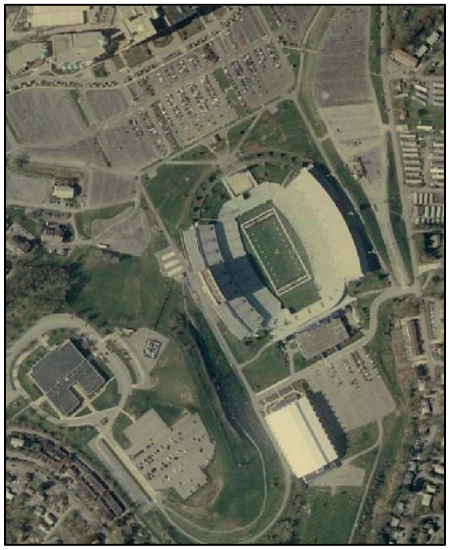
CHAPTER 11 –TRANSPORTATION SYSTEM SECURITY



11.1 Overview

The emphasis on transportation security results from the identification of surface transportation facilities as a common target worldwide. The importance of addressing the transportation system infrastructure's vulnerability to natural and human actions can be attributed to several factors:

- 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 to both deliver a blow impacting a large number of people and as an escape avenue for the terrorist.



These factors make transportation infrastructure a target of choice for those wanting to spread fear to society at large, but they also make transportation infrastructure harder to secure from terrorist actions.

Over the past decade, the focus on improving the security and stability of our nation's transportation infrastructure has intensified. Actions taken to date across the country 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, incident prevention and mitigation strategies are heavily oriented to facility design and retrofitting. These efforts have identified that it is most cost-effective to address 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.

11.2 Strategies

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

- Working with Monongalia Emergency Centralized Communications Agency (MECCA) 9-1-1, West Virginia Department of Transportation (WVDOT), Federal Highway Administration (FHWA), and the U.S. Department of Homeland Security (DHS) 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 Federal Bureau of Investigation (FBI)
  - Agencies within the U.S. 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 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 by asset in the region. Include potential transportation system bottlenecks or choke points.
- 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, involving 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 DHS. 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.

11.3 Intelligent Transportation Systems (ITS) and Homeland Security

Intelligent Transportation Systems (ITS) 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.

CHAPTER 12 - INNOVATIVE FUNDING STRATEGIES

12.1 Overview

The Long Range Transportation Plan (LRTP) Projects List (Table 9-1) includes nearly $700 million in identified transportation project needs in the region. At the same time, the forecast for available state and federal funding (see Chapter 8) is only approximately $136 million for the planning horizon (cost of Tier 1 projects only). This leaves an approximately $564 million funding gap for future needs identified in the LRTP.

Federal regulations allow for use of non-traditional revenues and strategies for closing the gap between the transportation needs and traditional sources of funding. Funds generated through "innovative" or less traditional mechanisms should be pursued to pay for projects beyond those in Tier 1 and/or to supplement traditional sources to either provide local matching funds or to improve the quality of the transportation project (multimodal enhancements, aesthetics, etc.).

While the Morgantown Monongalia Metropolitan Planning Organization (MMMPO) encourages the use of innovative funding strategies to maximize transportation improvements over the horizon of the plan, in the development of the fiscally constrained plan (see Section 9.3), no non-state/federal funding sources have been assumed. This is because no local or other funds have been committed for transportation improvements (at the time the LRTP Tier 1 project list was adopted on December 17, 2012).

It should be noted that not all the strategies discussed in Section 12.3 are allowable under current State laws. The *Local Transportation Funding/Legislative Committee* that is described by Strategy 1 (see Section 9.2) must provide leadership in terms of identifying and championing the pursuit of various innovative funding mechanisms, including working with the State Legislature when necessary.

The MPO will facilitate this process. The MPO is currently working with the West Virginia University (WVU) Law School through their Sustainability Project to develop draft language for the State legislature's consideration that would add local funding options to West Virginia State Code. The committee will need to continue to meet to further define these options and determine the most advantageous and feasible funding options for transportation projects in the region.

