TRANSPORTATION PLAN FOR 2045

BELMONT OHIO AND MARSHALL COUNTIES

JUNE 2021

Belmont-Ohio-Marshall Counties
Transportation Plan for 2045

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This Long Range Transportation Plan is prepared by Belomar Regional Council in cooperation with the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), West Virginia Department of Transportation (WVDOT), West Virginia Division of Public Transit (WVDPT), Ohio Department of Transportation (ODOT), local jurisdictions and other stakeholders. It is required by the Fixing America's Surface Transportation Act (FAST Act). It is jointly funded by FHWA, FTA, WVDOT, ODOT and Belomar Regional Council.

CHAPTER 1

INTRODUCTION

The purpose of the long range transportation plan for the Wheeling-Bridgeport Metropolitan Planning area is to sustain and promote economic development while providing safe and efficient movement of people and freight in, out and through the region. For this plan, the study area includes Belmont County in Ohio, and Ohio and Marshall Counties in West Virginia.

It is a multi-modal plan with emphasis on the mobility of all people. It addresses highway, transit, active transportation and freight movements. Freight includes truck, water, railroad, air and pipeline freight. Truck and water freight volume is expected to increase substantially due to the expected construction of a "cracker" plant in Belmont County. In anticipation, a transloading company has added warehouse space and is adding capability for rail-truck and water-rail transloading. Railroads, until recently, were used to haul coal. Most railroads were abandoned and have been converted to multi-use trails. These trails have grown in popularity. There is also interest in expanding operations at the Wheeling-Ohio County Airport.

The plan also addresses the new technologies that may be implemented during the life of this plan and the need for considering infrastructure improvements that may be needed, along with policy change for the rollout of new technology-based modes of transportation.

The plan addresses transportation performance management. Throughout this plan, performance measures, targets and target achievement are included as appropriate and a separate section is included to present performance measures, targets and achievement comprehensively.

In developing this plan, consideration is given to the population and economic trends; travel characteristics, economic development, land use characteristics, existing and future roadway level of service, funds available for the preservation of existing system and need for future improvement, and freight movement in, out and through the region. In developing this plan, opportunities were provided to all stakeholders for providing input for this plan and to review and comment on the different phases of plan. Input was solicited from the early stages of the plan development and there were several opportunities to provide input and comments during the development process.

Two surveys were conducted. The first survey involved local elected and appointed officials and the information regarding future growth and loss in jobs and housing in their jurisdiction was solicited. They were also asked to identify transportation projects and issues. The second survey was a needs and priority survey, this online survey was open to everyone. Only a few communities in the region have developed comprehensive plans. These were also considered and incorporated in the development of this plan.

The first long range transportation plan for the area was completed in 1975. Since then plans have been updated as required. Fixing America's Surface Transportation Act (FAST Act) requires plans be updated every five years and have a minimum target of 20 years. Prior to this update, plans were updated every four years to address air quality conformity requirements. For this plan, a qualitative conformity determination is done.

ODOT has recently completed Access Ohio 2045, a statewide long range plan. WVDOT is in the process of completing a 2050 Multi-Modal Long Range Plan. The information from both plans was reviewed and where applicable, used in the preparation of this plan.

As per the FAST Act, this plan is required to be fiscally constrained. Both state agencies analyzed historical data in developing future revenue projections and establishing financial constraint values for this plan. In looking at the funds needed to address local needs and the values provided, it is clear that a lack of sufficient funding would be experienced through the life of this plan. Should additional funding become available at a later date; this plan will be amended to advance unfunded projects.

This plan is prepared in consultation and cooperation with the WVDOT, ODOT, FHWA, FTA, and local jurisdictions. It is guided by the input from the stakeholders and the resource advisory group consisting of other federal, state and local agencies. The plan ensures that there is no disparate impact on identified environmental justice target areas and that minorities and economically disadvantaged populations have adequate opportunity to provide input in this plan.

CHAPTER 2

REGIONAL GOALS AND OBJECTIVES

Transportation Infrastructure is critical for economic development, our well being and wealth generation. Under Section 1203 of the Moving Ahead for Progress in the 21st Century (MAP-21) as amended by the Fixing America's Surface Transportation Act (FAST ACT), Congress established goals in seven key areas to address problems facing the transportation system. The seven national goals are:

- Safety
- Infrastructure Conditions
- Congestion Reduction
- System Reliability
- Freight Movement and Economic Vitality
- Environmental Sustainability
- Reduced Project Delivery Delays

To address statutory requirements associated with goal attainment, FHWA and FTA, through several rulemakings, established requirements for performance management. Transportation performance management is defined by the FHWA as a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals. Throughout this document discussion on performance measures and targets is included as needed.

Performance measures and targets have been prepared in support of seven national goals. The performance measures were identified by the FHWA/FTA and statewide targets were prepared by ODOT and WVDOT. Belomar opted to approve and support statewide targets. Performance measures were identified by three separate final rules and are referred to as PM1 (Safety), PM2 (Pavement and Bridge Condition) and PM3 (Congestion and CMAQ). Transit providers and states have also prepared state of good repair (SGR) and safety targets. In addition, transit providers have prepared Transit Asset Management Plans.

Recently, ODOT completed an Access Ohio 2045 plan consistent with federal regulations and national goals. WVDOT is in the process of preparing a Long Range Transportation Plan (LRTP) for the year 2050. Both plans have statewide goals that are consistent with the national goals. The Statewide goals are as follows:

Access Ohio 2045 Goals	*West Virginia 2050 LRTP Goals*
Safety (A045-1)* Preservation (A045-2)* Efficiency & Reliability (A045-3)* Mobility & Accessibility (A045-4)* Economic Competitiveness (A045-5)* Quality of Life (A045-6)* Environmental Stewardship (A045-7)*	System Condition, Efficiency & Fiscal Sustainability (WV50-1)* Safety & Security for all Users (WV50-2)* Economic Vitality & Freight Movement (WV50-3)* Multimodal Mobility, Reliability & Accessibility (WV50-4)* Livable & Healthy Communities (WV50-5)*

*Added for association with regional goals.

The regional plan is updated every five years. The update after the availability of the decennial census data is a major update as the Travel Demand Model (TDM) is recalibrated with the new census data and available traffic counts. The 2020 census data will not be available at the block level geography for a few years after the census. The regional goals and objectives are adopted at the time TDM is recalibrated. For this update, the adopted goals and objectives are revisited for compatibility with the recent statewide goals of West Virginia and Ohio. The regional goals are consistent with national and statewide goals.

Regional Goals and Objectives

Goal: Promote efficiency of operation and emphasize preservation of existing transportation system.

Statewide Goal Association: A045-2, A045-3, WV50-1

Objectives:	***Performance Measures:***
• Improve traffic flow by operational improvements such as optimizing signal timings, channelization, spot improvements, and Intelligent Transportation Systems.	Establish benchmark travel times in key corridors. (PM3) Establish travel time targets. (PM3)

• Facilitate maintenance strategies and schedules that are based on service life and degree of deterioration e.g. State Pavement Management Systems' based repairs.	Cooperatively work with WVDOT and ODOT to establish targets for the pavement condition and bridge condition improvements. (PM2) Support the programming of projects that will facilitate attainment of statewide targets. (PM1, PM2, PM3) Identify tools and techniques that will help the local governments in developing pavement condition based maintenance programs. (PM2)
• Measure system's performance based on Level of Service (LOS) criteria and strive to maintain an acceptable LOS	Determine LOS of key corridors. (PM3) Identify improvements for key locations with LOS E or worse. (PM3)
• Promote transit and facilitate a planned fleet replacement schedule.	Work with the transit provider to establish targets for the state of good repair. (SGR)
• Preserve and enhance transit facilities and non-motorized facilities such as multi-use trails.	Work with the transit providers to establish acceptable benchmarks for the condition of assets and facilities. (SGR) Work with the local jurisdictions to establish acceptable benchmark for the condition of multi-use trails. (PM1, PM3)

Goal: Increase Safety

Statewide Goal Association: A045-1, WV50-2

Objectives:	***Performance Measures:***
• Obtain and analyze accident data.	Cooperatively work with WVDOT and ODOT to develop targets for reducing crash frequency, serious injuries and fatalities; reducing injury crashes and fatal crashes per vehicle mile traveled. (PM1)
• Participate in the identification of high hazard locations.	Work cooperatively with the states in attaining safety targets. (PM1)
• Facilitate the development of projects that enhance the safety of people and goods movement.	Support safety projects designed to achieve targets. (PM1)

Goal: Increase Accessibility and Mobility Options

Statewide Goal Association: A045-4, WV50-4

Objectives:	***Performance Measures:***
• Improve the mobility of those traditionally under served by existing transportation systems.	Conduct accessibility study of transit for identifying access gaps. (TAM)
• Maintain, enhance, and expand transit service.	Identify revenue shortfall, funding sources and options for transit improvement. (TAM, SGR)
• Optimize service delivery by promoting coordination among providers.	Work with the fixed route and on-demand transit providers to plan for a coordinated approach to optimize service delivery. (TAM)
• Study accessibility of freight terminals and major generators in the area.	Review accessibility of major generators and freight terminals. (PM3)
• Review the functional class system.	If needed, revise functional class to address any identified access issue or freight movement issue. (PM3)
• Maintain, enhance and expand existing multi-use trails with emphasis on developing interconnected network of trails.	Conduct accessibility study for multi-use trails for equitable access and access points. (PM1)

Goal: Enhance Intermodal Connectivity and Integration

Statewide Goal Association: A045-3, WV50-3

Objectives:	***Performance Measures:***
• Ensure viability and maintenance of existing intermodal facility.	Support maintenance schedules and projects for the intermodal facility. (TAM, SGR)
• Improve intermodal transfers where needed.	Review access to intermodal transfer locations for waterborne freight. (TAM, PM3) Identify and address issues regarding on-time freight delivery. (PM3)

Goal: Enhance Intermodal Connectivity and Integration

Statewide Goal Association: A045-3, WV50-3

• Facilitate the development of an integrated multi-modal transportation system.	Support projects that integrate multi-modal system. (PM3, TAM) Support an interconnected multi-use trails system. (PM1)

Goal: Support Economic Vitality by Enabling Competitiveness, Productivity and Efficiency

Statewide Goal Association: A045-5, WV50-3

Objectives:	***Performance Measures:***
• Identify the existing and future development areas and address transportation needs.	Support and facilitate the preparation of Land Use plans that identify current and proposed land use activity. (PM3)
• Develop transportation projects that enhance existing developments and promote future growth.	Support planned access to committed economic development sites. (PM1, PM3) Support access management projects. (PM3)
• Optimize the use of existing networks to accommodate both existing and new developments.	Support center turn lanes where needed. Support projects designed to improve access and traffic flow. (PM3)
• Improve travel time to major activity centers.	Establish benchmark travel times in key corridors. (PM3) Identify improvements needed. (PM3)
• Identify projects that facilitate efficient freight movement to, from and through the area.	Identify alternatives to address freight shippers' concern. (PM3)

Goal: Protect and Enhance the Environment

Statewide Goal Association: A045-7, WV50-5

Objectives:	***Performance Measures:***
• Identify ways to improve air quality.	Cooperatively work with the state agency to ensure that the area is meeting the National Ambient Air Quality Standards (NAAQS). (PM3)
• Develop strategies to reduce emissions.	Support statewide strategies to reduce emissions. (PM3) Identify and improve Park and Ride locations. (PM3)
• Ensure equity in the benefits of transportation system.	Conduct project analysis to ensure equity and no disproportionate adverse effect on any one area or one population group.
• Protect recreational and other environmentally sensitive areas.	Support statewide initiatives to protect the environment from the adverse effects of shale drilling. (PM3) Cooperate with the state agencies in timely determination of adverse effects of transportation projects and plans. (PM3)
• Promote consistency of transportation improvements with state and local plans.	Ensure that regional goals are consistent with the state and local goals. Consider local economic and comprehensive plans in the development of long range transportation plan. Select projects that are consistent with the state and local plans. (PM1, PM2, PM3)

Goal: Support Security

Statewide Goal Association: A045-1, WV50-2

Objectives:	***Performance Measures:***
• Participate in the need assessment for systemwide security.	Support the state and local efforts geared towards security of transportation networks. (PM3)
• Facilitate development of projects that enhance security of critical network links.	Support EMS and Homeland Security projects.
• Participate in the development of plans for mass movement of people during emergencies.	Support plans and projects designating evacuation routes. Support service plans along these routes; support signing of evacuation routes.
• Participate in the development of hazard mitigation plans for the area.	Work with the Emergency Management Services Departments of each County to assess needs and develop strategies for hazard mitigation.

Goal: Accelerate Project Delivery

Statewide Goal Association: A045-7; WV50-1

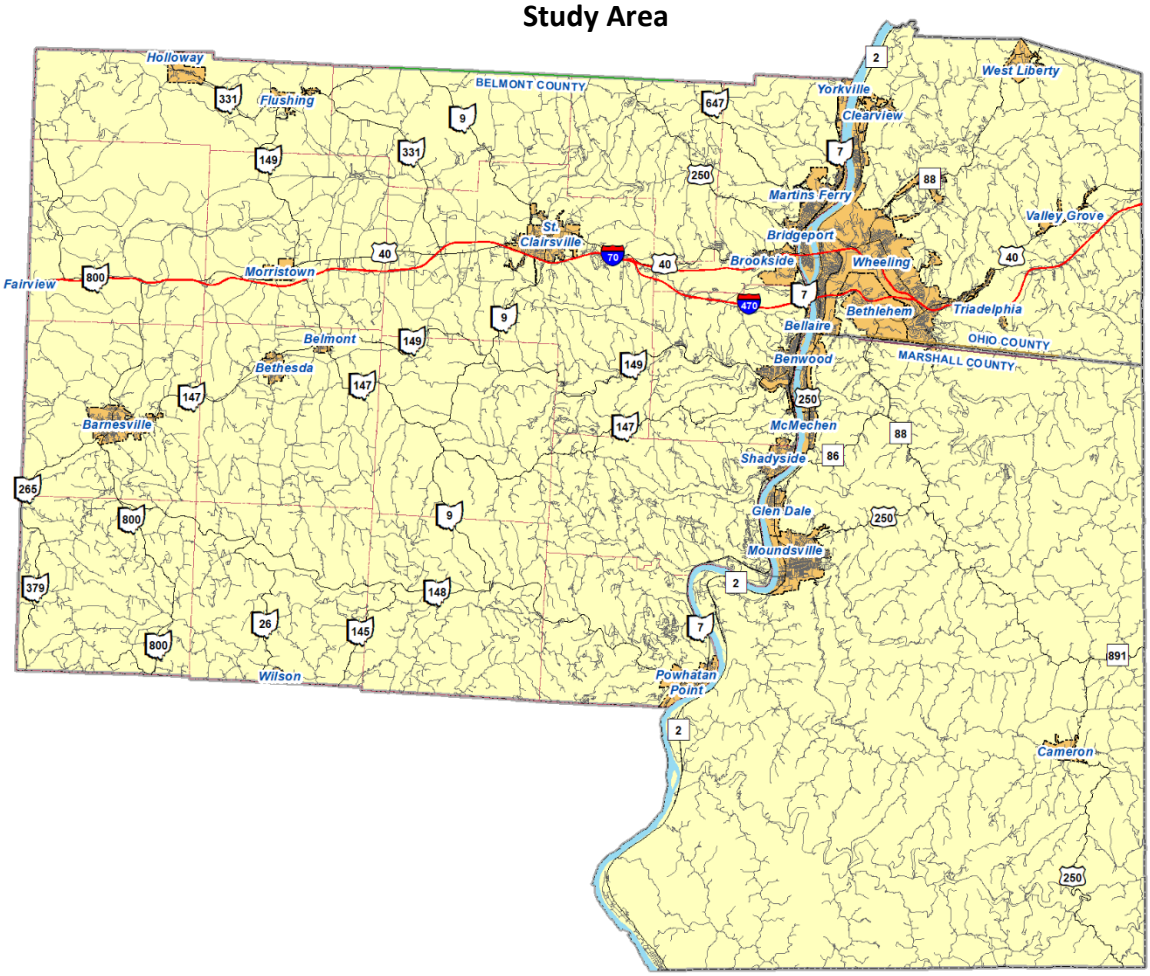
Objectives:	***Performance Measures:***
• Ensure delays if any, at regional level, are minimized.	Cooperatively work with the states to minimize delays. (PM3)

CHAPTER 3

STUDY AREA

The study area consists of Belmont County in Ohio and Marshall and Ohio Counties in West Virginia, as shown in Figure 3-1. These three counties are located between Pittsburgh, Pennsylvania and Columbus, Ohio. The Ohio River bisects Ohio and West Virginia, separating Belmont County from Marshall and Ohio Counties. Together, the three counties cover 948 square miles, with Belmont County, which is the largest of the three, containing 537 square miles. Located west of the Appalachian Mountains, the terrain is hilly and makes infrastructure improvements and site development more challenging in terms of design and cost.

Figure 3-1
Study Area



There are 27 local jurisdictions within the region. In addition, Belmont County has 16 townships. The central city in the area is Wheeling, which is in Ohio County. According to the 2010 Census, the region has a population of 147,950. The last three decades have shown a significant population decline, which can be attributed to a progressive chain of job loss, particularly in the coal and steel industry. Population loss has slowed and economic growth is occurring in service and energy sectors. Large reserves of natural gas have attracted workers engaged in recovering the natural gas. These workers have contributed to the expansion of the service sector. The job outlook is promising in the recovery, processing and distribution of natural gas. A multi-billion dollar ethane cracker plant is expected to be built soon.

There are strong social and economic interactions among the counties in the study area. These interactions result in work and non-work trips. An example of work trips based on ACS data from 2006 to 2010 is shown in Table 3-1. The trips shown are from all three counties in the study area. Although a vast majority of work trips originating from these counties terminate within the study area, a significant number of trips terminate in the surrounding counties of Jefferson, Ohio and Washington and Allegheny, Pennsylvania.

Table 3-1
Work Trips To and From the Region

TO	FROM		
	Belmont	Ohio	Marshall
Belmont	N/A	1,925	980
Ohio	6,220	N/A	4,080
Marshall	1,380	1,315	N/A
Washington	195	540	280
Allegheny	335	395	130
Jefferson	1,055	245	200

Source: U.S. Census Bureau, 2006 – 2010 ACS Data.

Jefferson County, Ohio is part of the Brook-Hancock Jefferson (BHJ) metropolitan area to the north of the study area; while Washington and Allegheny Counties are part of the Southwestern Pennsylvania region including the City of Pittsburgh.

Within the study area, more Belmont County residents commute to work to other counties than any other in the region. The number of Belmont County residents that commute to other counties is almost double the number that commute to the county. Over 2.5 times more workers commute to Ohio County than the ones that commute from the county. The number of out-commuters from Marshall County is almost 1.5 times the number of in-commuters.

The study area was designated as non-attainment of 1997 National Ambient Air Quality Standards (NAAQS) for Ozone and PM2.5 (fine particulate matter). The area was in violation of the 8-hour standard of 0.08 ppm for Ozone. For PM2.5, the non-attainment was for the annual standard only. The PM2.5 annual standard is exceeded if the three year average of annual mean concentration of PM2.5 is greater than 15 micrograms per cubic meter.