12.2 Current Alternative Funding Options

In addition to the funding streams identified in Chapter 8, the following are two funding options that have been used in the past in the region.

Tax Increment Financing

The following description of tax increment financing is taken from excerpts from the document *Property Tax Increment Financing in West Virginia, A Guide for Counties and Class I and II Municipalities*, published by the West Virginia Development Office.

> *Tax increment financing captures the projected increase in property tax revenue gained by developing a discrete geographic area and uses that increase to assist in paying for the project. This funding makes it possible to go forward with projects that otherwise would not be built.*
>
> *Tax increment financing can be used by West Virginia counties and class I and II municipalities to help fund their own development projects or projects brought to them by private developers or other private or government entities. Class III and IV municipalities must work with their local county commissions in order to utilize tax increment financing. (Class I municipalities have more than 50,000 people. Class II municipalities have more than 10,000 and up to 50,000 people. Class III municipalities have more than 2,000 and up to 10,000 people. Class IV municipalities have less than 2,000 people.)*
>
> *There are two ways to fund projects using tax increment financing: (1) Pay-as-you-go method; and (2) Issuing tax increment financing bonds or notes.*
>
> *(1) **Pay-as-you-go**. In some cases, the county or municipality may be able to use the tax increment to pay for projects as they are constructed. Possible projects that might use the pay-as-you-go method are the installation of streetscapes or other small improvements. In all cases, the county or municipality (in conjunction with any outside developer) will need to submit a project proposal to the State Development Office; however, no tax increment financing obligations will be issued (see below) to finance the construction.*

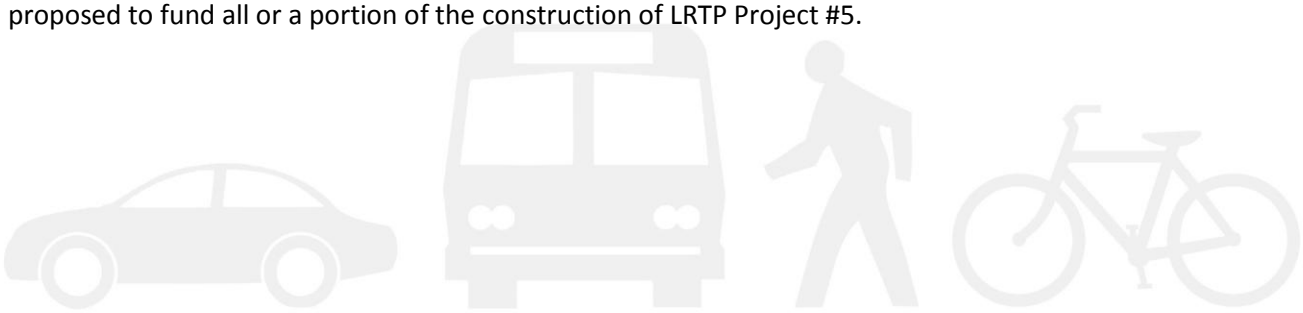
*(2) **Issuing Tax Increment Financing Bonds or Notes**. In other cases, there may be substantial up-front development costs and the county or municipality will need to issue tax increment financing bonds or notes in order to use the increment to help finance the project. These obligations will provide money up front to pay for a portion or all of the project's costs. The obligations will then be paid back by the tax increment over a period of up to thirty (30) years.*

Projects must be located within a development or redevelopment project area or district. That area may already be in existence or may be established in conjunction with the approval of the development or redevelopment project that is funded in whole or part with tax increment financing. The project area or district in which the project is located must be directly and substantively benefited by the proposed project plan.

Tax increment financing is reserved for use with projects that, "but for" the existence of tax increment financing, would otherwise not be built. Eligible projects may be proposed by a county or municipality, by a private developer, or by another government or private entity (including local economic development authorities). However, each project must be approved by a county commission or the governing body of a class I or II municipality in order to be eligible for tax increment financing.

In order to be eligible for tax increment financing, a project must also promote the economic development of the project area or district by eliminating a blighted area, preventing the deterioration of an area into a blighted area, increasing employment, and/or encouraging the location of commercial or industrial activity and jobs in West Virginia.

All tax increment financing plans must be approved by the West Virginia Development Office. There also is an option to do sales tax (versus real estate tax) increment financing. For the sales tax option, State legislature must approve the proposed tax district and financing plan. A combined real estate and sales tax increment financing plan is proposed to fund all or a portion of the construction of LRTP Project #5.



Developer Contributions

While there is no formal policy for impact fees in Monongalia County, the County and the City of Morgantown have been successful at times in working with developers to obtain voluntary participation in transportation infrastructure projects. These include partial or full payment of traffic signal costs, turn lane costs, right-of-way dedication in lieu of cash payments, etc.

12.3 Potential Innovative Funding Mechanisms

The following list of potential funding sources was generated through discussions with a committee of local leaders, stakeholders, and funding experts.

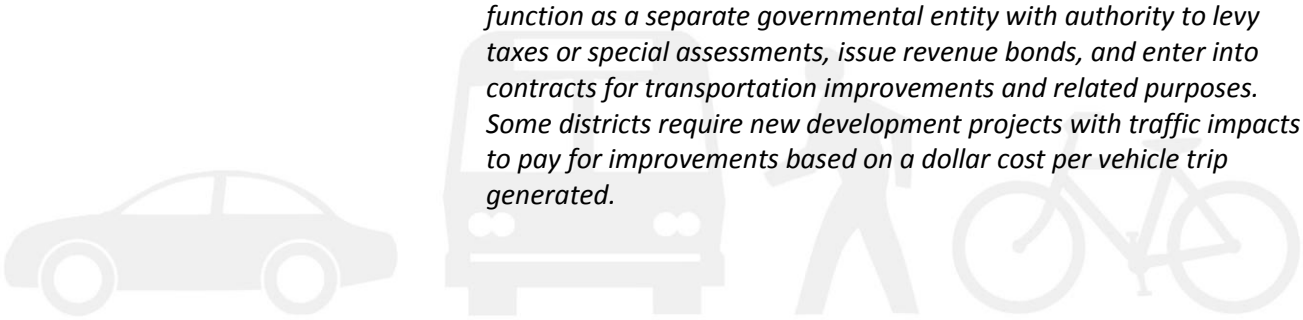
Student Impact Fee

A fee would be added to WVU student fees (or an increase in the current fee) designated for transportation services and/or improvements.

Transportation Improvement District

As defined in the document *Alternative Funding Strategies for Improving Transportation Facilities*, prepared by the Center for Urban Transportation Research for the North Carolina Department of Transportation (2006):

> *A transportation improvement district (TID) is a special funding district for improving transportation infrastructure and services in a specific area. Known in some states as transportation development districts (TDD), they provide a forum for achieving cooperation among local governments and other governmental agencies on a common purpose of improving the transportation system in a designated area.*
>
> *State law varies as to their nature and authority, but generally they function as a separate governmental entity with authority to levy taxes or special assessments, issue revenue bonds, and enter into contracts for transportation improvements and related purposes. Some districts require new development projects with traffic impacts to pay for improvements based on a dollar cost per vehicle trip generated.*



A local government body, typically a county commission, acts as the lead entity informing the district. The district must also have a development plan that is consistent with adopted land use and development plans. Zoning and build-out projections by each municipality form the basis for the infrastructure improvements required for the district.

Income Tax

This option would increase local income taxes by a certain percentage, which would be designated for transportation improvements or a broader array of municipal infrastructure improvements. 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.

Excess Property Tax

This would be a tax on real estate property above the maximum levels allowed by state law. The voters of each taxing authority must approve any excess levy of tax proposed for their municipality, school board or county. This type of funding source can be used for any tax payer approved use including transit operating expenses.