These designations required Transportation Conformity under the Clean Air Act. The purpose is to ensure that the federally supported highway and transit projects/activities are consistent with (conform to) the state air quality implementation plan (SIP). Bel-O-Mar has made conformity determinations for the Long Range Plans (LRP) and the Transportation Improvement Programs (TIP) prepared after the year 2004.

Effective June, 2007, all three counties in the Belomar region were re-designated as attainment for Ozone. However, transportation conformity determination was still required and made for the LRP and TIP. In April, 2012, EPA designated non-attainment areas based on the 2008 revised standard of 0.075 ppm. Bel-O-Mar areas were unclassified. In April, 2015, the 1997 Ozone NAAQS were revoked and no further conformity determinations are needed for the 1997 Ozone NAAQS. However, court decision reversed EPA's guidance and requires a qualitative conformity determination. It is also noted, based on the current area ambient monitoring, the area is in attainment of 2015 Ozone standard of 0.070 ppm.

For the PM2.5, the area was re-designated to attainment of the 1997 annual NAAQS in September, 2013. As a part of the attainment ruling, EPA also determined that for the purpose of transportation conformity, emissions from on road mobile sources are insignificant. This finding relieved both states of the obligation to comply with nonattainment-related planning requirements for PM2.5 pursuant to Part D of the Clean Air Act. As a result, emissions analysis is not required for PM2.5 transportation conformity. However, the conformity process, including interagency consultation and other conformity requirements are still to be satisfied. In addition, a project level hot-spot analysis is also potentially required.

The area's assets include low crime rate, excellent educational system, parks and accessibility to interstate system, railroads, the Ohio River and approximately half of the nation's population within 500 miles. As shown in Figure 3-2, over 149 million people and many major markets are within one day's driving distance.

During the decade ending in 2010, the region lost 3% of the population. However, this loss was far less than the 2010 pre-census estimates and projections from other sources. This indicates that the region's economy began to grow prior to the 2010 Census bucking pre-census trends. The 2020 pre-census estimates show a population loss of over 3%. Local indicators suggest any loss will be far less than the pre-census estimate.

Figure 3-2
Study Area Accessibility to Major Markets

The known natural gas reserves in Marcellus and Utica Shale formations in the region have seen tremendous drilling activity in the area. The natural gas recovery, processing and distribution activity has brought significant growth in service and energy.

CHAPTER 4

REGIONAL CONDITIONS, TRENDS AND ISSUES

The three county bi-state region is rich in natural gas deposits locked in Marcellus and Utica shale formations. Marcellus shale alone holds an estimated 141 trillion cubic feet of recoverable gas.[1] These shale formations sit between 7,000 and 12,000 feet below ground. The gas is recovered by a hydraulic fracturing process generally known as "fracking." The activities associated with extracting, storing, transporting and processing of natural gas have brought significant change. The region is looking forward to the construction of a cracker plant near Shadyside, Ohio. This will be an unprecedented development of over $10 billion that will generate hundreds of good paying jobs at the plant and hundreds more in the associated cluster industry. Over $100 million has been spent for the site preparation. The decision to go ahead and break ground has suffered delays due to the pandemic.

The rapid growth in the energy sector is boosted by a strong service economy in the region. Over the years, service sector jobs were on the rise and the rate of growth was accelerated with the new hospitality jobs. In a short span of less than five years, many new hotels/motels and restaurants were built to support the influx of transient workers associated with the natural gas recovery. The area has also seen construction of new apartment complexes and repurposing of vacant buildings for upscale apartments. The latest building planned to undergo repurposing is the old Wheeling-Pittsburgh Steel building in downtown Wheeling. This building will be converted to apartments at a cost of over $60 million.

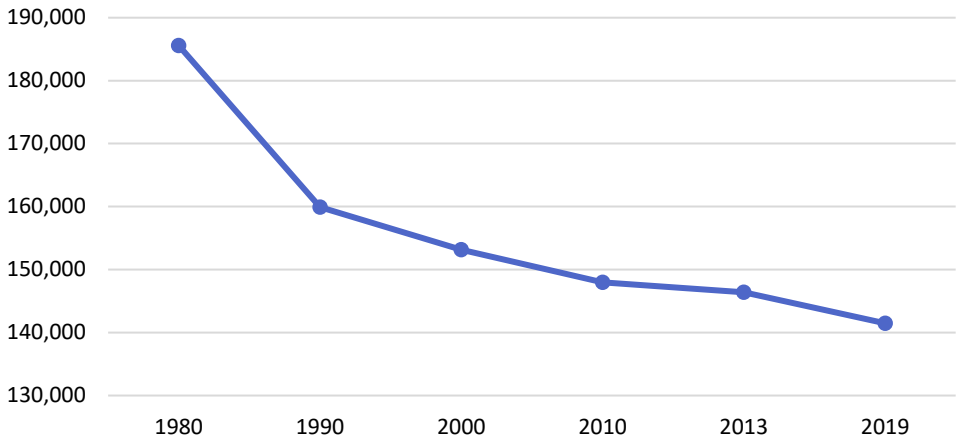
Cracker plant site at Dilles Bottom

As per the 2010 Census, there are 147,950 persons in the region. The 2010 Census revealed a significant difference from the previous assumptions of population loss, as per the Census Bureau's 2008 estimates of population. Although the 2010 Census shows a loss of 3% for the region, this is far less than the pre-census estimates and population projections from other sources. This indicates that the region has turned a corner on estimate based consistent population loss shown in Figures 4-1 and 4-2. This finding can also be supported by the increased

[1] U.S. Energy Information Administration, Annual Energy Outlook 2012.

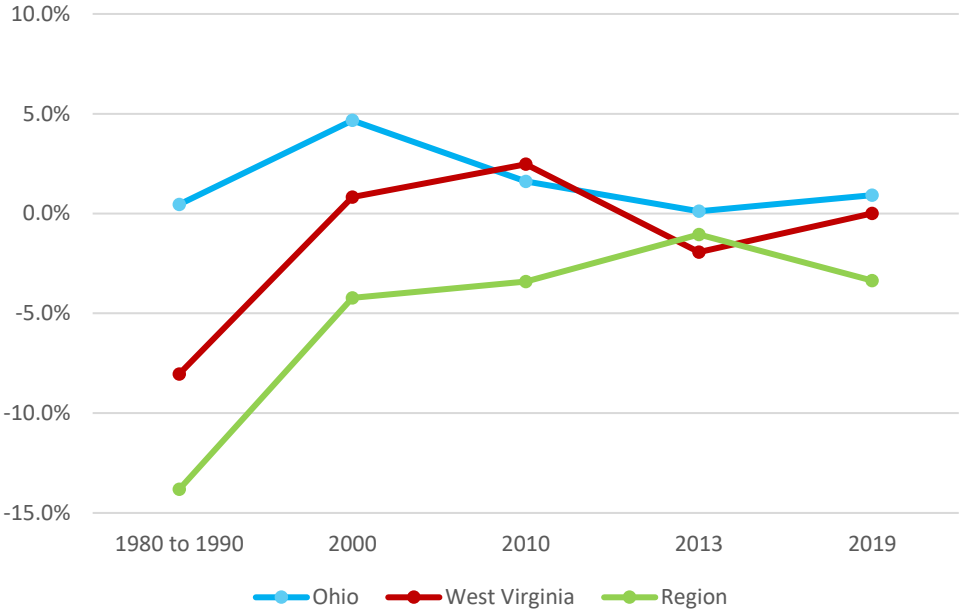
activity in Marcellus and Utica Shale drilling and known reserves of natural gas in the region. There is an influx of transient workers and residential accommodations are in short supply. Many hotels, recreational vehicle parks and apartments have been built within the last five years. While these workers interact with local businesses, they also use local infrastructure and services. These workers, even though they will be in the area for a long time, are not included in the census statistics for the three counties in the region.

Figure 4-1
Population Change in the Region



Source: U.S. Census Bureau.

Figure 4-2
Percent Change in Population

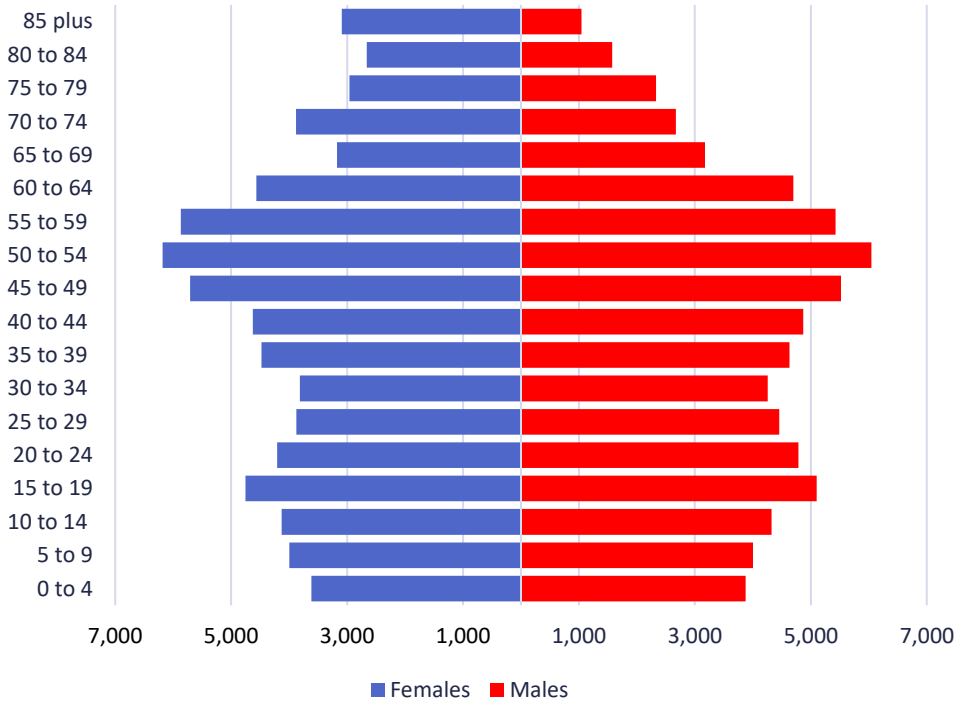


Source: U.S. Census Bureau.

The one time population loss of over 14% from 1980 to 1990 parallels the significant loss of manufacturing and mining jobs in the region. During this decade, the garment and glass industry suffered significant losses. The population loss rate has declined significantly since 1990. The 2010 Census showed a drop of 3%. The rate dropped to 1% in 2013 before jumping back to 3% in 2019, based on the 2020 pre-Census estimates. In spite of visible growth in the energy sector and presence of hundreds of workers in this sector, the 2020 Census will not include these transient workers in the local census count, unless they claim residence in the region. These workers will have constant presence in the region for years to come. It is expected that the 2020 Census will show a stabilizing population base with a lower than estimated pre-Census rate.

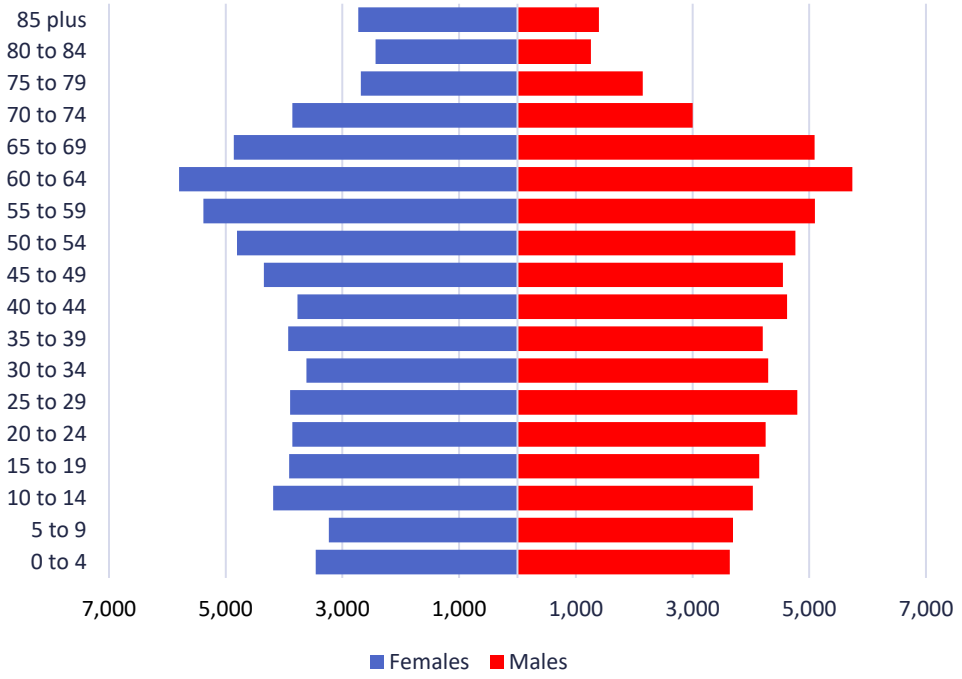
The composition of the population is also changing, as shown in population pyramids in Figure 4-3 and Figure 4-4. In the year 2010, 24% of the population was over 60 years of age. In 2019, it is estimated to be 30%. In comparison, the 2010 statewide proportion of 60 plus population in West Virginia and Ohio was 22% and 19%, respectively. The statewide estimates for 2019 are 27% for West Virginia and 23% for Ohio. The regional population is aging at a faster rate than the states. The aging population presents new challenges and opportunities.

Figure 4-3
2010 ACS Population by Age & Sex in Region



Source: U.S. Census Bureau.

Figure 4-4
2019 ACS Population by Age & Sex in Region



Source: U.S. Census Bureau.

Education

The region has a mix of public and private schools. On the West Virginia side, there are two countywide school boards, while in Belmont County, Ohio there are ten school boards, one for each district. The idea of school consolidations has been considered at the state level in Ohio, while local traditions and pride favor status quo. School districts in Belmont County have suffered as their revenues drop with loss of jobs and business closures in the county. Some of the private schools closed due to a lack of enrollment. The region is home to schools of national excellence. Opportunities also exist for job training, two-year degree programs, baccalaureate degree programs and graduate level programs. College level education is known to generate higher incomes and is associated with the positive market outcomes due to the availability of educated and skilled workforce.

All but one institution of higher learning has experienced a drop in enrollment in recent years. Enrollment increased at West Liberty University due to new graduate level programs and an increase in online offerings. In the year 2020, all institutions had to adapt to learning needs in the wake of the COVID-19 pandemic. This has negatively affected the enrollment and revenue stream of all institutions of higher learning. Local school districts also had to alter educational medium and tools to keep students engaged.

The overall effect of the pandemic on the region can only be assessed after the return of pre-pandemic normal.

Employment

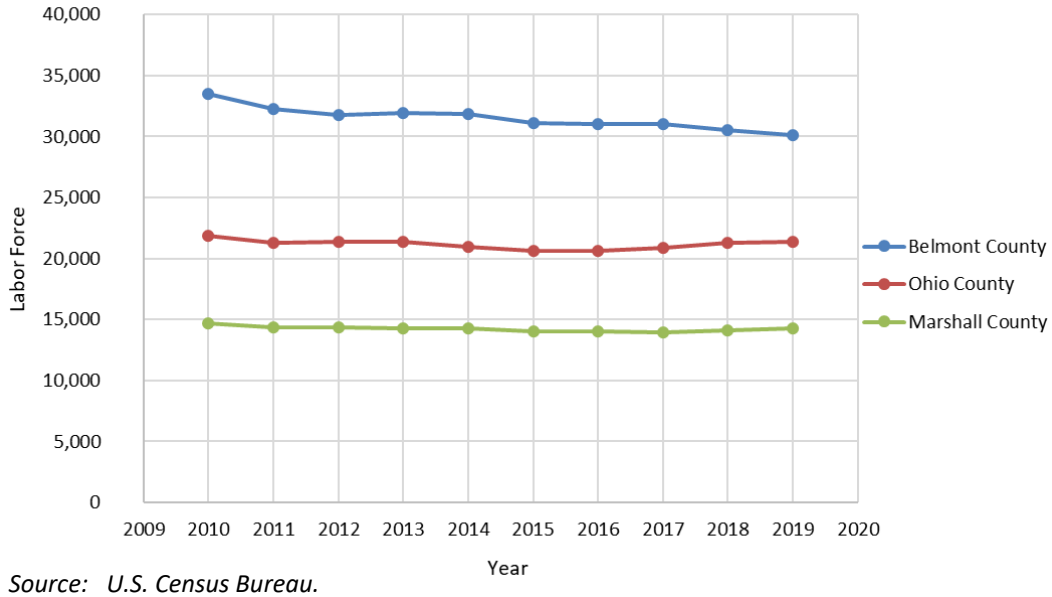
The region is rich in coal and natural gas reserves. Due to the high sulfur content, the coal mining industry lost many jobs in the 1980s and 1990s. These losses continued through 2010, and since then there have been additional layoffs. With the national focus on clean energy, the local coal production has suffered. Also, jobs in the steel, glass and garment industries have gone elsewhere and show no sign of coming back. The region has been shifting from a strong manufacturing base to a service sector dominated job base. During the last decade, hundreds of service sector jobs have come to the region. Although the chemical plants along the Ohio River have held their own, the power plants have lost jobs. The Burger Power Plant, in Shadyside, Ohio, closed in 2010 and an AEP coal fired Kammer power plant in Marshall County closed in 2015. While the coal mining employment is enduring losses, natural gas production is on the rise. The region is experiencing a resurgence of manufacturing industry related to shale drilling and production. The crown jewel of this activity is the expected opening of a multi-billion dollar ethane cracker plant in Belmont County. The cracker plant will bring thousands of direct and indirect jobs.

A large scale development known as "The Highlands" created many jobs on the West Virginia side of the region. At the same time, retail jobs were lost in the Ohio Valley Mall area on the Ohio side. Large automotive dealerships and a few other businesses left downtown Wheeling to relocate to "The Highlands." The Ohio Valley Mall has repurposed some of the vacated spaces. The Mall and Plaza area in St. Clairsville has recovered from these losses and is poised to add many new service sector jobs. The new roadway with the I-70 overpass was built to open up additional land for development and to alleviate traffic congestion in the area. East Ohio Regional Hospital (EORH) is making a comeback. Downtown Wheeling is also making a resurgence with the relocation of the Health Plan, a major health insurer. Vacant buildings in downtown Wheeling are being repurposed. Proposed residential use of the Wheeling-Pittsburgh Steel building will add new apartments and bring additional clientele for the local businesses. Other vacant buildings already converted to apartments have been a huge success. Downtown living is bound to accelerate other developments. Several new restaurants and a fresh produce store have already moved into the downtown and Centre Market area. Now closed, the Ohio Valley Medical Center (OVMC) building is also acquired and repurposed. The proactive approach of the city fathers has also brought a streetscape project for Main and Market Street. This will enhance the downtown environment for the residents, workers and visitors. The downtown area is quickly becoming a vibrant living and working place. For a long time, the Wheeling Island Hotel - Casino – Racetrack attracted patrons from the tri-state area and beyond. However, competing casinos have opened in Pittsburgh and Washington, Pennsylvania and in major cities in Ohio. This competition has affected the revenues from the local casino. The City of Wheeling continues to be a place where people come to work as the City's population almost doubles during the day.