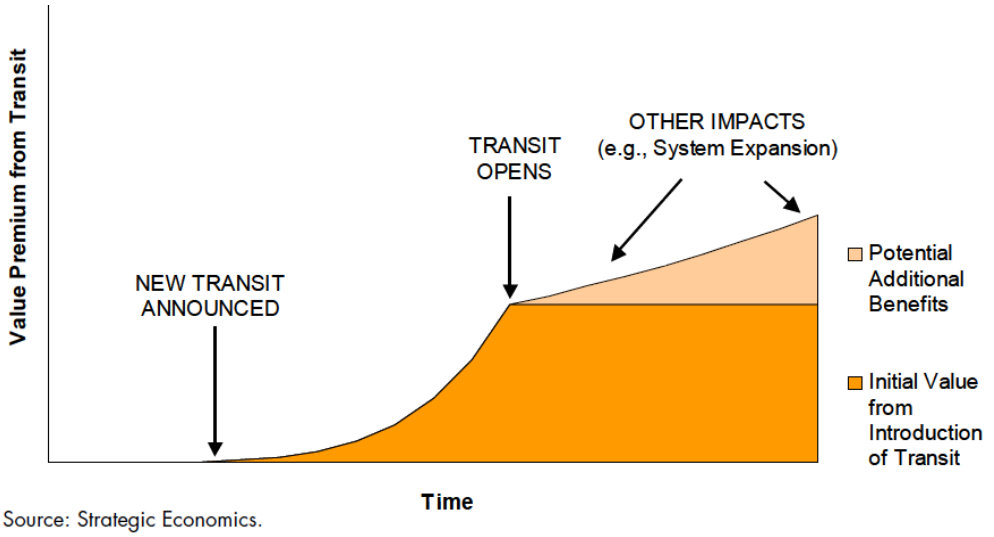
Permit Parking Districts

This would designate certain areas in local municipalities where public parking would require a permit. Permit fees would then be designated for transportation improvement purposes only.

Transit-Oriented Development

Transit-Oriented Development refers to new development and redevelopment that is centered upon and driven by access to transit facilities. The opportunity to generate funding to operate and improve the transit system comes from capturing the increase in property values that result from the new or improved transit services in an area or a corridor, as illustrated in the following graphic.

Hypothetical Transit Value Curve



Source: Strategic Economics.

A document entitled *Capturing the Value of Transit,* prepared by the Center for Transit-Oriented Development for the Federal Transit Administration (2008) points out the following strategies for capturing the value of transit:

Special Assessment – a tax assessed against parcels that have been identified as receiving a direct and unique benefit as a result of a public project.

Tax Increment Financing – a mechanism that allows the public sector to capture growth in property tax (or sometimes sales tax) resulting from new development and increasing property values.

Joint Development – generally, cooperation between the public and private sectors to deliver transit-oriented development (TOD), usually involving development on transit agency owned land.

Developer/Impact Fee- a fee assessed on new development within a jurisdiction as a means to defray the cost to the jurisdiction of expanding and extending public services to the development.

Local Option Vehicle Registration Tax

This additional tax can be instituted either by the Board of County Commissioners, or as the result of a referendum by the voters and would be collected for each registered vehicle in the Monongalia County.

TIGER Grants

Transportation Investment Generating Economic Recovery (TIGER) is a federal discretionary grant program included in the American Recovery and Reinvestment Act of 2009. The program awarded nearly $500 million in its fourth round of awards (for fiscal year 2013) in June of 2012.

Per the United States Department of Transportation (USDOT), these funds are awarded on a competitive basis for projects that will have a significant impact on the nation, a metropolitan area or a region. Additionally, the awards ensure an equitable geographic distribution of funds, an appropriate balance in addressing the needs of urban and rural areas, and the investment in a variety of transportation modes. The USDOT emphasizes that the most competitive projects are those with the following characteristics:

- Multimodal projects, with coordinated investment from other sources and programs
- Demonstrate project benefits across selection criteria
- New partnerships, multi-jurisdictional cooperation
- Public-private partnerships
- Support key national priorities
- Non-traditional or hard to fund projects

Many of the future needs identified in the LRTP fit these characteristics, so this program should be taken advantage of to the greatest extent possible. However, the future of the program is not clear given recent cuts in federal funding.