The region was experiencing a low unemployment rate before the pandemic. The Ohio County rate was below 5%, while the Wheeling Metropolitan area rate was 5.4%. 2020 was a tumultuous year when employment suffered. Significant losses were registered in the hospitality industry. While employment is rebounding, the full impact of COVID-19 related losses will not be known until the pandemic is behind us. Figures 4-5 and 4-6 show while there was no change

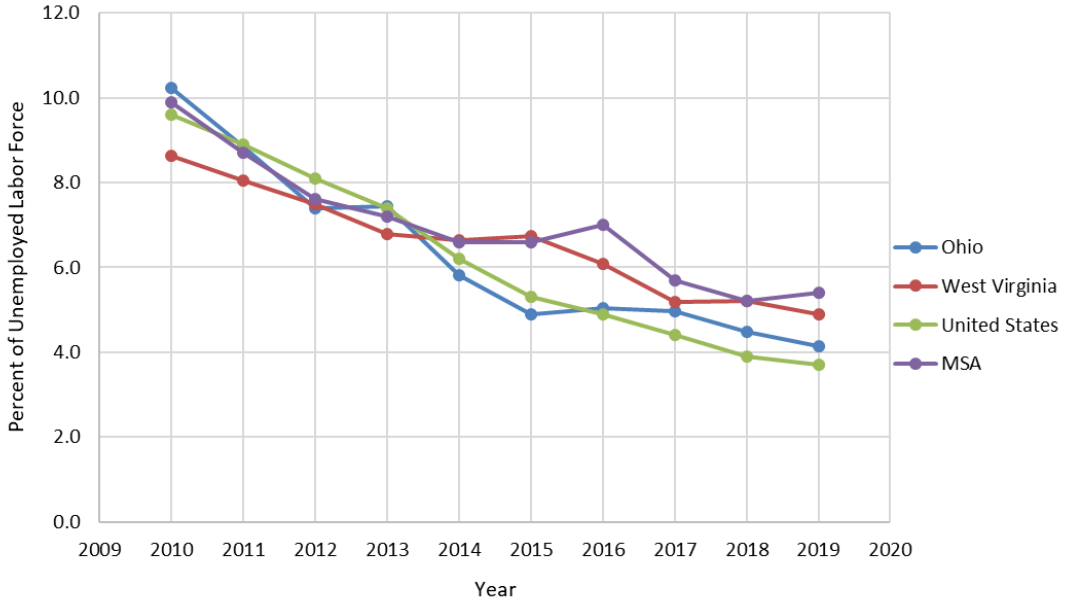
in labor force since 2015, the unemployed rate fluctuated from a high of almost 10% in 2010 to a low of 5.4% in 2019. In comparison, the local unemployment rate has been higher than the statewide rates and national rates since 2015. At the same time, according to the Federal Reserve Bank of St. Louis, the Gross Domestic Product for the metro area grew by over 25%. The labor force participation rates are also changing with older persons working longer and many workers holding more than one job.

Figure 4-5
Labor Force by County



Source: U.S. Census Bureau.

Figure 4-6
Unemployment Rate



Source: U.S. Census Bureau.

The outlook for employment looks promising as shown in Table 4-1. Woods and Poole's projection shows a growth of 19%. When the expected cracker plant employment is included, the growth would be 28%. This is an annual growth rate of less than 1%. In comparison, the Bureau of Labor Statistics annual growth rate for the nation is 1.3% from 2009 – 2019.

Table 4-1
Regional Population and Employment

County	2010 Population	2010 Employment	2045 Population	2045 Employment
Belmont	70,400	29,482	66,140	40,557
Marshall	33,107	17,388	29,517	16,822
Ohio	44,443	32,738	37,746	44,855
Total	147,950	79,608	133,403	102,234

Source: 2010 Population, Census Bureau.
2010 Employment, 2010 ES202 data.
2045 Population, ODOD (Belmont County) and Woods & Poole 2018.
Data Pamphlet (Ohio and Marshall Counties).
2045 Employment, Woods & Poole and local cracker plant employment estimate.

The economic opportunities in the region are tied to the availability of developable land. Due to the hilly terrain, flat land or parcels with slopes under 20% are at a premium. Large developable land parcels exist near the Ohio County Airport. The airport is an asset for the region and the developable land surrounding the airport provides opportunities for "Air Park" and aviation related activities and businesses.

Transportation

Apart from the occasional delays due to special events, construction or roadway incidence, the local commuter does not experience the long delays that are everyday occurrences in neighboring Pittsburgh, Pennsylvania or Columbus, Ohio. However, a few spot locations have traffic backups during peak periods. The local concerns are through truck traffic, heavy trucks servicing natural gas recovery sites, lack of capital investment for economic opportunities and infrastructure improvements, dwindling local resources for roadway and bridge maintenance, the inability of smaller jurisdictions to provide local match for federal funding, and a lack of operating revenues for sustaining transit services.

The previous long range plans had far more projects than could be supported by available funds. This plan is no exception. The funding gap between statewide needs and revenue continues to grow. Ohio's Access Ohio 2045 Plan estimates an annual need ranging between $6.2 billion to $6.9 billion. The available funds as per ODOT's current budget are $4.4 billion/year. A Blue Ribbon Commission in West Virginia determined an additional need of $1.13 billion

annually. These funding gaps will have detrimental effects on sustaining the existing infrastructure, let alone the future needs.

The current condition of bridges in the three counties is presented in Table 4-2. There are 93 bridges in poor condition, as defined by the National Bridge Inventory (NBI) rating scale. Bridges are inspected and rated for each of the bridge's primary elements: deck, superstructure and substructure. A rating scale of 0 – 9 is used. A rating of 4 or lower is associated with "Poor" condition. A "Poor" condition does not mean the bridge is unsafe, it is an indication that maintenance/repairs are needed.

In the metropolitan area, 93 bridges are in poor condition. Almost half of these are in Ohio County. While Belmont County has 318 bridges, it has the lowest number of bridges in poor condition.

States also have Pavement Management Systems (PMS) to rate the pavement condition and identify pavements in need of maintenance. However, a comprehensive database similar to NBI data is not readily available.

Table 4-2
Bridge Condition by County 2019

County	Bridge Counts				Bridge Area (Square Meters)			
	All	*Good*	*Fair*	*Poor*	*All*	*Good*	*Fair*	*Poor*
Belmont	318	163	135	20	200,563	75,615	93,418	31,530
Ohio	84	29	28	27	37,270	9,005	21,452	6,813
Marshall	115	14	55	46	204,269	13,179	80,832	110,259
TOTAL	517	206	218	93	44,102	97,799	195,702	148,602

Source: FHWA National Bridge Inventory (NBI) for 2019.

The region needs capital investment for key roadway projects to keep pace with the infrastructure needs associated with the natural gas boom and the ethane cracker plant. Through traffic and truck traffic on I-70 is also expected to grow. Without improvements, level of service on I-70 is bound to deteriorate and it will be almost impossible to generate measurable economic development in the I-70 corridor. Also, the industrial parks along WV2 and future economic development including gas processing plants and an ethane cracker plant would benefit from a four lane upgrade of WV2 in the southern part of Marshall County. The funding for this plan is far short of identified capital improvement needs.

The West Virginia Legislature created the West Virginia Route 2/I-68 Authority to promote, plan and assist in advancing the construction of the I-68 Energy Corridor and the four lane upgrade of WV2 for the purpose of encouraging new economic and community development. Within Ohio County, Route 2 through Wheeling downtown and the Warwood

neighborhood remains a 2-lane facility. A Northern Parkway and other alignments were proposed for a bypass, but did not materialize due to a lack of funds and local consensus.

In Marshall County, $121 million was recently obligated from the "Roads to Prosperity" funds for a 4-lane upgrade of Route 2 from Proctor to Kent. This still leaves a 2-lane section from Kent to Franklin.

The extension of I-68 from Morgantown to WV2 is also advanced by the Rt. 2/I-68 Authority. This 73 mile roadway, with a price tag of over $1 billion, will significantly reduce travel time to Morgantown and open up economic development opportunities along the way.

Many jurisdictions in the region have been developing bikeway and pedestrian trails. For the most part, the trail development in the region has been rails-to-trails conversion. There are several standalone multi-use trails in the region. Locals have been working to protect the Aetnaville Bridge over the Ohio River, which would play a key role in connecting trail networks from the West Virginia side to the Ohio side of the river. Currently, this bridge has been closed to all traffic, and no future plans are in place for pedestrian/bike use. The region would benefit from an interconnected network of trails. The Ohio Department of Transportation has designated interconnected bikeway routes throughout the state. One of these state bike routes goes through Belmont County. Some communities are also using shared lane markings (SLM) or "sharrow" to create multi-modal access to places of interest.

The transit authorities have struggled with a lack of operating funds. Transit provides a viable transportation alternative to automobile and may be the only economical mobility option for those who do not own an automobile or have other limitations. A lack of operating funds has been a deterrent for addressing changing service needs in the region. Other service providers use handicap accessible vans to provide mobility options to seniors and people with disabilities. In rural areas away from fixed transit routes, there is a need for mobility options.

The need for increased investment in the infrastructure is recognized at the national level. However, the Fixing America's Surface Transportation Act (FAST Act) did not address the long term revenue stream for fixing the transportation infrastructure. It is expected, considering the robust role the transportation network plays in the national economic prosperity, global competition and quality of life, that the funding issue will eventually be addressed at the national level. States may also find ways to boost revenue for roadway projects. The region will benefit from much needed improvements of the local transportation network. Access Ohio 2045 has presented a few options to address this shortfall.

Vehicle Miles of Travel

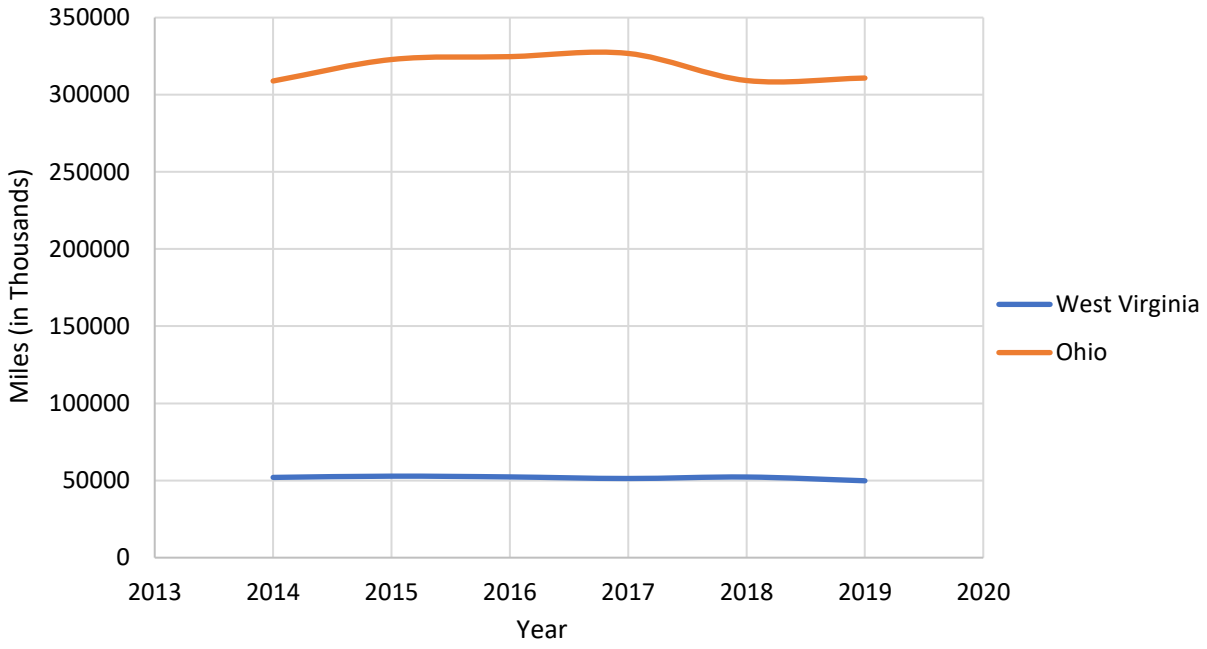
Vehicle Miles of Travel (VMT) measures the amount of travel in a region, typically over a period of one year. It reflects total miles traveled by all vehicles and is reflective of travel demand and travel behavior. Recently it has emerged as one of the alternatives for generating revenue for the transportation infrastructure.

Nationwide, VMT has been increasing every year since 2014. In 2019, it was 8% higher than VMT in 2014. As shown in Figure 4-7, there are little fluctuations in VMT from 2014 to 2019. The lowest VMT was in 2019 and it was 4% less than the 2014 value. In Ohio, VMT grew year over year from 2014 to 2017. For 2018 and 2019 it dropped, finishing in 2019 to the level observed in 2014. The change in 2019 was less than 1%. In West Virginia, the peak occurred in 2015 and the lowest VMT since 2014 was recorded in 2019.

The VMT for the three counties in the region is presented in Figure 4-8. Belmont County VMT followed Ohio's pattern from 2014 to 2019. It peaked in 2017 and dropped in 2018 and 2019. In Ohio County, it peaked in 2018 and dropped in 2019. In comparison, the 2019 VMT was 3% lower than the 2014 VMT. Marshall County's pattern was somewhat similar to West Virginia's VMT. It peaked in 2016 and the 2019 VMT was similar to the 2014 VMT.

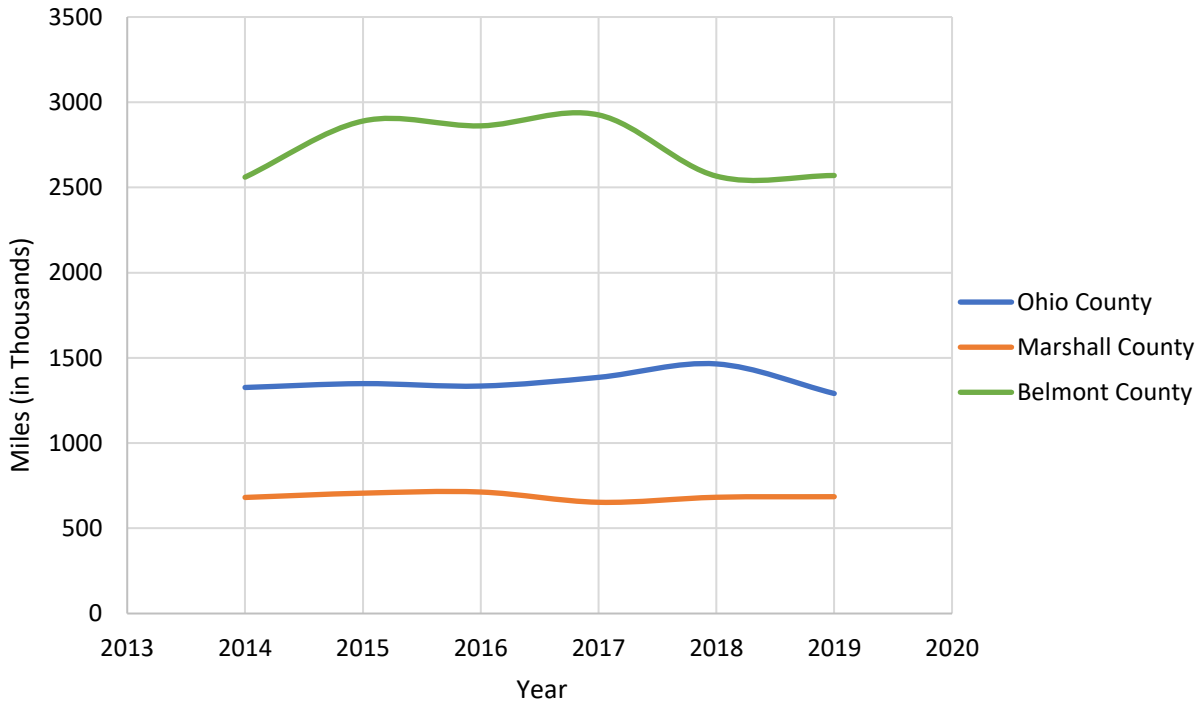
A drop of VMT in Ohio, West Virginia and the local area has happened when nationwide VMT is rising. The VMT can drop with change in travel behavior. Shorter trips, telecommuting, increased public transit use, shift to alternate modes of travel and online shopping and banking can affect VMT. The VMT in 2020 likely will be even lower due to the pandemic and associated lockdowns and restricted travel.

Figure 4-7
Daily Vehicle Miles of Travel by State



Source: *https://transportation.wv.gov/highways/programplanning/preliminary_engineering/traffic_analysis/Pages/TravelMonitoring.aspx*
https://www.transportation.ohio.gov/wps/portal/gov/odot/programs/greendogsbark/long-text-translations/resources/dvmt

Figure 4-8
Daily Vehicle Miles of Travel by County



Source: *https://transportation.wv.gov/highways/programplanning/preliminary_engineering/traffic_analysis/Pages/TravelMonitoring.aspx*
https://www.transportation.ohio.gov/wps/portal/gov/odot/programs/greendogsbark/long-text-translations/resources/dvmt

Marcellus and Utica Shale Drilling Issues and Opportunities

The region is experiencing unprecedented growth in the energy sector. The presence of shale formations in the region has been known for many years. However, its potential as a major source of natural gas has been realized only recently. The fact that natural gas is trapped in these formations was also known, but due to the vast expanse, depth and low permeability of these formations, it was not economical to explore until recently. The game changer was a well in neighboring Washington County, Pennsylvania that began production in 2005. This well was so promising that the owner of this well, Range Resources, reported that its Marcellus Shale investment had exceeded $1 billion.[2] [3]

Since the early estimates of approximately 1.9 trillion cubic feet of gas trapped over vast underground areas in New York, Ohio, Pennsylvania, West Virginia and Kentucky, some estimates approached 500 trillion cubic feet[4] in Marcellus Shale alone. According to the U.S. Energy

[2] Range Resources Wikipedia page.
[3] Range Resources, Marcellus Division.
[4] Terry Engelder, Professor of Geoscience at PSU and Gary Lash, Professor of Geology, SUNY at Fredonia.

Information Administration, they estimate 141 trillion cubic feet of gas is technically recoverable. It is still difficult for scientists to accurately calculate how much gas may be in the Marcellus Shale, and future technology may create ways to recover even more of the natural gas. With trillions of dollars at stake, the energy companies have increased activity in the region. This activity currently includes vertical and horizontal wells, as well as injection wells. A map showing the location of wells and drilling permits in the region is shown in Figure 4-9.

The recent well data is presented in Table 4-3. Belmont County is home to some of the top producing wells in Ohio and leads the state in natural gas production. Each drilled well costs over $1 million and the deeper the well, the higher the cost. The depth of Marcellus and Utica shale formations can vary from 3,000 feet below ground to more than 9,000 feet below ground.

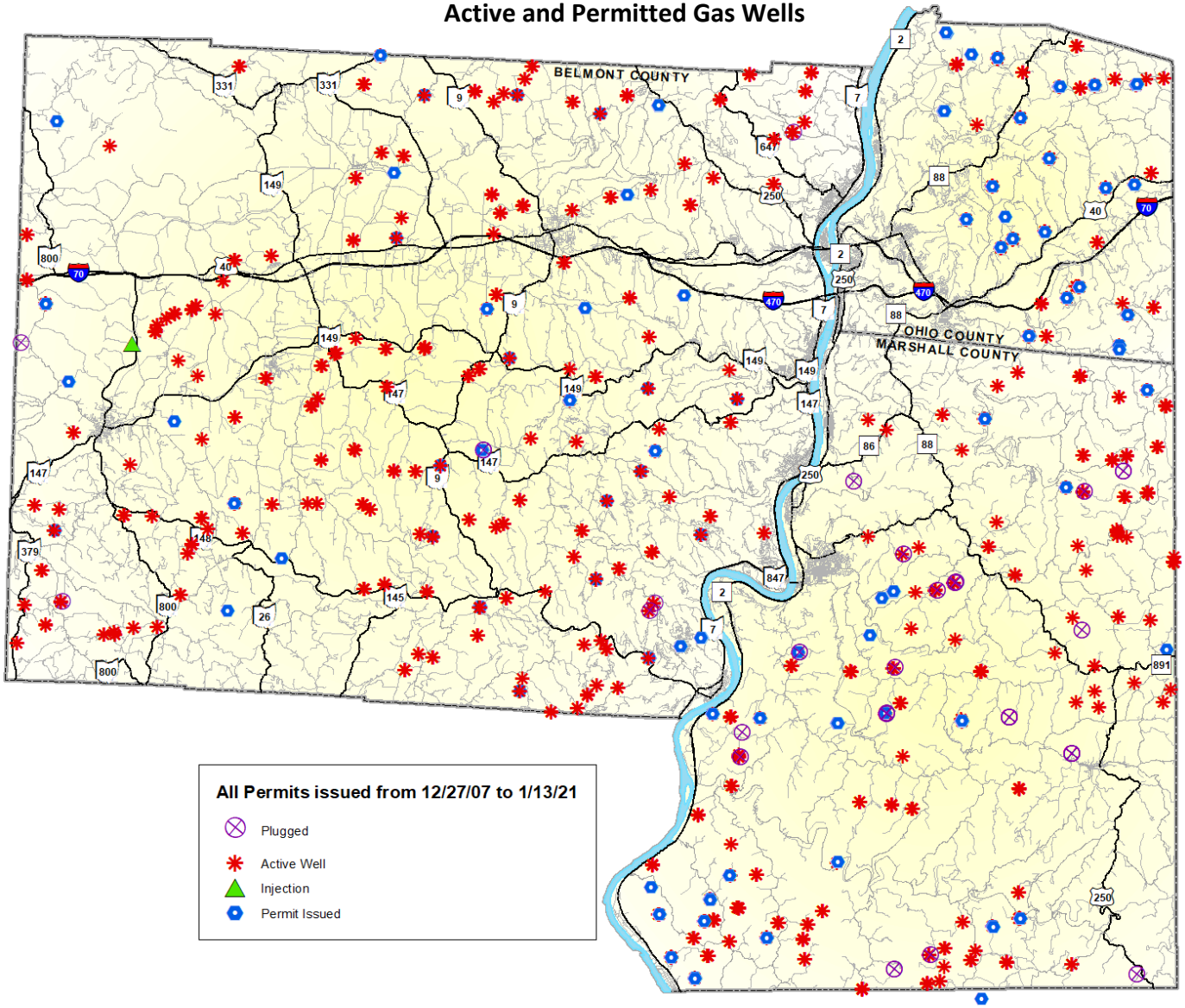
Table 4-3
Marcellus-Utica Shale Wells

County	Active Wells	Total Wells on File
Belmont	556	3,800
Marshall	811	2,341
Ohio	184	330

Source: WVDEP; ODNR *www.drillingedge.com*

Source: E & E News - Marc Marriott/Chevron Phillips Chemical Co.

Figure 4-9
Active and Permitted Gas Wells



The natural gas is recovered using hydraulic fracturing generally known as "fracking." This process has been in use in Texas and elsewhere in the country. For natural gas recovery from Marcellus or Utica Shale formations, due to low permeability, it is necessary to drill horizontally and fracture the rock formation to release the trapped natural gas for collection and processing. The process of hydraulic fracturing makes it economical to develop these gas fields for production. The fracturing process uses water mixed with additives and chemicals. This liquid is pumped down the well bore to fracture the rock. Each gas well requires over 4 million gallons of water. A large portion of this water stays in the ground, while approximately 30% to 70% comes back to the surface through the well bore. This returned liquid, containing known cancer-causing chemicals, has to be disposed of or reused.

The hydraulic fracturing process is not without serious concerns that include foul smell, ground water contamination, air pollution, orphaned wells, increased truck traffic and road deterioration. Several local communities have raised concerns and there are apprehensions about the process of hydraulic fracturing, availability of huge amounts of water, and disposal of fracking liquids.

The gas producing wells in the region and in neighboring counties have already proven the viability of local gas reserves. This activity entails well drilling, laying pipe for distribution, building compressor stations and cryogenic plants. Many energy companies are actively investing to acquire natural gas rights to expand their operations. Shell Corporation has built an ethylene cracker plant in nearby Beaver County, Pennsylvania. In addition, an ethane cracker plant is expected to be built in Belmont County. This is the beginning of a cluster industry that is estimated to generate thousands of new jobs and several billion dollars' worth of new investment. The cracker plant converts natural gas liquids to other chemicals that go into the manufacturing of many other products such as plastics and tires.

An example of cluster industry poised to take off is the recent commitment of Mountaineer NGL Storage to invest well over $200 million to build the salt caverns to store 1.5 million barrels of liquid gas in three caverns approximately 12 miles from the cracker plant site at Dilles Bottom.

An artist's rendering of the Mountaineer NGL Storage facility along the Ohio River.

Source: Mountaineer NGL Storage

This unprecedented boom in the region presents tremendous opportunities for an orderly economic expansion, while minimizing the negative impacts of hydraulic fracturing. The local jurisdictions can have unique local plans that facilitate desirable growth within the vicinity of their borders. The local areas can also participate in a countywide or regional plan that addresses local issues at the regional scale. These plans may include strategies such as no drilling within a certain feet of a drinking water source, desired spacing between well pads, designated routes for trucks, strategies for road improvements, setting up public-private pools of funds largely sustained by energy companies to pay fair share of their role in roadway deterioration, and emergency response and/or cleanup. These plans may also include strategies for future growth. The gas industry is going to play a major role in our region for several years, much like coal did in the 1960s and 70s. It will be up to local entities whether we proactively plan for the associated growth, or grow reacting to the pressures of an expanding and shifting economy.

The fracking process has created many roadway maintenance and safety concerns due to the increase in truck traffic on local roads.

CHAPTER 5

LAND USE

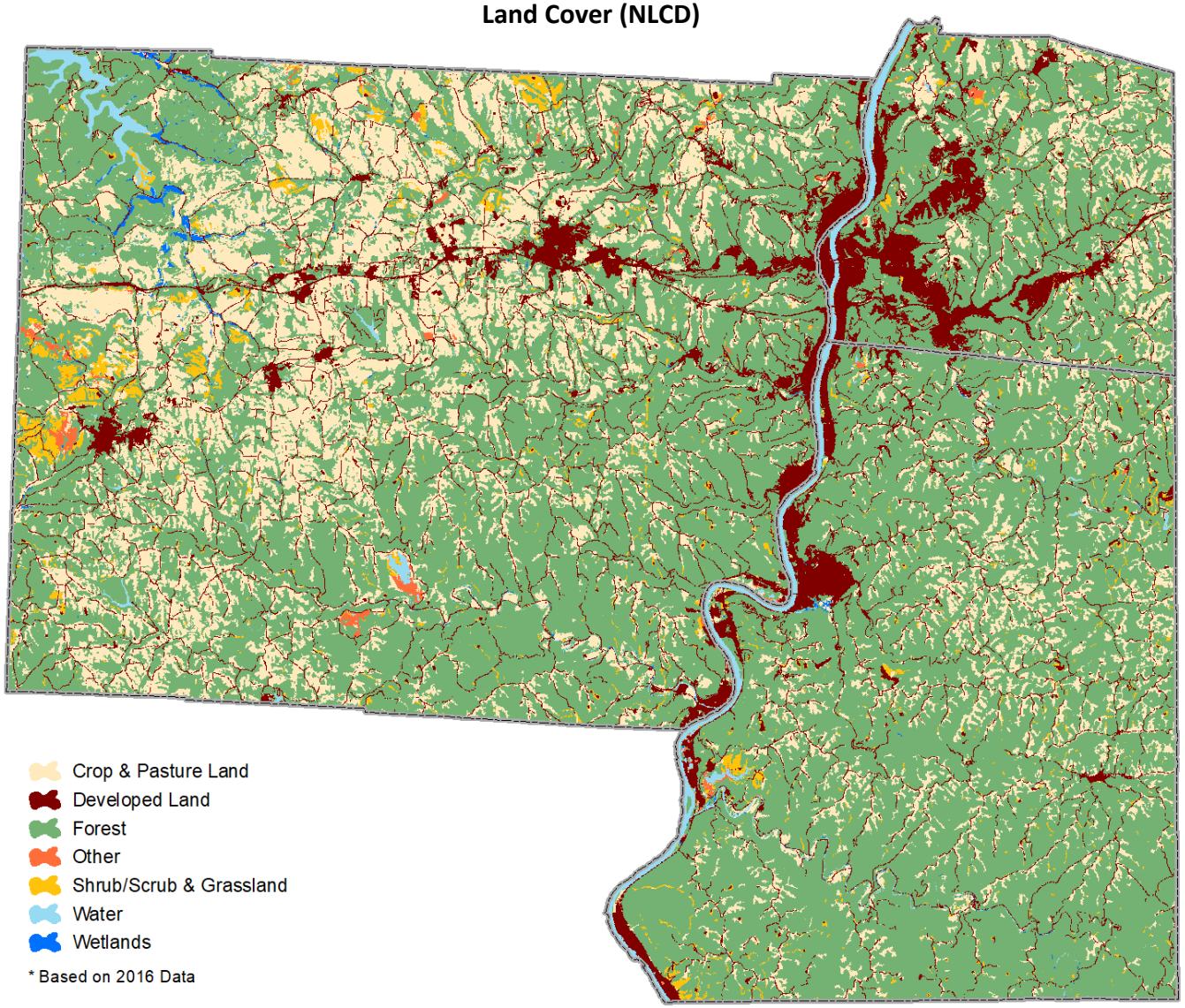
The demand for transportation is related to the degree and type of land use. Trips are produced where people live and are attracted to where they work, shop, use services and go for recreation. A land use map shows how the land is being used and what is the intensity of use. More importantly, it provides insight into where future growth is likely so resources can be directed for infrastructure development. Infrastructure (e.g., roads, utilities, communications, etc.) plays a key role in sustaining and promoting growth. In addition, physical constraints such as topography affect the growth. Slopes over 20% are extremely difficult to build on. The land cover information is available from the National Land Cover Database (NLCD) of the United States Geological Survey (USGS). This database is updated every five years. The land cover maps for Belmont, Ohio and Marshall Counties, as seen in Figure 5-1, are generated from the 2016 NLCD and associated land cover area is shown in Table 5-1. The detailed land use maps for the study are not available.

Table 5-1
NLCD Area by Land Cover

Land Cover Area (Square Miles)						
County	Crop & Pasture Land	Forest	Other	Shrub/Scrub & Grassland	Water	Wetlands
Belmont	151.33	316.39	2.65	13.45	5.58	2.03
Marshall	39.32	236.35	0.38	5.00	7.09	0.24
Ohio	17.17	65.14	0.25	1.26	3.03	0.01

The mountainous terrain of the three county region has resulted in much of the early development to be in the valleys along the Ohio River and National Road (US40). The Ohio River carries barge traffic that has been used to ship coal and other commodities from the area. National Road was a major east-west highway before I-70 was built. More recent developments have followed the national trend of suburbs fanning out from Central Business Districts (CBDs). However, due to the topographical constraints, developments have occurred along ridgetops and on moderate slopes. The retail and service sector jobs have followed this trend and have been moving from CBDs of local jurisdictions to new developments elsewhere in the region. This outward move started with the opening of the Ohio Valley Mall in Belmont County and is continuing with the development of "The Highlands" in Ohio County. The stakeholders in CBDs, in the meantime, are using innovative ways to adapt to this change.

Figure 5-1
Land Cover (NLCD)



Source: Land Cover from NLCD

Downtown Wheeling is rebounding from the flight to the suburbs trend by bringing businesses and housing back to the downtown. The Health Plan, a major service provider, has located its headquarters in the downtown area. Several vacant historical buildings have been repurposed into desirable apartments. The demand for the high-end apartments far exceeds the supply. With more people living in downtown, many restaurants have also moved in and around downtown. A healthy food choice is also available in the Central Business District (CBD) now. An investment of over $25 million is being made to improve the downtown streetscape and to create a pedestrian friendly walkable environment.

Slopes and Development Sites

To identify the future development sites, an online interactive survey was designed and administered through ESRI's ArcGIS online. The stakeholders were asked to identify sites on the digital map showing the area in the vicinity of their location. If needed, respondents could zoom into any location in the region. In addition, information regarding land use, comprehensive and zoning plans was also sought. Information about short term and long term loss or gain in housing and jobs was also solicited. The survey questionnaire is included in Appendix A. Previous mail in surveys had also solicited similar information. Prior to surveys, in person interviews with paper maps were conducted. Belomar also solicits information for the Comprehensive Economic Development Strategy (CEDS) required by the Economic Development Administration (EDA). This information was also used. The sites shown in Figure 5-2 are a culmination of recent and previous efforts. The cities of Wheeling and Moundsville also have comprehensive plans. These comprehensive plans are considered in this process.

A one half mile buffer along I-70, SR7 and I470 was created. Parts of SR331 were also included in this buffer. A large number of major generators are located within this buffer and significant economic activity occurs in this stretch. The buffered area is the local high growth zone. In addition, potential for growth exists along SR800 north of Barnesville, areas around the City of Moundsville and along a few ridges on WV88 in Wheeling and near the Ohio County Airport.

As noted, a comprehensive land use map for the study area is not available. Therefore, the number of households, employment, vehicle registrations and school enrollment are considered in generating future travel demand in the area. This data is presented as Table 5-2. In addition, major traffic generators, recreational and educational facilities are identified. These are shown in Figures 5-3 and 5-4.

The area has seen population loss in the past and available estimates of the future continue to show loss. However, the number of households is increasing with the aging population and continued influx of transient workers engaged in the natural gas recovery and processing. Although the census data continues to show population losses, the transient workers, unless they claim residence in the area, are not included in the local census count. These workers support local economy and use infrastructure and services in the region. It is expected that the 2020 Census will reveal a slowing rate of population loss and may even register a slight increase.

Table 5-2
Study Area Variables for Assignment

	2010	2045 Projected
Population[1]	147,950	133,403
Households	61,462	65,256[2]
Vehicle Registration[3]	104,317	110,376
Employment	79,608	102,234
K-8 School Enrollment[4] [5]	15,105	14,203
High School	7,617	6,270
Post-Secondary/College	10,406	10,455

Using census geography, the three county area is subdivided in 554 subareas called Traffic Analysis Zones (TAZs). The 2010 Census block level data is aggregated for all TAZs. The 2045 projections are disaggregated from county level to TAZ level.

In assigning (disaggregating) the 2045 variables to the TAZs, the response from previous interviews, a mail-in local jurisdiction survey, a recent interactive online survey, available comprehensive plans, slopes and knowledge of the local area were utilized. The database of TAZ statistics was provided to ODOT for input to the Travel Demand Model (TDM). The current validated TDM was then used to develop 2045 traffic volumes. In developing the traffic volume forecast, growth of through trips and freight movement was also incorporated.

[1] 2010 population, household and employment data is from the 2010 Census. 2045 ODOD (Belmont) projections, Woods & Poole Economics, Inc. Data Pamphlet, 2018. (Ohio and Marshall)
[2] The transient workers will continue to be here through the construction of the cracker plant and for extracting natural gas and liquids.
[3] 2010 and 2045 vehicle registration based on vehicles/household values.
[4] 2010 K-8, High School and Post-Secondary/College enrollment data from the West Virginia Department of Education, the Ohio Department of Education and the National Center for Education Statistics.
[5] 2045 school enrollment estimates are based on population change.