Sales Tax

If approved by local ordinance or referendum by the voters, an additional countywide or transportation district-wide sales tax could be designated for funding transportation system maintenance, expansion, and operations programs.

Wage Taxes

State law allows Monongalia County, through a referendum vote of the electorate, to levy a fee/tax dedicated to municipal infrastructure improvements based on employee head count. The county would have the capabilities to identify 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.

A referendum of this type was attempted in Monongalia County a few years ago and failed. In order to potentially pass such a referendum, a significant level of public education, a well-crafted campaign, and support from local politicians and community leaders would likely be needed. Leadership from the proposed *Local Transportation Funding/ Legislative Committee* would be important.

Tolling

A county may propose a toll facility on a new location. The availability of funding must be documented in an investment-grade traffic and revenue study and be cooperatively proposed with the State.

Local Option Fuel Tax

This would be a per gallon fuel tax levied by the county, established by referendum or County Commission Ordinance.

Impact Fees

Many communities across the country have passed local laws to require commercial, industrial, and residential developers to pay for improvements needed due to the impact that development will have on the local infrastructure in terms of roadway safety and capacity.

The issue of transportation impact fees is always 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.

West Virginia law permits counties, 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 as the construction or improvement of water, sewer, and stormwater infrastructure, roads, parks and recreational facilities, public schools, and public safety facilities.

To qualify to impose impact fees a county must meet several requirements 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 is the only West Virginia county that has met these requirements.

CHAPTER 13 – ENVIRONMENTAL JUSTICE ANALYSIS

13.1 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 Metropolitan Planning Organizations (MPOs) to produce analyses that ensure their Long Range Transportation Plan (LRTP) 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 Morgantown Monongalia MPO (MMMPO) 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 LRTP recommended projects overlaid on the communities of minority and low-income populations.

Environmental justice populations were identified in Monongalia County through review of 2010 Census block group data. Block group level data offers the most detailed (i.e., smallest Census geography) level of income data. There are 100 Census block groups in Monongalia County.

The most recent American Community Survey (ACS) 5-Year Estimate (2007-2011) data was 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. It is 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 **either**:
  - A higher percentage of households in poverty than the county average of 21.0 percent.
  - A higher percentage of minority residents than the county average of 10.2 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 21.0 percent.

- A population that has the same or a lower percentage of minority residents than the county average of 10.2 percent.

Figure 13-1 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 Tier 1 improvement projects were overlaid with the EJ data. Overlaying projects on the EJ data allows comparison of the relative level of transportation investment by EJ and non-EJ population.

The locations of recommended Tier 1 projects (as documented in Chapter 9 – Projects and Strategies) 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 is 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.

This analysis documents the level of planned transportation investment in the area's EJ and non-EJ communities. An investment in a community may be either beneficial to or negatively impact that community. For example bus service to a community can be a transportation benefit to the community while the fumes from the bus may be viewed as being a negative. Similarly building a new road may be viewed as a positive investment in the community's infrastructure while at the same time the impact to the neighborhood housing stock or pedestrian connectivity is a negative impact.

Figure 13-2 documents the block groups, their relative EJ status and the improvements included in the Tier 1 (fundable elements) of the recommended plan. The EJ assessment only included the Tier 1 projects in the evaluation. In the EJ assessment spatial analysis, each project was assigned an EJ status such that it was either:

- Located within an EJ defined block groups (EJ project).
- Located outside an EJ defined groups (non-EJ project).
- Located partially inside and outside an EJ defined group.

Analysis Results

Table 13-1 provides a summary of each identified improvement project, its EJ status, and its associated cost estimate. Table 13-2 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. Due to the fact that four of the approved Tier 1 projects were region-wide based, and did not have a defined geography. Those investments were separated out in the table. The percentage of transportation investment within and outside the EJ block groups was then calculated. Based upon those percentages, the region-wide investments were added back into the LRTP fundable total.