Figure 5-2
Slopes and Potential Growth Locations

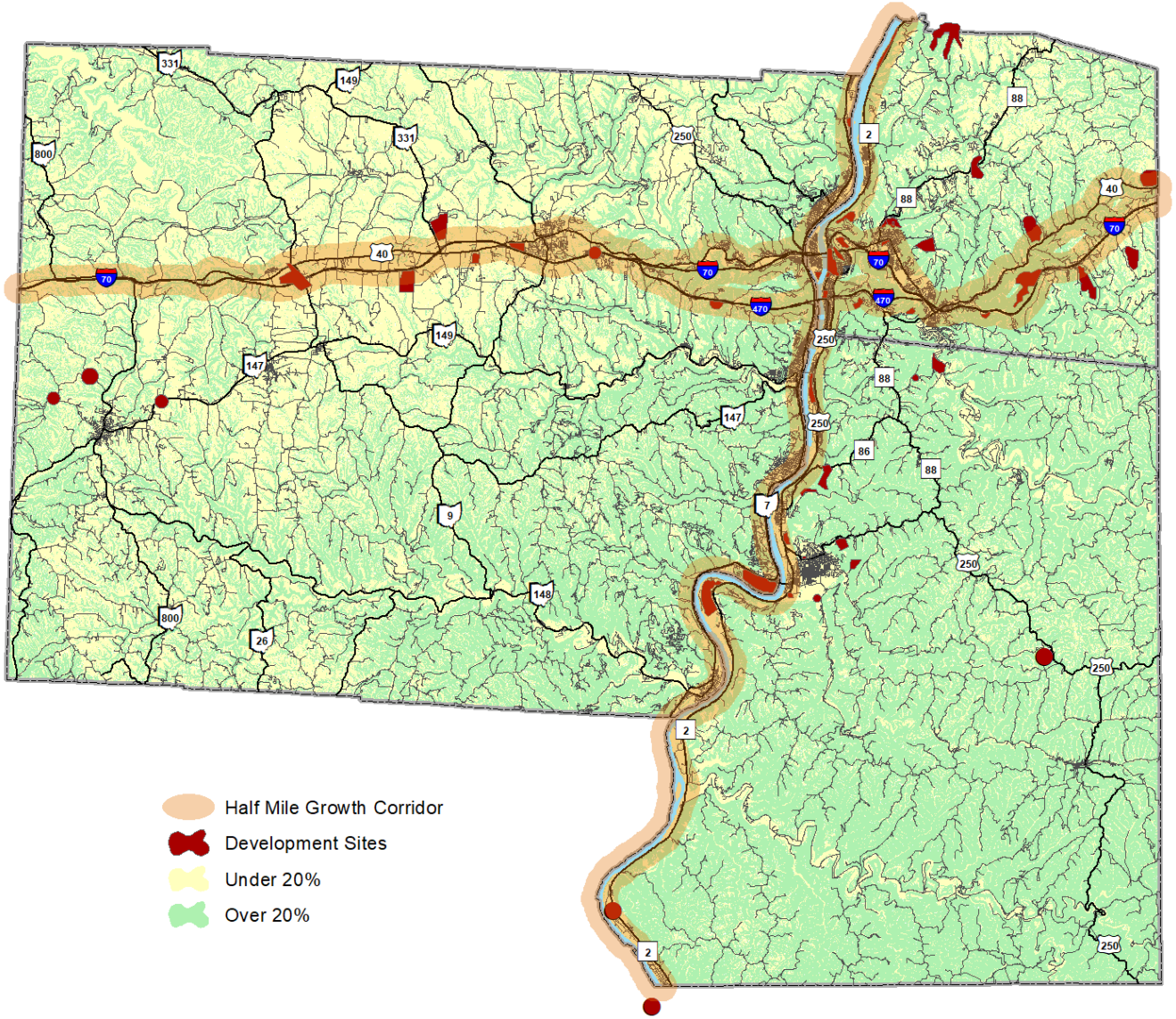
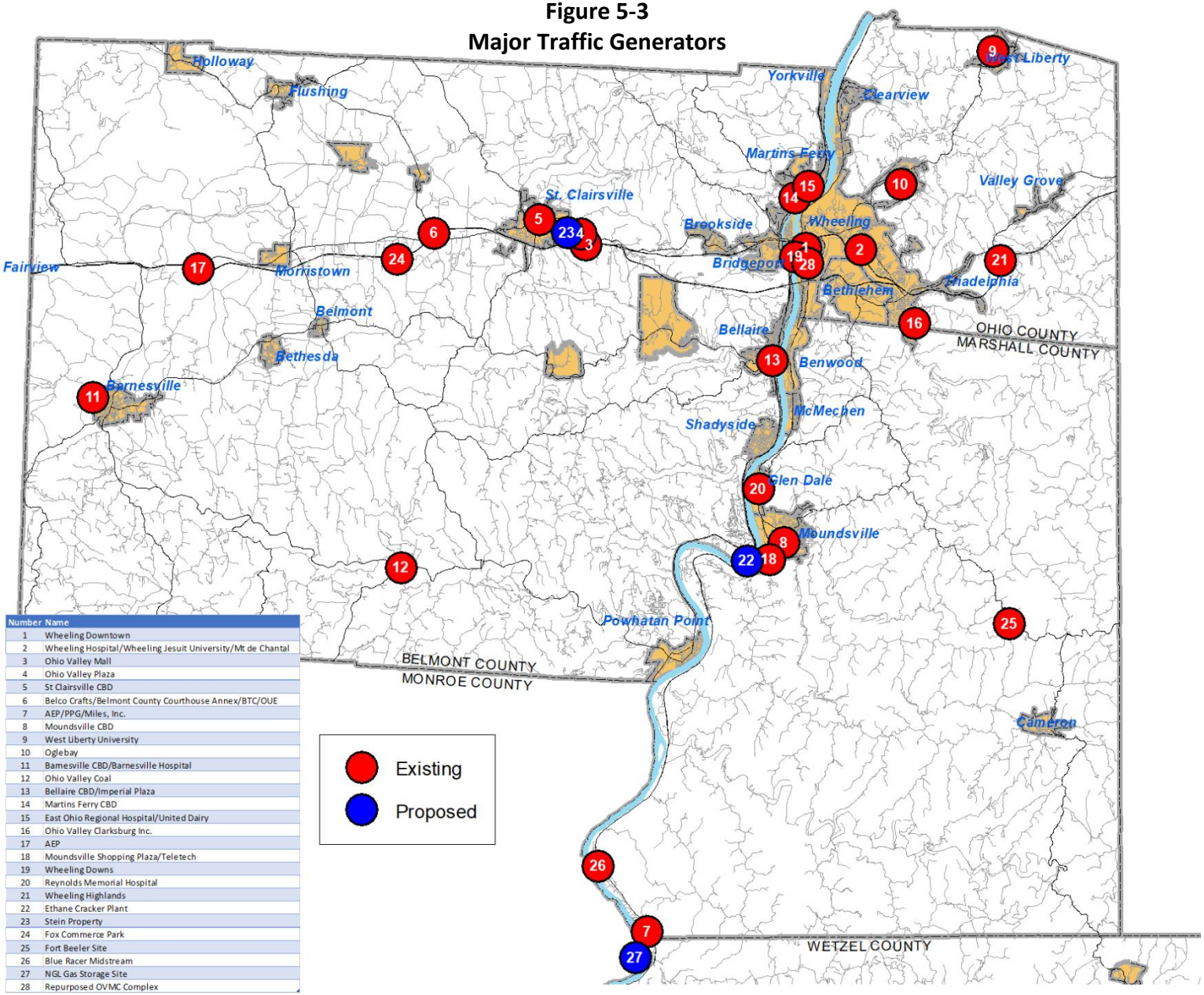
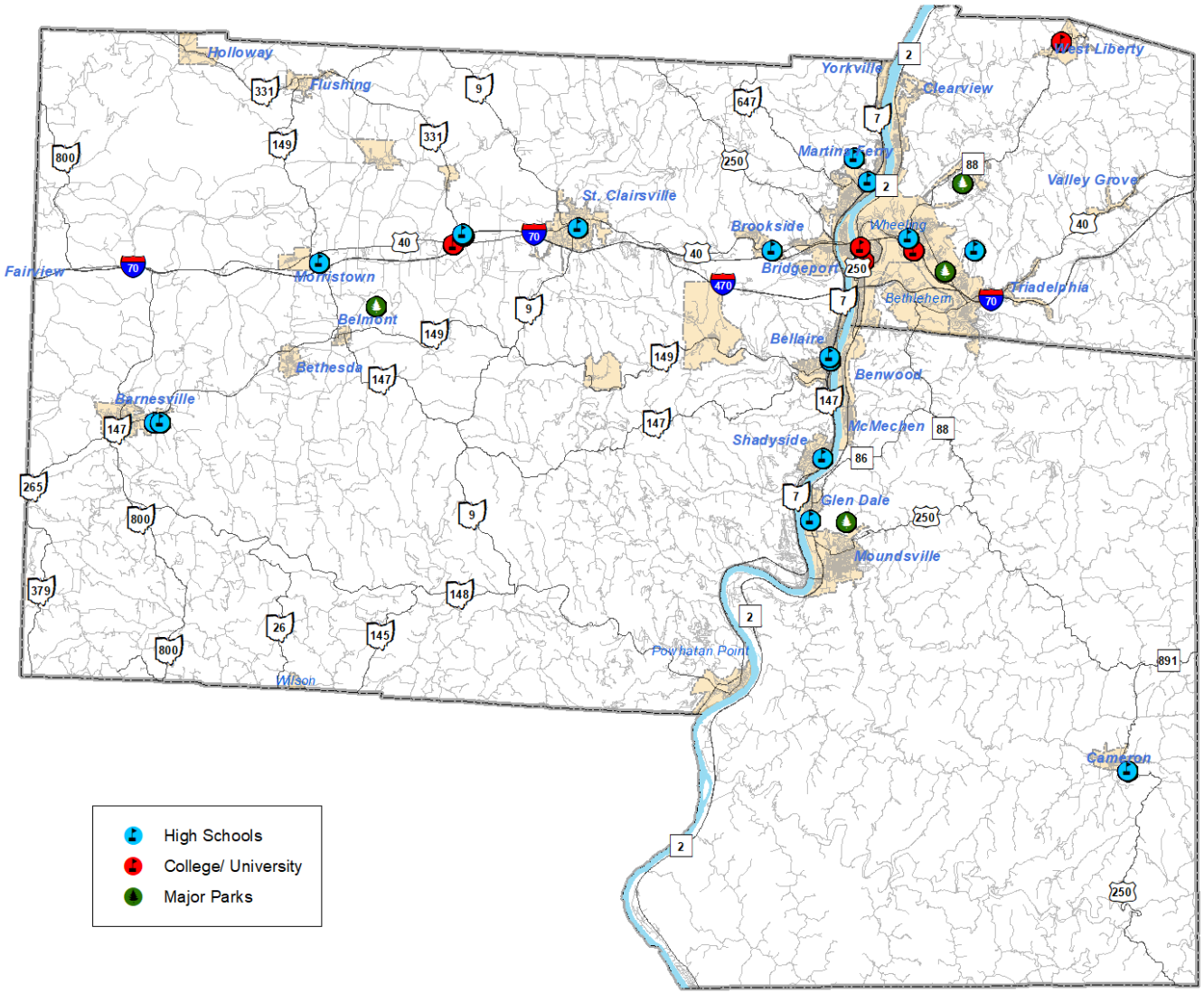


Figure 5-3
Major Traffic Generators



Number	Name
1	Wheeling Downtown
2	Wheeling Hospital/Wheeling Jesuit University/Mt de Chantal
3	Ohio Valley Mall
4	Ohio Valley Plaza
5	St Clairsville CBD
6	Belco Crafts/Belmont County Courthouse Annex/BTC/OUE
7	AEP/PPG/Miles, Inc.
8	Moundsville CBD
9	West Liberty University
10	Oglebay
11	Barnesville CBD/Barnesville Hospital
12	Ohio Valley Coal
13	Bellaire CBD/Imperial Plaza
14	Martins Ferry CBD
15	East Ohio Regional Hospital/United Dairy
16	Ohio Valley Clarksburg Inc.
17	AEP
18	Moundsville Shopping Plaza/Teletech
19	Wheeling Downs
20	Reynolds Memorial Hospital
21	Wheeling Highlands
22	Ethane Cracker Plant
23	Stein Property
24	Fox Commerce Park
25	Fort Beeler Site
26	Blue Racer Midstream
27	NGL Gas Storage Site
28	Repurposed OVMC Complex

Figure 5-4
Educational and Recreational Facilities



Regional Land Use Strategies

The three counties in the study area have taken the initiative to develop digital parcel layers for use in Geographic Information System (GIS). This data may be useful in developing a land use map. A land use map for all counties will be needed before a switch can be made from variable based model to a land use based model. Belomar will facilitate the development of a digital land use layer.

A region-wide comprehensive list of identified future growth sites was not available. Such a list would be an asset to local economic development organizations, prospective developers and the transportation planning process. In collaboration with other economic development partners, available lists of development sites will be merged to prepare a regional list of all known potential development sites in the region. The scope and content of the list will be appropriate for the local needs.

CHAPTER 6

EXISTING TRANSPORTATION INFRASTRUCTURE

The existing transportation network consists of roadways, transit systems, an intermodal facility, an active railroad line, non-motorized trail facilities, navigable Ohio River, and public and private small airports without scheduled commercial flights. The major international airports are approximately 50 miles to the east in Pittsburgh, Pennsylvania and 100 miles to the west in Columbus, Ohio. The roadway system is classified in terms of its function. This classification system is known as the functional class system. The functional class system was established in the 1960s and it is updated every ten years after the decennial census. Recent updates were completed after the 2010 Census. After the 1990 Census, all roads of national significance were identified separately. Nationwide these facilities are referred to as National Highway System (NHS) routes. I-70, I-470, SR7 from the Moundsville Bridge north to the Belmont County line, SR9 from St. Clairsville north to the Belmont County line, WV2 and the Moundsville Bridge over the Ohio River, and US250 in Marshall County are on the NHS.

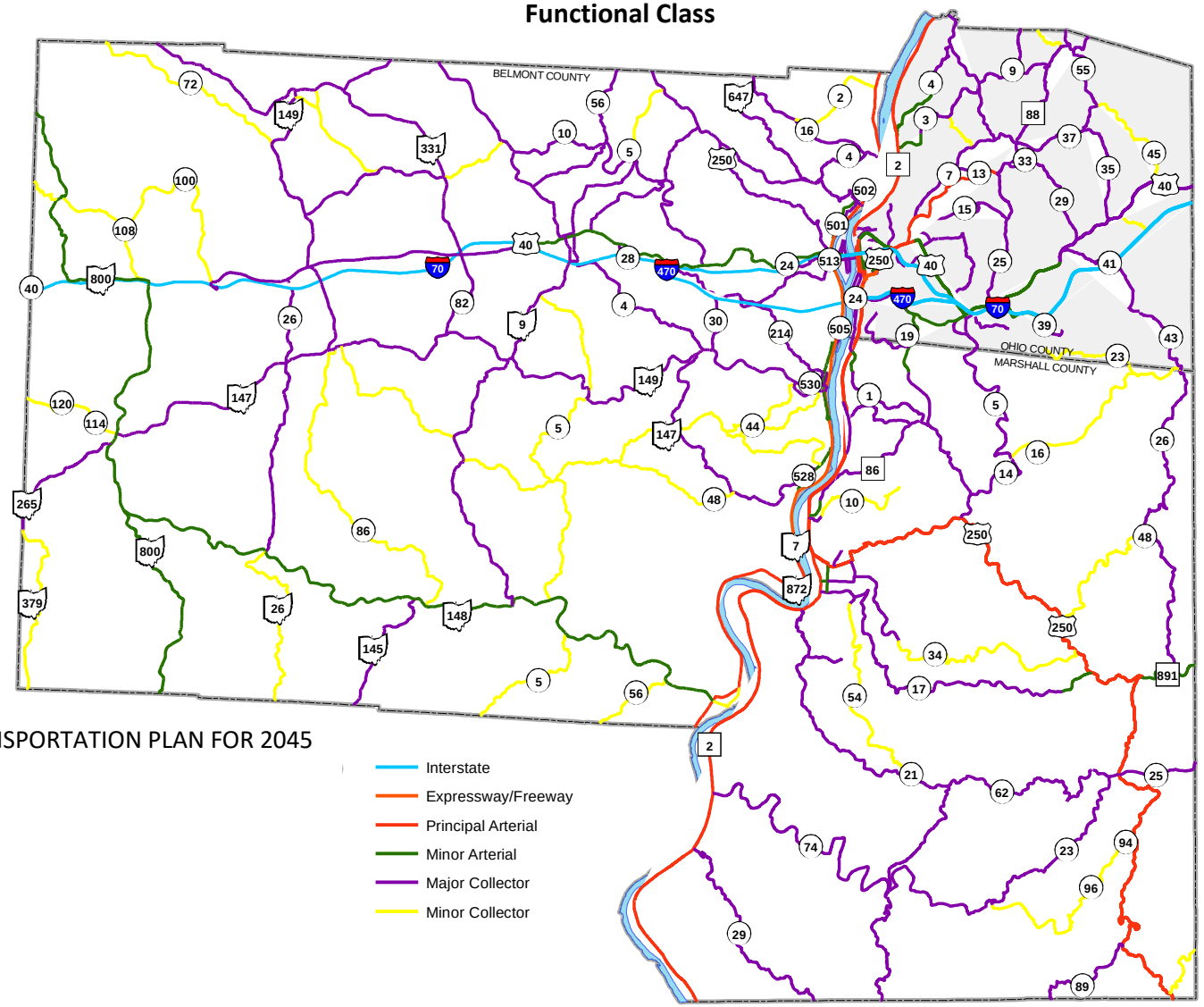
The principal consideration for classifying roads are the travel desires of the public, land access requirements based on the existing and future land use, and continuity of the system. This system is used to develop design standards for each type of facility and for the federal-aid system. In most cases, for a facility to qualify for federal funds, its classification must be higher than local. The functional classification system in the three county area is presented in Figure 6-1. The functional class primarily consists of Principal Arterials, Minor Arterials, Collectors and Local roads. Distinction is also made between urban and rural facilities. In rural areas, collectors are further classified as major and minor collectors.

Principal Arterials primarily serve long and through intercity trips. Three types of facilities are included in this class:

1. Interstate System
2. Freeways/Expressways
3. Other Principal Arterials

Interstate highways were primarily built to provide a network of interconnected roads for the national defense. They are built to federal design standards and primarily serve long trips. Most interstates, excluding the ones recently rebuilt, have served beyond their service life. The interstate highways form the backbone of the roadway network. I-70, a major east-west interstate, runs through Ohio and Belmont Counties in the region. The I-470 bypass provides an alternative route and relieves traffic congestion on the heavily traveled I-70. I-70 traffic is restricted to a single through lane at the Wheeling Tunnels. The north-south travel is primarily served by SR7 in Ohio and WV2 in West Virginia. Both routes run along the Ohio River. Both of

Figure 6-1
Functional Class



TRANSPORTATION PLAN FOR 2045

these facilities have sections that have controlled access, at grade crossings, and a single lane in each direction. Therefore, some sections are classified as other principal arterial and others as freeway/expressway.

Minor arterials distribute traffic from the principal arterials to collectors while collectors disseminate traffic to local streets that in turn provide access to property (e.g. houses and businesses). US40, in the east-west corridor, is one of many minor arterials in the area. Sections of US40 are heavily traveled and one of the busiest sections of US40 in Wheeling is designated as principal arterial. In addition to its functionality as an arterial, it also functions as a collector providing direct access to property. Sections of US40, with a lack of access control and high traffic volumes, show strains now and may frequently break down in the future. Similar strain can be expected on WV2 north of I-70. Collectors connect local roads to arterials. Locally, collectors also provide direct access to the adjacent property.

In the three county region there are approximately 52 miles of interstate, 15 miles of other freeways and expressways, 94 miles of principal arterials, 98 miles of minor arterials, 439 miles of major collectors, and 175 miles of minor collectors. There are 512 bridges in the region.[1] The three major bridges on the NHS are the Fort Henry Bridge over the Ohio River on I-70, the Veterans Memorial Bridge on I-470 and the Moundsville Bridge on the Ohio River connecting principal arterials WV2 and SR7. The Fort Henry Bridge also has sidewalks that are used by pedestrians to approach the Wheeling CBD from the Wheeling Island. In addition, a portion of 48th Street and North Guernsey Street in Bellaire, Ohio is an intermodal connector that serves three facilities on the Ohio River. These facilities are: Marietta Coal Company, Washington Plant Wharf; Oxford Mining, Bellaire Terminal Wharf; and MPR Supply Chain Solutions.

Roadways that are unclassified or are classified as local complete the rest of the roadway system in the region. In West Virginia, all county roads are on the statewide system and maintained by the state. Local jurisdictions within the counties also own roads to provide access to property and developments. In Ohio, in addition to county roads, there are township roads and municipal roads. In Belmont County, county routes are maintained by the county engineer and township roads are maintained by the township trustees. All municipalities maintain local roads within their jurisdictions. Some roads, that are not on the state system, are functionally classified as shown in Figure 6-1. All roads classified major collector and up are on the federal-aid system and eligible for federal funding.

Generally, the small communities lack adequate resources to undertake expansive roadway improvement projects. They also lack formalized pavement management systems for identifying and scheduling maintenance projects. More importantly, these jurisdictions lack resources to quantitatively identify safety deficiencies and address these appropriately. The

[1] From the FHWA National Bridge Inventory (Dec. 2015). In 2011, 23 new metrics were implemented by the National Bridge Inspection Program to assess the Federal and State bridge inspection programs. This process was made to ensure compliance with the National Bridge Inspection Standards, and this number comes from this new process.

safety improvements on local roads may be necessary to achieve statewide safety performance measure targets. Available digital crash data for local streets will be used in the future to assist both states in achieving statewide safety targets.

All roadways, with the exception of the interstate system, can be used for bicycling, even though a vast majority is not designated for shared use or signed as a bike route. ODOT has developed an interconnected statewide network of bike routes. One of these routes passes through Belmont County. A limited number of non-motorized facilities exist in some communities. Most streets, within municipalities, have sidewalks for pedestrian use with ADA compliant curb ramps.

The area is served by the Eastern Ohio Regional Transit Authority (EORTA) and the Ohio Valley Regional Transit Authority (OVRTA). Even though there are two separate boards to oversee the transit operations, there is one Executive Director and service garage for both authorities. A fixed route service, with downtown Wheeling as the hub, is provided. A curb-to-curb van service for Americans with Disabilities Act (ADA) paratransit eligible individuals is also available by reservation. Downtown Wheeling also has an intermodal facility. Among other services, it houses a Greyhound bus terminal. Scheduled intercity bus service is provided by the Greyhound Bus Lines.