Table 13-1. LRTP Tier 1 Projects – EJ Status and Cost

Project #	Project / Corridor	Planning Level Cost Estimate
6	New Bridge over Monongahela River and Roadway Connection to I-79	$45,000,000
7	Van Voorhis Road Improvements	$10,000,000
8	Beechurst Avenue Improvements	$7,000,000
13	West Run Road Improvements - Eastern Section (Scenario 2)	$3,000,000
26	North Side Connector Bus Rapid Transit	$1,000,000
28	White Park / Caperton Trail Connection	$50,000
	Within EJ Defined Block Groups Subtotal	**$66,050,000**
11	West Run Improvements - Western Section	$12,000,000
	Outside EJ Defined Block Groups Subtotal	**$12,000,000**
18	Greenbag Road Improvements	$15,000,000
27	Grant Avenue Bicycle / Pedestrian Connector	$900,000
38	Intersection Capacity and Safety Improvement Program	$31,000,000
	Partially within EJ Defined Block Groups Subtotal	**$46,900,000**
2	Americans with Disabilities Act (ADA) Connectivity Initiative*	$2,000,000
40	Regional Bikeway Plan Implementation Program*	$5,000,000
43	School Route Improvements (K-8)*	$2,000,000
45	Downtown Morgantown Signalization and Street Changes*	$2,000,000
	Region-Wide Undefined Subtotal	**$11,000,000**
	LRTP Fiscally Constrained Total	**$135,950,000**
*Note: Project list includes projects defined as Region-wide.		

Project Level Analysis – Project level analysis of the LRTP's Tier 1 projects was divided into two types of projects - operational enhancement of existing facilities and transit improvements and the construction of new facilities in new locations.

Operational Enhancements to Existing Facilities, Transit, and Non-Motorized Improvements – The vast majority of the LRTP's projects are operational improvements to existing facilities through spot improvements or improved transit service. The current condition of many of the streets on this list may be viewed as having a negative impact on the EJ communities because of unsafe, congested, and narrow travel lanes and the lack of safe pedestrian facilities. These unsafe facilities may be seen as dividing the communities where they are located. The MMMPO's adoption of a Complete Streets Policy and the emphasis of this plan on increased pedestrian and cyclist accessibility, if implemented, should mitigate the potential negative impacts of improved motorized vehicle operations in these areas and ultimately show a much greater positive benefit to the communities in which they are located.

The proposed transit and non-motorized improvements in the area are designed to primarily serve EJ communities which are currently served but provided with less service than there is demand for, as documented in Chapter 4. It is not expected that the proposed increased transit service would materially affect the adjacent communities. All projects in Tier 1 specifically include provisions for transit and/or non-motorized improvements.

Construction of Roadway on New Location – The LRTP only proposed one major facility in a new location, which is construction of a new bridge over the Monongahela River and a roadway connection to I-79 (Project #6). As noted in this analysis, the proposed facility would occur within Census blocks and significant EJ communities. The final location of the proposed facility has not been determined and therefore no conclusion may be drawn about the ultimate impact of the facility on the EJ population. However, any environmental studies undertaken to implement this project will need to consider the potential EJ implications of the project.

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Figure 13-1. Census Block Groups by Environmental Justice Status