Ohio County Airport
Source: Wheeling Intelligencer

Each county in the area has a small public airport. In addition, Belmont County has a private airport. Non-scheduled commuter flights are available from the Ohio County Airport. The Ohio County Airport is the only airport in the area with an air traffic control tower. Scheduled domestic and international flights are available at Pittsburgh International Airport in Allegheny County, Pennsylvania and Columbus International Airport in Franklin County, Ohio. The Ohio County Airport is the largest airport in the region. It also houses the West Virginia Air National Guard.

The Ohio River is a major navigable waterway that passes through the region. It carries barge traffic and tourist cruises. Docking facilities are available on the riverfront in downtown Wheeling. Private docking facilities are also located at various points in the study area. The freight movement on the Ohio River sustains local coal and steel industries, and the growing natural gas industry. The river traffic passes through the Pike Island Locks and Dam in Ohio County and Hannibal Locks and Dam just south of Marshall County. These locks and dams are maintained by the U.S. Corps of Engineers.

There is an active CSX, Wheeling and Lake Erie line in the area. It runs along the western bank of the Ohio River and crosses the river near Wheeling to reach the Benwood terminus. The line is used for freight only. A Norfolk and Southern Line, on the south end of Belmont County, is used for hauling coal mined in the county.

Several communities have converted abandoned railroads to trails. Almost all trails in the area are non-motorized. Efforts are underway to establish an interconnected system of trails in the region. A conceptual plan, developed by the Tri State Trail Initiative, envisions an interconnected trail system from Cincinnati, Ohio to Washington, D.C.

CHAPTER 7

HOMELAND SECURITY AND TRANSPORTATION NETWORK

The role of the transportation network is critical in all emergencies. A single medical emergency requires that the transportation time to a medical facility be minimized. A community level emergency needs an organized and prompt evacuation. A regional level emergency needs even greater resources, cooperation and substantially more roadway capacity. The chaos that prevailed after hurricanes Katrina in New Orleans and Rita in Houston are well known. The year 2020 was a bad year for disasters. There were ravaging wildfires that displaced people in the Western U.S. and burned millions of acres, hurricanes in coastal areas causing evacuations and heavy rains resulting in dam failures near Midland Michigan causing evacuation of over 10,000 residents. These were natural disasters with advance warning. Emergencies that arise as a result of a terrorist act can be even worse. National events may occur that require mass movement of people through the study area. Thus, the need for planning and preparedness for these unpredictable events cannot be over emphasized.

The Problem

The nature and location of a disastrous event is unpredictable. Within the study area there are 44 different jurisdictions. Of these, 31 (including 16 townships) are in Ohio and 13 are in West Virginia. The Pennsylvania state line is within fifteen miles of the Ohio State line. There are multiple jurisdictions with different resources and needs. I-70 is a major interstate that traverses through this region, it will be a key national evacuation route in any east-west evacuation. However, the capacity on I-70 is limited to a single through lane at the Wheeling Tunnel. Recognizing this limitation, the local Emergency Management Services (EMS) plans call for the use of I-470 for any potential east-west evacuation through the area. West Virginia University, based on a survey, identified the target destinations for those selecting to self-evacuate from the National Capital Region (NCR) due to a disaster event. These are illustrated below:

Source: "Highway Evacuations in selected Metropolitan Areas: Assessment of Impediments". A report prepared for FHWA.

Nationwide, major cities are identified under the Urban Area Security Initiatives (UASI). This initiative provides funds to enhance regional preparedness and capabilities of the nation's highest risk, highest threat, high-density urban areas.

Both Pittsburgh, Pennsylvania and Columbus, Ohio are included in UASI. These major metropolitan areas are within 100 miles of the study area. Any event in these cities will affect the local area without much lead time. The study area is also home to large chemical and power plants located along the Ohio River. Two dams with large lock chambers are also located on the Ohio River within the Bel-O-Mar region. There are numerous natural gas wells in the area and an ethane cracker plant worth several billion dollars is coming near Shadyside, Ohio. Salt caverns to store natural gas are also planned within close proximity of the cracker plant.

Local Initiatives

Each county has an EMS office. This office coordinates EMS within the county and oversees disaster preparedness. All counties have some form of Emergency Operations Plan and continue to work on comprehensive plans that include homeland security issues. Evacuation routes for local communities have been identified. Local jurisdictions cooperate with the county's EMS office. The local school superintendents and transit authorities also cooperate with the EMS directors. The states of Ohio, Pennsylvania and West Virginia are members of the interstate Emergency Mutual Assistance Compact (EMAC). Under this compact, the member states provide needed resources and assistance to the affected state. County EMS offices also operate on mutual assistance and local resource can cross state borders.

In Ohio County, using the West Virginia statewide interoperable radio program and Intelligent Transportation Systems (ITS) Architecture, communication and monitoring capabilities in the I-70 corridor have been enhanced. The City of Wheeling also has radio units for their police officers and firefighters to join Ohio County's communication system. Security cameras are installed in the Wheeling Tunnels, and along a few sections of I-70 in Ohio County. Additional cameras are being considered for other critical links including the Ohio River bridges.

In addition to EMS offices, a Northern Ohio River Industrial Mutual Aid Council is operational in the area. This council is responsible for any evacuation related to events at plants along the Ohio River. The local and regional plans may need to be revisited with the opening of the new cracker plant.

The Department of Homeland Security (DHS) requires the preparation of hazard mitigation plans. The county level plans are updated every five years. Ohio and Marshall Counties plans will be updated in the year 2022. Belomar worked with the county EMS directors to prepare the hazard mitigation plan in 2017 and will again take the lead for preparing the 2022 hazard mitigation plan. Belmont County's plan was recently updated by consultants. These plans include potential hazard profile, estimates of potential damages, and mitigation actions for each identified hazard.

Regional Strategies

A large scale disaster event can easily cross multiple jurisdictions. The unpredictability of an event requires dynamic plans that can change instantaneously with the type and scale of the event. Modern technology including Geographic Information Systems (GIS), Global Positioning System (GPS), new traffic modeling and EMS tools, provide opportunities for such plans. The scale of the event can vary from a local incident to a national event. Local incident related EMS can be best delivered at the local level. A regional level event can be overwhelming for local resources, thus the resources and plans may need to change in real time. This may be possible if multiple local plans are interconnected. Bel-O-Mar will be an active partner in the development of Hazard Mitigation Plans and will facilitate efforts for consistency among plans in the region by providing technical expertise, as needed.

These plans are expected to address, among other things, the logistics of service delivery and inventory of local resources, critical supply chains and locations for dispensing essential goods. Scenarios for mass movement of people through the area are also addressed.

The heart of this planning is to keep people informed and moving, while providing essential services along the way. Technology can play a major role in this. Location information based apps can be utilized for information dissemination and providing instructions. Drones can also aid in the assessment and recovery. Communication and the regional capacity to handle demand on communication equipment may become critical. Thus, it is essential that local efforts be incorporated in the statewide initiatives in this area. The ITS should anticipate and incorporate such needs. Bel-O-Mar will work with WVDOT and ODOT to advance ITS projects in the area.

CHAPTER 8

FREIGHT

In addition to the mobility of people, the movement of goods is necessary for the economic vitality of a region and quality of life of its people. Efficient and timely movement of goods through, into and out of our region is critical in sustaining and attracting economic activity. Realizing the importance of freight planning, Congress, through the Surface Transportation Acts, has required the incorporation of freight planning in the transportation plans.

Freight movement is very critical during natural disasters, regional emergencies and the worldwide pandemic. The supply chain logistics play a critical role in timely and efficient movement of goods. During the COVID-19 pandemic, the supply chain was under tremendous pressure to deliver goods from manufacturers spread all over the globe to match consumer demand that included panic buying. The supply chain was affected at all levels. According to an article in the Journal of Commerce[1] "The capacity crunch and disruption are being exacerbated by the container volumes that have overwhelmed port terminals and are sending congestion cascading through inland distribution channels." "There are just not enough drivers to cover the freight that's coming in." Local delivery of goods is affected by the delay in supply chain at any level.

Nationwide freight shipments by weight are predicted to increase by 53% from the year 2012 to 2045. In Ohio, total freight is projected to increase by 62% by 2045, for a total of 1.36 billion tons of shipments. West Virginia on the other hand, is only expected to see an increase of about 12% from 2012 to 2045. Freight shipment by weight for the United States, Ohio, and West Virginia are shown in Table 8-1. While statewide freight data is available through public domain data sets, the regional data for areas with population under 200,000 is not readily available. Previous studies and statewide data are used to estimate future needs of the region.

Table 8-1
Total Freight Shipments by Weight
(Thousands of tons)

	2012	2045	%Change
United States	22,899,441	34,972,992	52.72%
Ohio	836,961	1,355,343	61.94%
West Virginia	332,632	372,420	11.96%

Source: FHWA Freight Analysis Framework: Summary Statistics

[1] *www.joc.com*

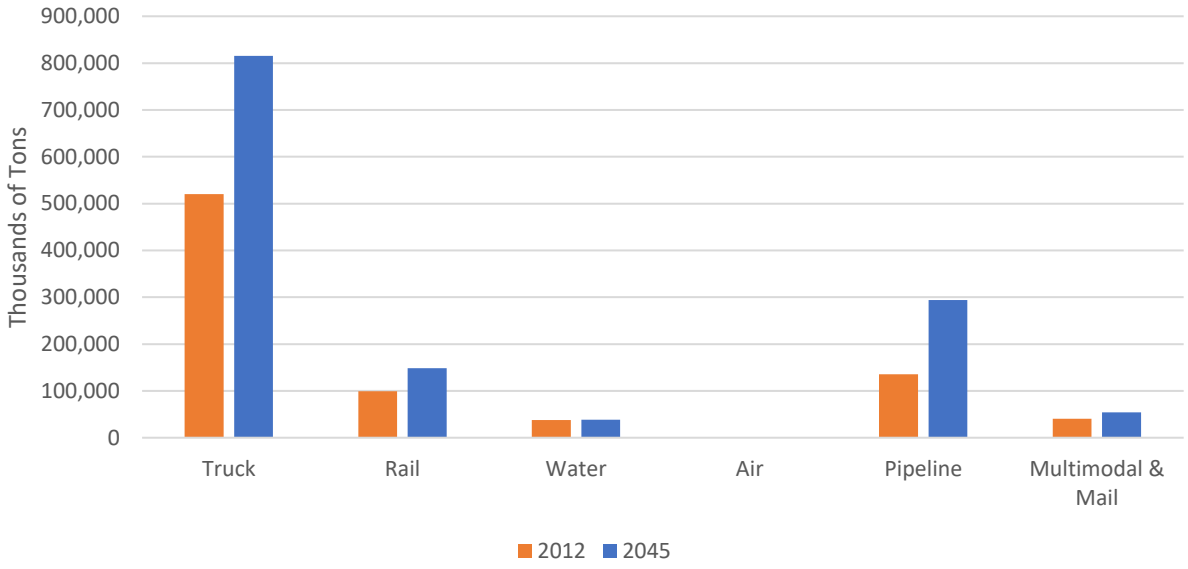
The regional assets for freight movement include the Ohio River with transloading facilities located on intermodal connectors to the national highway system, access to two railroads, and I-70, a busy east-west interstate. I-70 is on the National Highway Freight Network (NHFN) and is one of the most critical highway segments of the U.S. Freight Transportation System. Two north-south interstate routes, I-77 and I-79 are located within 25 miles in each direction. The roadway access to one of the transloading facilities in Belmont County was improved to accommodate shipments of ocean-bound super-size generators from Mount Vernon, Ohio for loading on barges for travel down the Ohio and Mississippi River. Other port facilities are located on both sides of the river in the region.

The Census Bureau conducts economic census every five years, in addition to the decennial census. A Commodity Flow Survey (CFS) is part of the economic census. It provides information on commodities shipped, their value, weight, and mode of transportation, as well as the origin and destination of shipments of commodities from manufacturing, mining, wholesale, and selected retail, and service establishments. The Commodity Flow Survey, undertaken through a partnership between the Census Bureau and the Bureau of Transportation Statistics (BTS) is conducted during the years ending in "2" and "7". The CFS produces data on the movement of goods in the United States. Although this data is available for large metro areas with a population greater than 200,000, it is not available in sufficient detail for smaller metro areas such as ours.

The Federal Highway Administration (FHWA) also maintains a Freight Analysis Framework (FAF). It is a compilation of data and products that provide estimates of freight shipped to (imports), from (exports), and within (domestic) the United States. Although it provides valuable information for larger areas, its use for local planning is limited as origin-destination (O-D) data is not available for counties. Efforts are underway to disaggregate this data to facilitate local analyses at the county level.

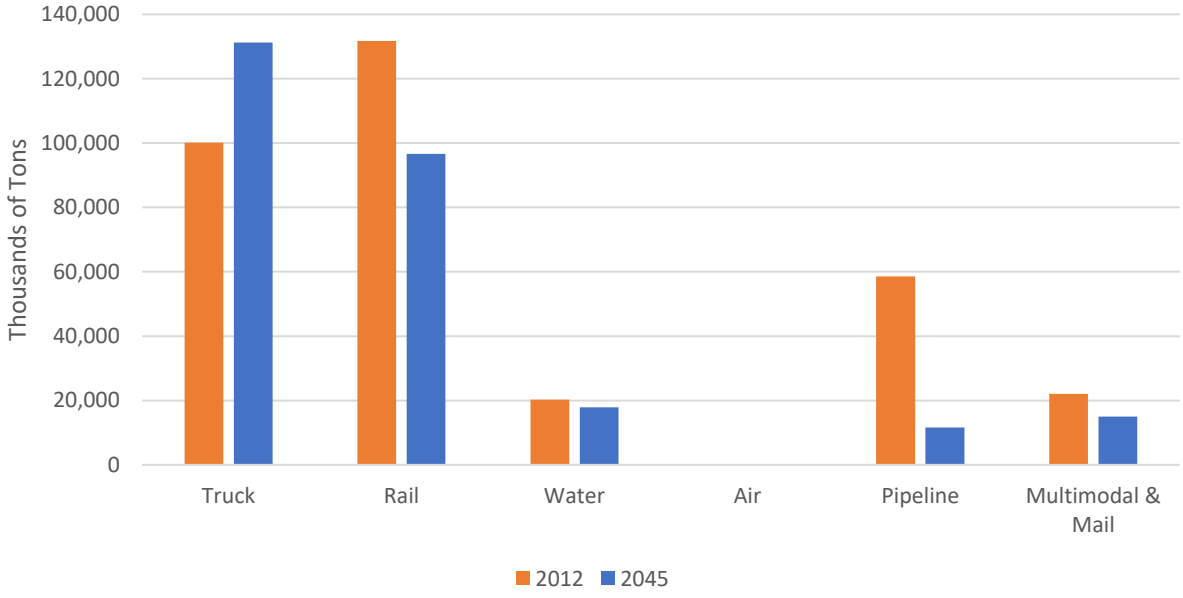
Movement of freight by mode is shown in Figure 8-1 and Figure 8-2. Trucks are the main mode of freight transportation in Ohio and this trend will continue into 2045. In West Virginia, rail transported 31 million tons more freight than truck in 2012. Truck shipment will continue to increase into 2045, while rail shipment will decrease and fall behind truck total weight. Rail and water are useful for long-hauls and cost less than other modes of shipment. Air is an expensive and less accessible mode of shipment and is used for high value, and on-time shipments that carry less weight. Pipelines move gaseous and liquid products with little human input. Multimodal & Mail include shipments that use multiple modes to reach its destination.

Figure 8-1
Ohio Freight Shipment by Mode



Source: FHWA Freight Analysis Framework: Summary Statistics

Figure 8-2
West Virginia Freight Shipment by Mode



Source: FHWA Freight Analysis Framework: Summary Statistics

Truck

Truck freight is one of the most prevalent modes of shipment and has the greatest impact on the public. Trucks share the road with other automobiles; high truck volumes in the traffic stream lower the level of service. Level of service is associated with roadway congestion. Heavy truckloads, on local roads, affect roadway structure and operation due to inadequate turning radii and excessive weight. Generally, if you see a truck on your street, it is there because your neighbor ordered something. All our needs from shelter, food and clothing are delivered by trucks.

Trucks provide an essential service and during the time of disasters and crisis, they are crucial for our recovery. During COVID-19, truckers overcame tremendous challenges to keep the supply chain functioning to meet our panic buying needs. They were on the road when rest areas and restaurants were closed and it was a struggle to find basic amenities and conveniences on their routes. Trucks are essential for our well being and for our economy.

To better understand the travel of truck freight, the FHWA Freight Analysis Framework was analyzed to determine trends within Ohio and West Virginia that can be applied to the region. Table 8-2 shows truck freight by weight moving to, from, and the total of all shipments in Ohio and West Virginia in 2012 and 2045.

Table 8-2
Truck Freight by Weight (Thousands of tons)

	Total 2012	From 2012	To 2012	Total 2045	From 2045	To 2045
Ohio	519,975	117,893	100,271	815,345	185,083	184,313
West Virginia	100,073	31,764	20,837	131,287	32,155	43,870

Source: FHWA Freight Analysis Framework: Summary Statistics

In both cases, for Ohio and West Virginia, more freight was shipped from each state than was shipped to, in 2012. Both states also experience more through freight than inbound or outbound freight. Ohio is expected to experience a 57% increase in total truck freight travel by 2045. Shipments to Ohio are predicted to increase by 84%. West Virginia's total truck freight is expected to increase by 31%. Truck freight leaving West Virginia is predicted to more than double in weight by 2045.

Interstate 70, a major east-west freight corridor, runs through the region. It is a critical freight interstate on the National Freight Network and is one of the top ten import-export corridors in Ohio. The truck traffic is projected to grow by over 2% annually over the next 25 years. This increase reflects a shift to global economy, e-trade, e-shipping, shift in shipping routes due to the opening of a new set of locks at the Panama Canal, and on time deliveries where trucks essentially are warehouses on wheels. The footprint of this change is visible locally in expanding warehousing and distribution activity at "The Highlands". The Cabela's Distribution Center of 1.2 million square feet is the largest connected building in West Virginia. There are over 149 million people within 500 miles of our region (Study Area Figure 3-1). Truck deliveries for up to 500 miles can be made within one day. The regional location is an asset for the land and river based supply chain logistics.

The east-west truck traffic on I-70 and I-470 increased by 12% from 2017 to 2019. I-470 carries a larger proportion of this traffic due to the through lane restriction in the Wheeling Tunnels, and lane restrictions due to the ongoing construction project that is slated to end in 2022. The truck traffic will continue to grow on I-70 and I-470 in the future.

Truck delays due to bottlenecks on the roadways are costly and place an overhead on the supply chain logistics. Two freight mobility indicators are delay/mile[2] and truck reliability index (TRI).[3] The minimum value of TRI is 1. The larger the number, the greater the congestion. Table 8-3 includes truck delay/mile and TRI information for select sections of I-70 and I-470. Each section of interstate has a rank for delay/mile and TRI. These rankings are compared to the other sections of interstate within the same state. In West Virginia, ranking is based on 116 sections and 652 sections in Ohio.