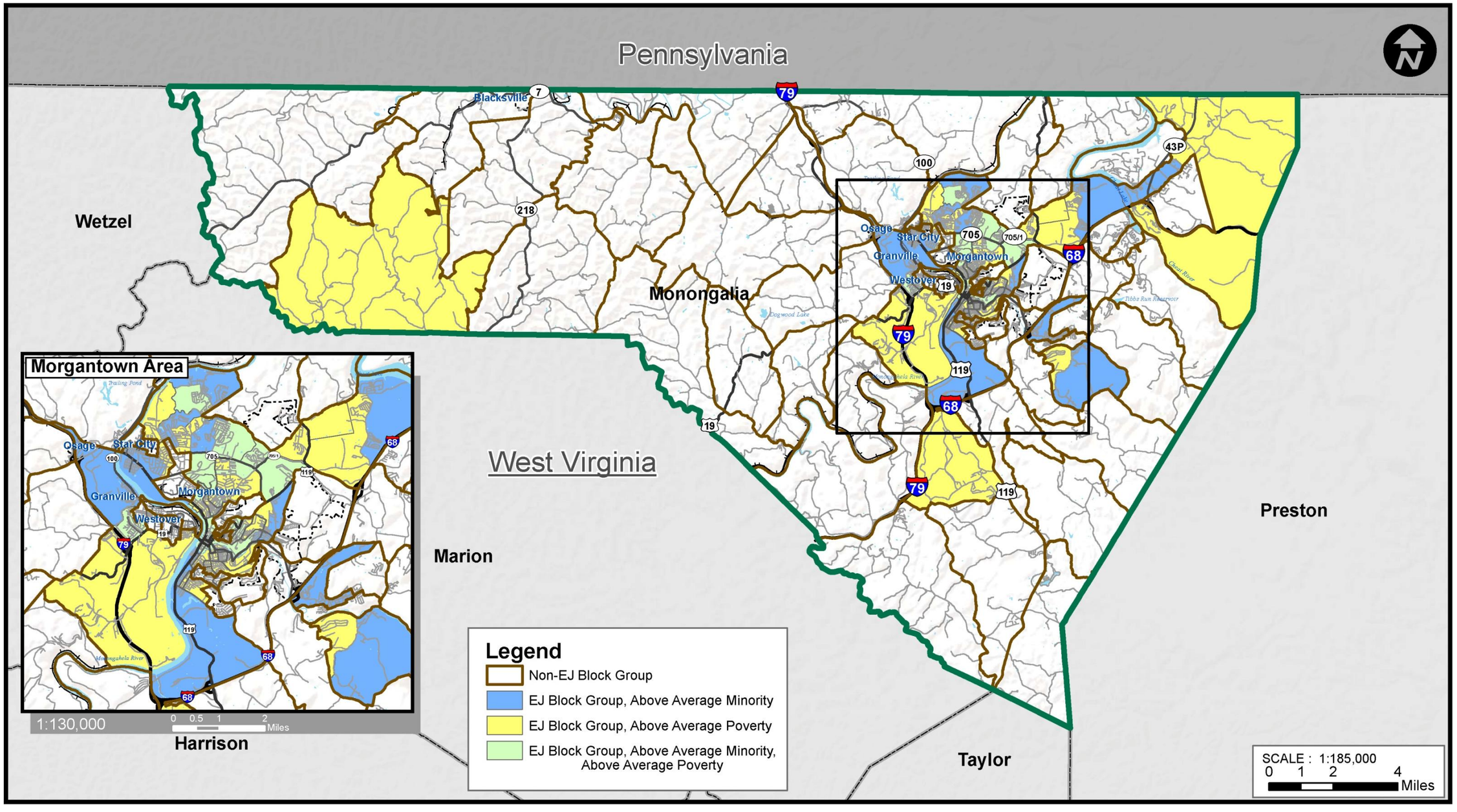

Figure 13-2. Recommended Improvement Projects Overlaid on Environmental Justice Status