Table 8-3
Delay/Mile and Truck Reliability Index Ranking for I-70 and I-470

Route	Section	Length (Miles)	Delay/Mile (Truck Hours)	Delay/Mile Ranking (OH -/652, WV -/116)	Truck Reliability Index (TRI)	TRI Ranking (OH -/652, WV -/116)
I-70	West of I-470, OH	4.6	10,187	394	1.04	582
I-70	East of I-470, OH	5.8	1,669	539	1.08	319
I-470	From I-70 to WV State Line	6.8	1,347	419	1.05	499
I-470	From OH State Line to I-70	4.0	5,807	10	1.08	58
I-70	Over Wheeling Island, WV	1.5	6,403	7	1.41	6
I-70	East of I-470, WV	9.3	10,187	3	1.97	1

Source: FHWA Freight Mobility Trends and Highway Bottleneck

[2] Delay/mile is calculated from the difference between actual 15-minute travel time and a reference travel time (85th percentile based on free flow conditions) and multiplying each 15-minute difference value with the corresponding 15-minute truck volume. All separately calculated 15-minute delays are added to give annual truck hours of delays and using section length, the aggregate is converted to delay/mile.

[3] Truck reliability index compares 95th percentile travel time to 50th percentile travel times of the day.

Looking at both sections of I-70 at the state line, there is a much higher delay/mile in West Virginia than Ohio. This could be due to "The Highlands" traffic on the West Virginia side. Multi-year I-70 bridge construction project and a single through lane in the Wheeling Tunnel contribute to delays experienced on I-70. Also, I-470 delay per mile and TRI are lower than I-70 in spite of higher AADT.

The section of I-70 from I-470 to the Pennsylvania State Line is the most congested section of interstate in our region and is ranked 3rd worst in the state. This section experiences shipments to and from "The Highlands" and is less than 20 miles from I-79 which leads to Pittsburgh and Morgantown. This part of I-70 is the choke point for the eastbound and westbound freight.

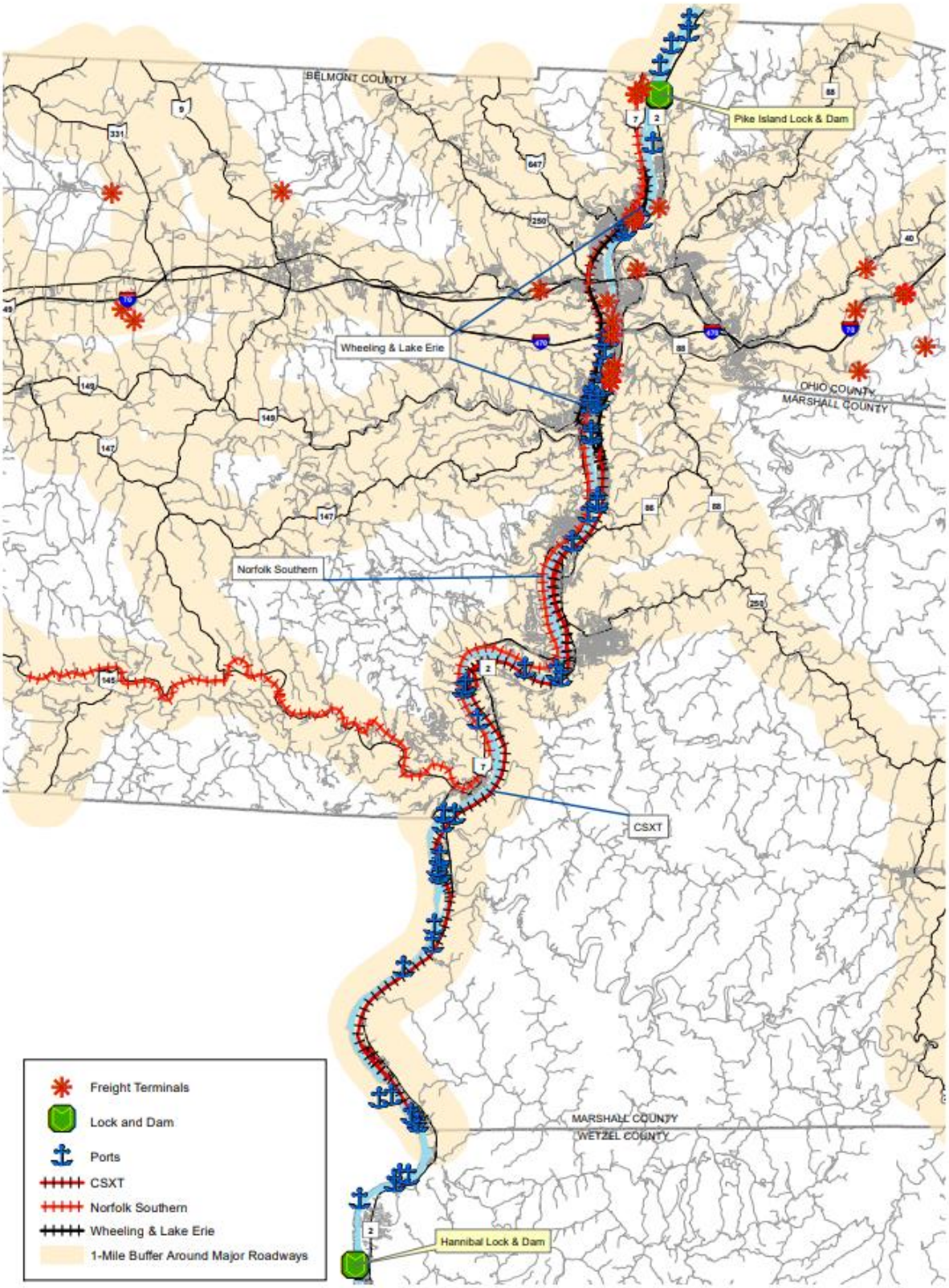
A previous shipper/receiver survey done in the region revealed that 85% of respondents are involved in on-time deliveries and their businesses depend on it. The suggestions made reinforce the concerns regarding on-time deliveries. The respondents would like to see road maintenance at night, improve access to major roadways by improving local streets and secondary roads, and reduce delays on local streets through small towns and villages, particularly around the City of Wheeling. Interestingly, most of the respondents (66%) were either manufacturers or involved in wholesale and distribution. The survey also verified that almost all freight enters and exits the region on I-70 and I-470. From these interstates, WV2, SR7, and US40 are utilized to access the origin or destination facility. A few specific state routes and local streets are also mentioned as the first or last leg of the trip. The survey was done in 2010, however the findings are still relevant.

Freight Terminals' Accessibility

Efficient movement of trucks from the location of major shippers/receivers and transloading facilities is important. Therefore, as shown in Figure 8-3, all major freight terminals were geocoded, and a one-mile buffer around major roadways (Interstates, U.S., and State Routes) was created to determine accessibility issues and associated improvements.

All but one shipper was found to be inside the one-mile buffer distance from a major roadway. Even this shipper is well within two miles of Interstate 70. A separate list of freight terminals and Ohio River ports is included in Appendix B. The major transloading facilities on the Ohio River are conveniently accessible from SR7 in Belmont County and WV2 in Ohio and Marshall Counties. The transloading facility used for supercargo is connected to SR7 through an intermodal connector. Railroads are also conveniently located. Therefore, it is concluded that no significant accessibility issues affect movement of goods in the region. A few spot improvements may be identified in the future as part of a local statewide freight study or plan.

Figure 8-3
Accessibility of Freight Terminals to Roadway Railroads and Ports



There are plans for the construction of a multi-billion dollar ethane cracker plant in Belmont County along the Ohio River. This project will cause an increase in most modes of freight shipment. The construction will require a lot of trucks to deliver materials and remove waste from the area. These trucks would likely be using I-70, I-470, SR 7, WV2, and US 250. After the project's completion, trucks would still use the same major roads for supply to and shipments from the plant. It is important to do a traffic study for the area, before construction starts, to determine what local roads bear the greatest impact from the new traffic. While trucks will be used heavily for the construction of this project, pipeline, rail, and water could be more useful for moving natural gas and other supplies to and from the site after it is up and running.

In 2020, all businesses felt the impact of the Covid-19 pandemic, especially trucking. Truck shipping plummeted in the end of March and beginning of April because of the pandemic. The demand for freight movement was very high, with e-commerce doubling in April, but supply chains were unable to keep up with the extreme demand for supplies. Since then, the industry has been on a steady rise as supply chains are reestablished. Truck freight could see an even higher increase in volume than expected following the pandemic due to more online shopping and post COVID-19 surge in demand.

The expected growth will add significant truck traffic on local interstates. Currently on I-70, more than one in three vehicles is a truck. In addition to the predicted increase of through traffic, the cracker plant construction and operation will add more truck traffic. This significant increase will create freight bottlenecks. Freight bottlenecks have a significant effect on supply chain logistics. Thus, it is critical to plan projects that would address the expected increase in traffic volume. It is also important to address truck parking and staging needs for servicing the local area.

Truck Parking

Pre-COVID-19 projections for e-commerce were pointing to an exponential growth. Change in shopping behavior in favor of online shopping was accelerated by COVID-19 restrictions and need for touchless and safe transactions. This has resulted in significant increase in volume and value of freight moving on trucks. The increase in truck traffic is visible on our roadways. The trucking industry is also regulated to restrict truckers on road hours. Truck delivery hours are also restricted in some jurisdictions and some receivers depend upon on-time deliveries for their operations. Any careful route planning can run into delays due to unforeseen events that may include construction or other emergencies. Truckers can also have delays at loading and unloading sites.

The heavy through truck traffic and traffic for local deliveries need parking and staging areas. Several regulatory restrictions and receiver needs, leave truckers no other choice but to park the truck to time the delivery or to comply with on-road hour restrictions.

Rest Area Parking Overflow

The planning and provision of truck parking has been lagging. It is available at rest areas on our highways and truck stops along the way. The rest stop truck parking was designed in the 50's and 60's and is not at par for today's needs. Several states also limit hours of parking in rest areas. These multi-layered problems and issues leave no choice for truckers, but to illegally park in spots and areas that may not be desirable. Routinely trucks are seen parked on interstate interchange ramps and rest area ramps. The rest area overflow also extends to the mainline creating unsafe situations for the trucker and the traveling public. Truckers play a very important role in our day to day life and need the same safeguards as we expect while traveling. The Jason's Law was enacted by the U.S. Congress for the safety of truckers after a fatal robbery of a truck driver parked in an abandoned gas station in South Carolina waiting for an early morning delivery.

Irrespective of mode of origin, a truck segment is inherent either at the origin and/or at the delivery end. The short and long haul freight is carried by large trucking companies and independent truck operators. While large freight carriers may have prearranged parking spots, the needs of independent truckers will be different. Also, a trucker may not reach a designated/reserved location within the restricted hours due to unforeseen delays. The last mile of freight delivery also presents several challenges. A freight staging area alleviates some of the last mile delivery challenges. Box trucks and less than truck (LTL) load deliveries can relieve concerns regarding excess load on local roads and associated road damage. Further, the traffic delays caused due to lack of turning radii for large trucks in urban environments can also be minimized.

A nationwide survey of truckers reveals that 98% of them experience parking issues. The lack of parking is visible in overflow parking at rest areas and illegally parked trucks in emergency pull over lanes along highways. Only a handful of communities nationwide are beginning to address it. There is an immediate need to address parking situations and last mile delivery issues. Communities need to take a look at freight issues in and around their jurisdictions and address the safety of truckers bringing goods and material for

Parking Overflow on Ramps

local consumption and supporting local economies through e-commerce deliveries and moving locally produced goods and material to elsewhere in the country.

The essential facilities at a truck parking area are lighting and restrooms. Additional conveniences may include idle reduction, internet access, and vending service. In addition, consideration should be given to incorporate charging stations for electric vehicles and potential parking and/or staging needs of connected vehicles.

The federal regulations prevent commercialization of rest areas on interstates without tolls. This precludes provisions of amenities such as EV Charging Stations and idle reduction tools for truckers. While commercial truck stops provide amenities, the bulk of truck parking occurs at rest areas. An inventory of commercial truck parking areas should be prepared to understand supply and demand. A demand and supply analysis may lead to solutions that include need for truck parking improvements at rest areas. ODOT has already implemented the Smart Parking Software (IIS) at 18 rest stops along I-70, I-75, and U.S. Route 33. The software allows truck drivers to see how many spots are available at a given rest stop. The following quote from the Transport Topics magazine highlights the need for investments:

"Parking is a huge concern for drivers. Studies by the Federal Highway Administration show that 83% of drivers routinely take 30 minutes or longer to find parking and that 37 DOTs reported problems with commercial parking." [4]

In addition to parking spot inventory of public and private truck parking spaces in the region, an inventory of delivery zone restrictions and receivers needing on-time deliveries is also needed. Inventory may be taken as part of the study that would include major shippers and receivers. This supply and demand study should identify local issues and potential solutions. A comprehensive approach to address freight issues begins with local area freight plans developed to address local issues in coordination with statewide plans.

Water Freight

One of the biggest, yet under-utilized, regional assets is the Ohio River. The Ohio River begins in Pittsburgh and flows almost 1,000 miles before merging into the Mississippi River. There are two dams with locks in the area; the Pike Island Locks and Dam are in the north of the region, and the Hannibal Locks and Dam are in the south. The Hannibal Locks and Dam are in Wetzel County, between Hannibal, Ohio and New Martinsville, West Virginia. Both dams and sets of locks have experienced some decline in freight tonnage since 2005. The major decrease in freight was from 2005 to 2009 mainly due to the economic recession. Hannibal Locks and Dam

Pike Island Locks and Dam

[4] https://www.ttnews.com/articles/state-dots-are-provided-parking-software-trucks-rest-stops

rebounded slightly with more consistent growth of freight movement than Pike Island Locks and Dam from 2009 to 2019. It is also important to note that the decline occurred while the rising gas prices were affecting shipments by truck. For shipping, "raw materials average .97 cents per ton mile by barge, compared with 2.53 cents per ton mile by rail or 5.35 cents per ton mile by truck" (U.S. Army Corps of Engineers Pittsburgh District 2009).

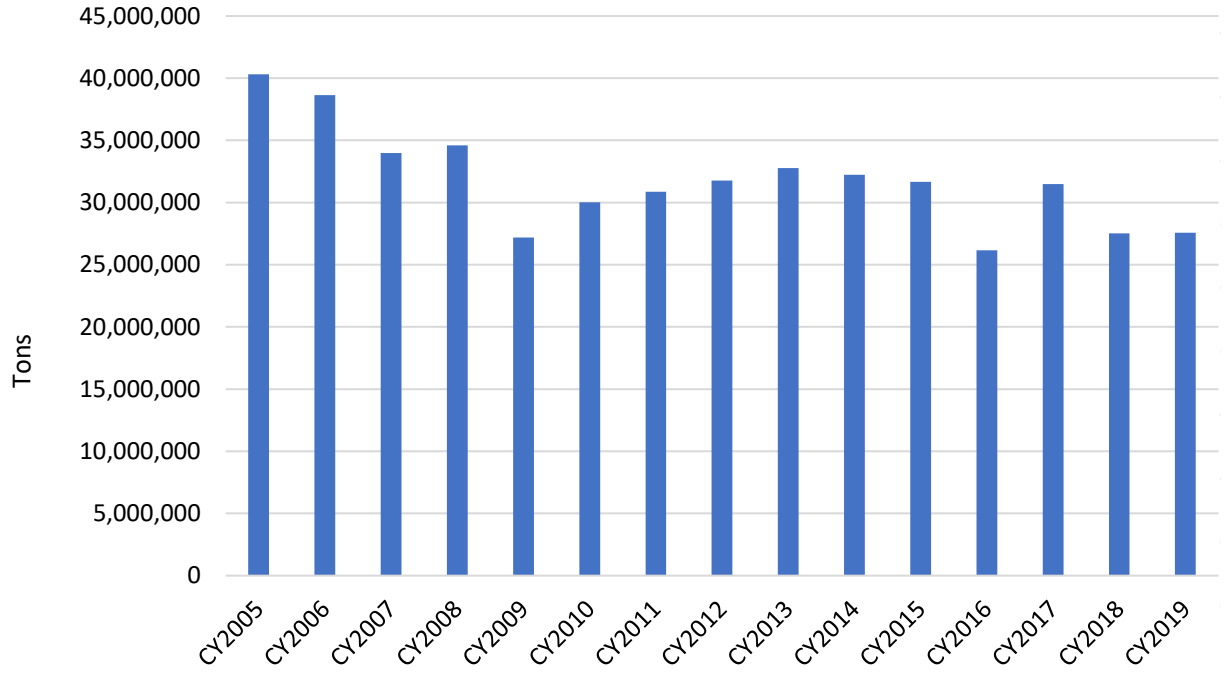
Over the past 15 years, Pike Island has experienced a 32% decrease in freight tonnage passing through its locks, which is shown in Table 8-4. However, Pike Island had a steady increase in freight from 2010 to 2014 following the recession. This can be seen in Figure 8-4 and similarly for Hannibal Locks and Dam in Figure 8-5. Hannibal maintained better retention of freight tonnage from 2005 to 2019 than Pike Island. Hannibal decreased 15% over the 15 years, less than half the decrease at Pike Island.

Table 8-4
Pike Island Locks and Dam and Hannibal Locks and Dam Freight Tonnage

	2005	2019	% Change
Pike Island Locks and Dam	40,314,139	27,567,147	-32%
Hannibal Locks and Dam	53,288,222	45,477,126	-15%

Source: U.S. Army Corps of Engineers, Public Lock Commodity Report

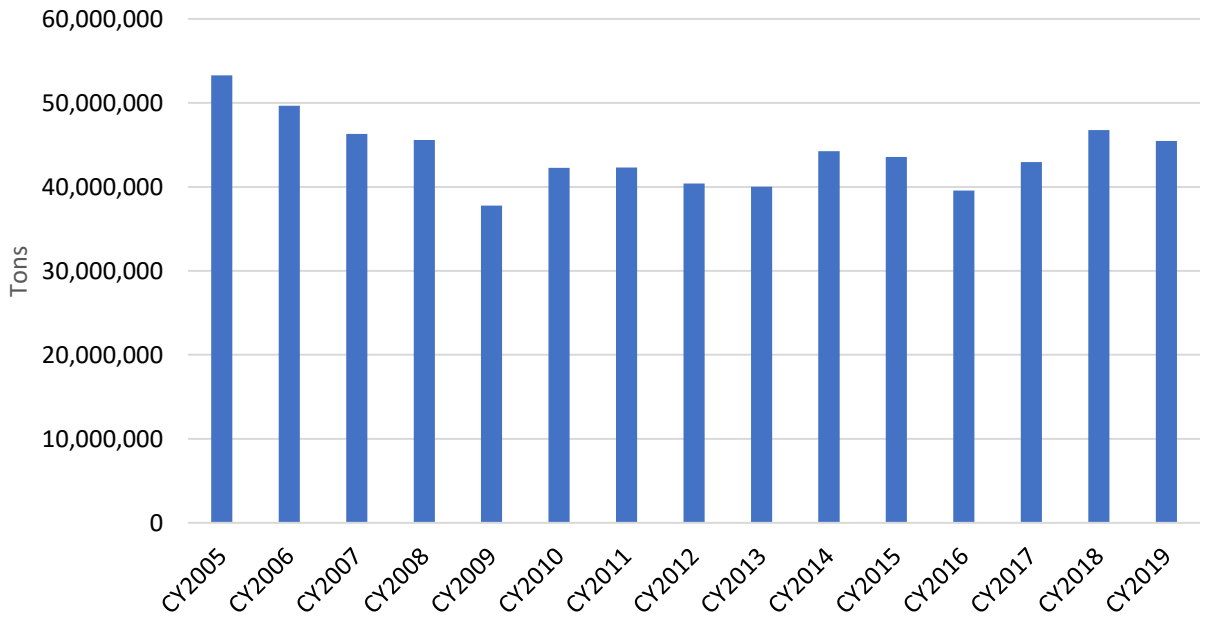
Figure 8-4
Freight Through Pike Island Locks and Dam
by Calendar Year



Source: U.S. Army Corps of Engineers, Public Lock Commodity Report

Figure 8-5

Freight Through Hannibal Locks and Dam by Calendar Year



Source: U.S. Army Corps of Engineers, Public Lock Commodity Report

Coal is by far the predominant commodity moving on the Ohio River in our region. Due to emphasis on clean energy and high Sulphur content, coal production is declining. Figure 8-6 shows that coal, lignite, and coal coke made up 56.6% of the products that moved through Pike Island and Hannibal Dams in 2018. This is down 11.5% from 2013, where coal and coal products make up 68.1% of freight by weight. Figure 8-7 shows coal, lignite, and coal coke freight through Pike Island and Hannibal Dams from 2005 to 2019. Crude materials (excluding fuels) and petroleum and petroleum products make up the second biggest freight contributor that together make up 39.3% of the freight by weight. Crude materials (excluding fuels) have had the largest increase in freight percentage, growing by 8.1% since 2013. Water freight on the Ohio River could expect some increase with the proposed cracker plant in Belmont County. A major indicator of efficient lock passage can be determined by delay and processing times, which are shown in Figure 8-8. Pike Island shows lower and more consistent processing and delay times than Hannibal, however Pike Island Locks process 10 million fewer tons of freight on average each year.