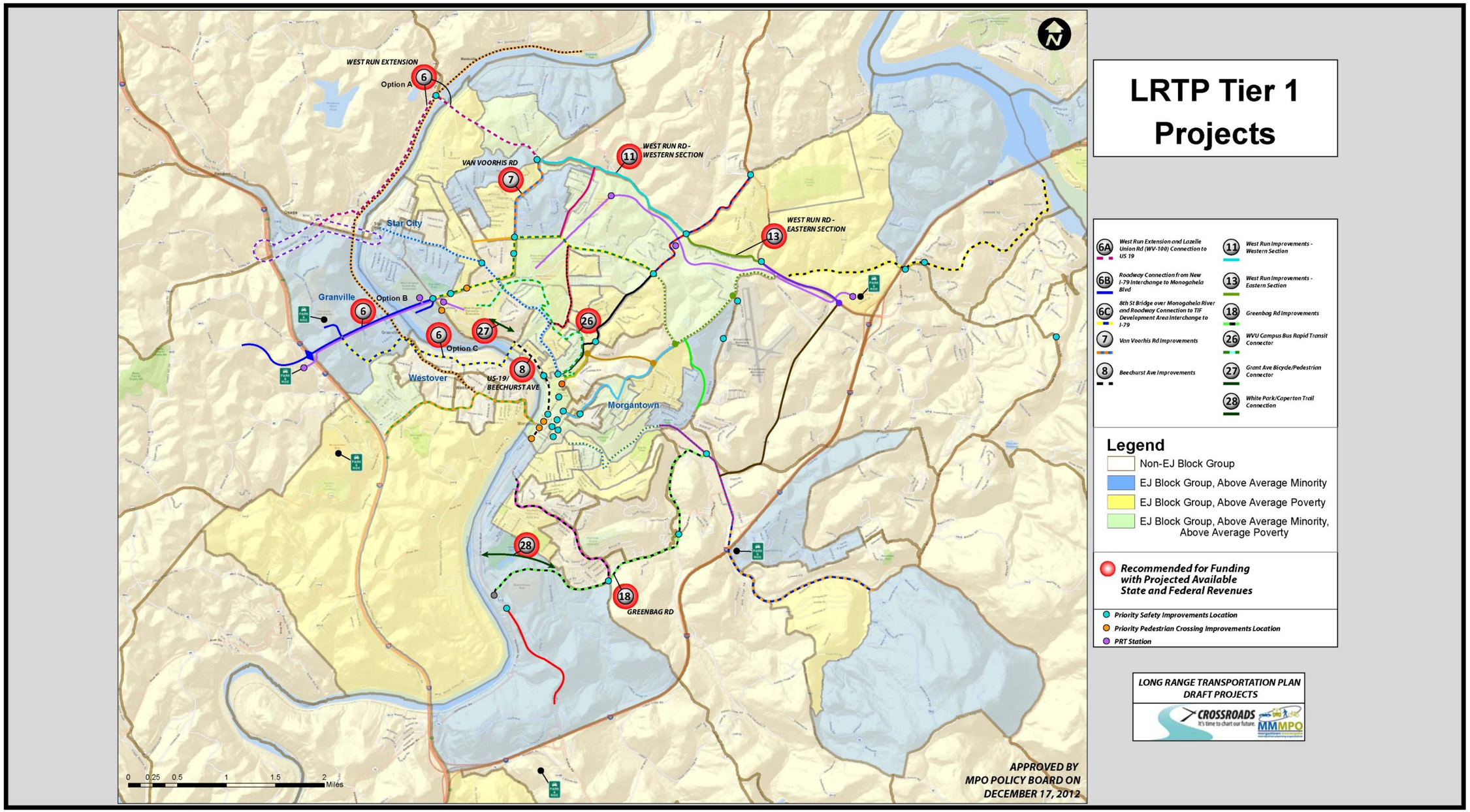

Table 13-2. Planned Transportation Investments in EJ/non-EJ Block Groups

Variables	Within EJ-Defined Block Groups	Outside EJ-Defined Block Groups	Monongalia County Total
Population	49,361	46,828	96,189
Percent of Population	51%	49%	100%
Total Improvement Project Cost Estimates	$105,593,817.53	$30,356,182.47	$135,950,000
Percent of Total Costs	78%	22%	

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 Table 13-2, the identified EJ communities have higher levels of direct transportation investments than non-EJ communities.

Summary

Overall there is low potential for discrimination against low-income and minority populations in relation to the recommended LRTP projects. The identified low-income and minority populations in the Morgantown MMMPO study area would experience higher levels of transportation investments with the Long-Range Transportation Plan list of recommended improvement projects.

There is the potential for disproportionate adverse impacts to the EJ population in the vicinity of the proposed Monongahela River crossing alternatives. However, the environmental studies to be conducted prior to the implementation of this project should be able to successfully identify avoidance or mitigation strategies to prevent a disproportionate impact on these communities.