Coal Barge

Figure 8-6
Percentage of Commodities Flowing Through Pike Island Locks and Dam and Hannibal Locks and Dam
2018

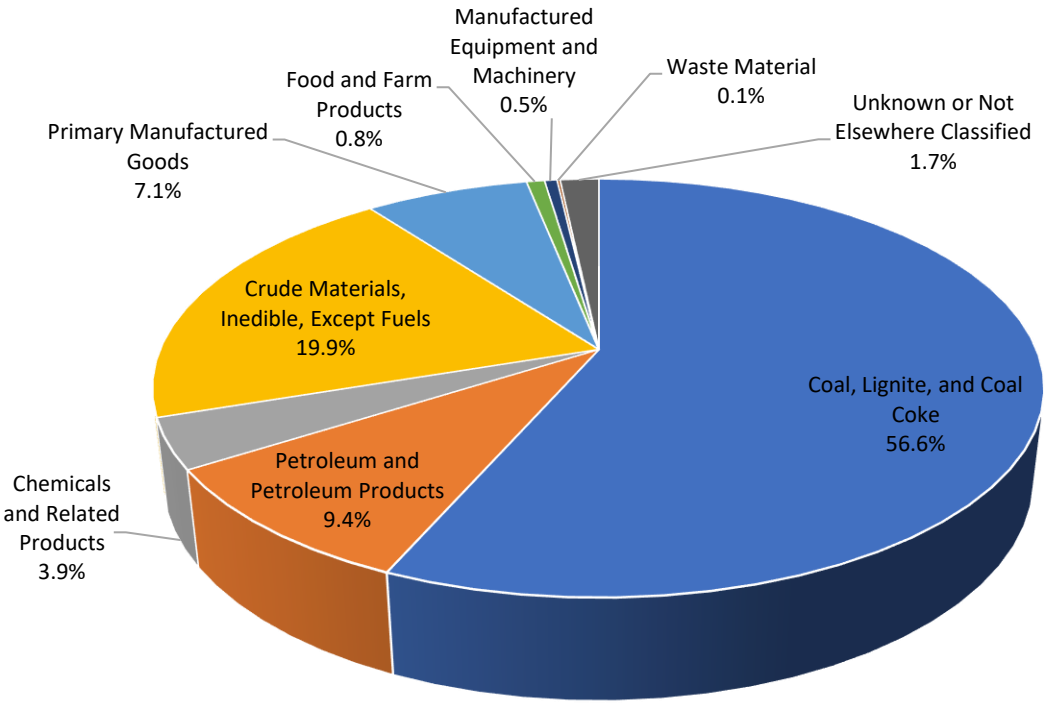
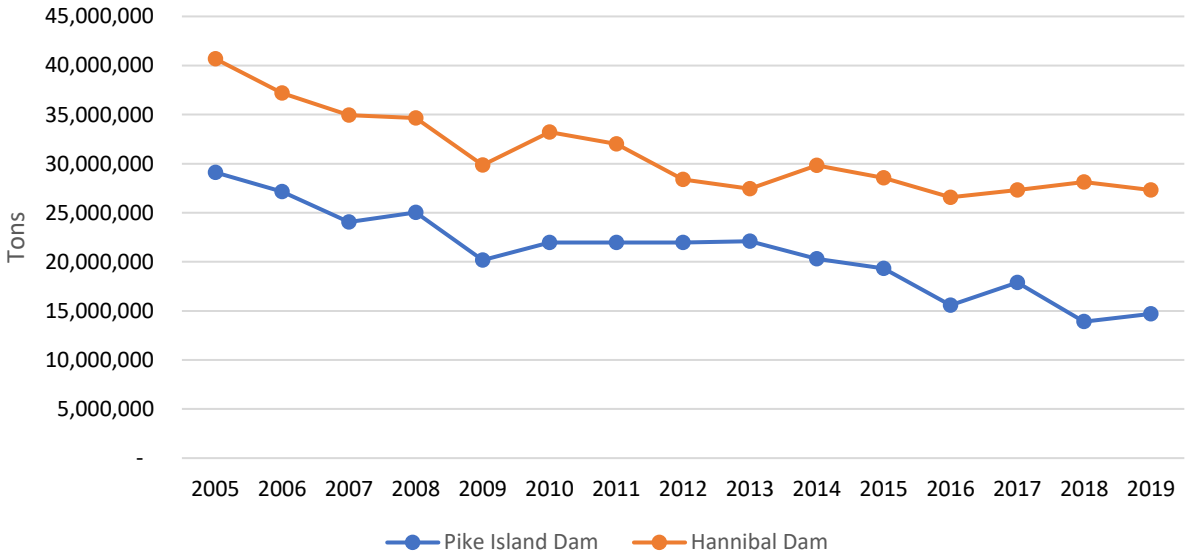
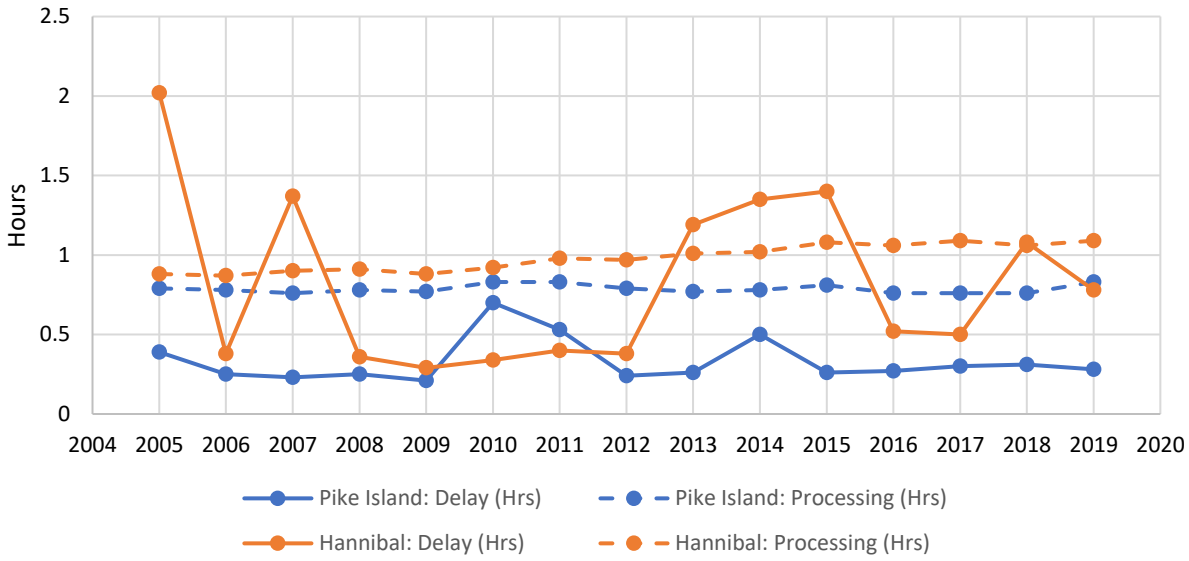


Figure 8-7
Coal, Lignite, and Coal Coke Freight
Through Pike Island Locks and Dam and Hannibal Locks and Dam



Source: U.S. Army Corps of Engineers, Public Lock Commodity Report

Figure 8-8
Pike Island Locks and Dam and Hannibal Locks and Dam
Delay and Processing Time



Source: U.S. Army Corps of Engineers, Public Lock Commodity Report

The proposed construction of the ethane cracker plant in Belmont county will likely impact the amount of freight shipped on the water. The planned location for the cracker plant on the Ohio River is conducive for an increase in water transport. The transloading facility MPR Supply Chain Solutions recently received a $500,000 loan to include rail service to its intermodal functions. In addition, MPR has acquired an additional 50 acres of land for warehousing and is spending almost $1 million for these improvements. The transloading capacity in the vicinity of the cracker plant will be important to provide competitive multi-modal transport options. Traffic delays at locks and dams should also be addressed for efficient movement of water freight.

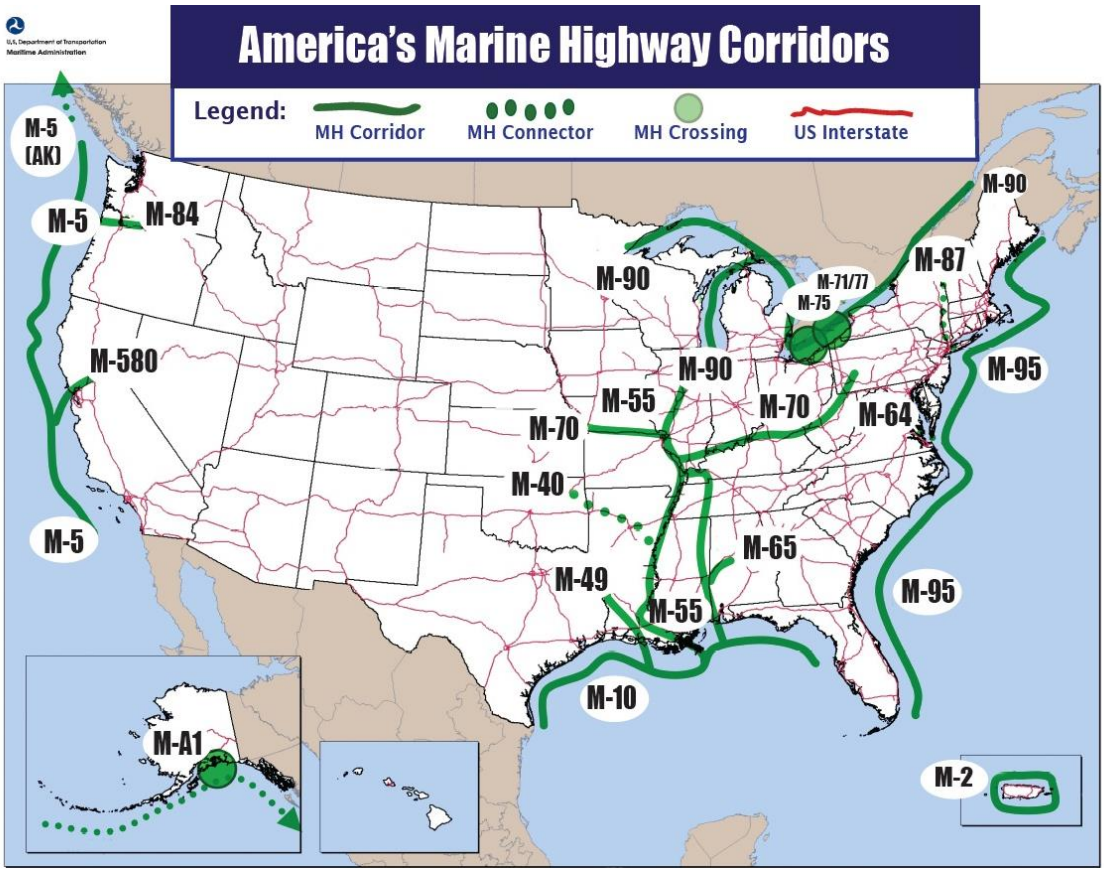
M-70 Marine Highway Corridor

Americas Marine Highway System accommodates the waterborne movement of passengers and non-bulk freight between origins and destinations otherwise served solely by roadways and railways.[5] Eighteen marine corridors, shown in Figure 8-9, each running parallel to the nation's most important land-based routes have been designated by USDOT. Within these corridors, eight marine highway projects have been selected. Pittsburgh has been named the start of the Federal Marine Highway M-70, extending all the way to Kansas City, where it connects with M-55. With these designations comes the eligibility for federal funds to improve the water freight and spur economic development by identifying and removing barriers to freight movement. The marine highway program is designed to increase shipping on waterways. For success of the M-70 corridor, infrastructure improvement at current locks and dams will remain

[5] USDOT Maritime Administration, *America's Marine Highway Report to Congress, April 2011.*

the "elephant in the room" regarding river traffic in this region.[6] With the projected growth in freight movement and the shift in shipping routes, more freight will be moving in, out, and through our region. This will present economic opportunities in transport, warehousing, and distribution sectors.

Figure 8-9
Map of the Marine Highway Corridors



Railroads

Wheeling & Lake Erie Railway Company, CSX, and Norfolk Southern all have operational tracks in the region. The tracks mainly run along both sides of the Ohio River, and cross the river near Wheeling, to reach the Benwood terminal. The Norfolk Southern line branches off at Powhatan Point, and hauls mainly coal mined in southern Belmont County. The railroads are shown in Figure 8-3. Other railroads have been abandoned and converted to trails. An expansion of railroad to include a river-rail-truck transloading facility will help movement of shipments to and from the area. MPR Supply Chain Solutions, in Bellaire, is expanding to include rail service. Their new multi-mode transloading facility is just 1 mile south of the current location and will be able to handle rail-truck-river transloading. This facility will focus on rail and will connect with

[6] "Local Waterway Designated as Federal Marine Highway", *Pittsburgh Tribune-Review*, October 11, 2010.

the Wheeling & Lake Erie line. The Ohio Rail Development Commission has provided a $500,000 grant to MPR for this expansion.

MPR Transloading Facility

Due to fuel costs and congestion related to delays on the nation's highways, other modes of freight transportation (e.g., railroads) may become more attractive and competitive. In Ohio, rail freight by weight is predicted to increase by 49% from 2012 to 2045. West Virginia on the other hand, is expected to decrease rail freight by 27%. This major decrease of rail freight in West Virginia is likely due to the decline of the coal industry. The cost of railroad shipment per ton mile is less than half the cost of shipping by truck. While truck shipments that travel less than 500 miles for delivery have a distinct advantage for time of delivery, the railroads are more efficient for long haul delivery.

In our region, the rise of shale drilling has impacted railroad freight. A shale well generally requires 30 rail carloads of inbound material and will produce 20 carloads of outbound material.[7] Rail will have a large role in the shipment of natural gas liquids and crude oil. However, ODOT's Statewide Freight Study reveals that "the southeast part of the state lacks the rail corridor density that ensures service and has a high proportion of inactive rail lines." Private development of new rail services and improvement of deficient rail lines would help this region grow with the demands of the industry. West Virginia's Rail Plan also recognizes the need to expand services in energy activity areas and increase emphasis on intermodal activities. There is a need to understand the nature of multimodal connections involving rail, water, and truck. At present all intermodal connections in the area are privately owned. The region can also benefit from improving the local rail lines to a 286,000-pound capacity standard, as recommended in the Ohio Statewide Freight Study. A cost benefit analysis of such an upgrade is also suggested. Considering energy sector growth in the area, such an analysis is recommended. It is important that the region maintain existing railroads and actively participate in rail initiatives being advanced in the neighboring states.

Rail-Truck Transloading

[7] *Parson Brinckerhoff, Ohio Statewide Freight Study, Prepared for ODOT's Access Ohio 2040, November 2013.*

The Belomar region and State of West Virginia have a unique, on-going opportunity to coordinate with peer regions on intercity and megaregional transportation. One of the two hyperloop ultra-high-speed analyses recently conducted in Ohio would potentially link Chicago with Pittsburgh via Wheeling. Hyperloop is a technology still in development that would operate magnetically levitated and propelled vehicles through a semi-vacuum tube at speeds up to 600 miles per hour. The technology is designed to carry both passengers and palleted freight. The Pennsylvania Turnpike Commission is currently conducting a related hyperloop analysis for lines crossing Pennsylvania and linking to metropolitan New York City. Should a full network under analysis in neighboring states be realized, a result could be surface transportation connecting Wheeling to New York City, Philadelphia or Chicago within one hour. West Virginia is selected to host a testing and certification facility for the technology.

A separate analysis explored how to link Chicago, Columbus and Pittsburgh with conventional intercity passenger trains, potentially including a station 30 minutes north of Wheeling near Mingo Junction. If completed, this rail service would offer a potential extension opportunity: Pittsburgh-Wheeling commuter rail corridor, with a station either near Market Plaza or on the Ohio side of the river. These studies all offer intriguing transportation and economic development potential for the region.

Belomar will monitor these developments and partner with peer regions to maximize opportunities for our area.

Pipeline

Pipelines are an important freight transportation method throughout the Appalachian Region with the abundance of oil and natural gas. The statewide pipeline freight by weight is shown in Table 8-5. In 2012, pipelines in Ohio and West Virginia made up 16% and 18% of freight by weight, respectively. By 2045, Ohio's pipeline freight is expected to be more than double, a jump of over 117%. In West Virginia, the growth is also significant with an increase of almost 91%.

Table 8-5
Pipeline Freight by Weight
(Thousands of tons)

	2012	2045	% Change
Ohio	135,190	293,714	117.26%
West Virginia	58,543	111,575	90.59%

Source: FHWA Freight Analysis Framework: Summary Statistics

This projected increase is likely due to the boom of oil and natural gas throughout the region. The wells in Belmont County and neighboring counties are not only some of the most productive in the state, but in the entire nation. The drastic increase in drilling requires ways to transport the product and has led to the construction of new pipelines. The approved and proposed pipeline projects throughout the Appalachian Region are shown in Figure 8-10. Some of these projects have been completed by this time or are now approved for construction.

Rover Pipeline is a newly completed 713-mile-long pipeline that stretches from West Virginia to Michigan. There are 7 compressor stations that are in, or just outside of our region. This is likely the most useful new pipeline for the region. Other new pipelines that pass through or are very close to the region are the Mountaineer Xpress and Leach Xpress. New pipelines and expansion projects are likely to continue to increase ease of shipment and greater distribution access. The gas is transported by pipeline via hubs to many states and regions, including the Gulf Coast, Michigan and Canada.

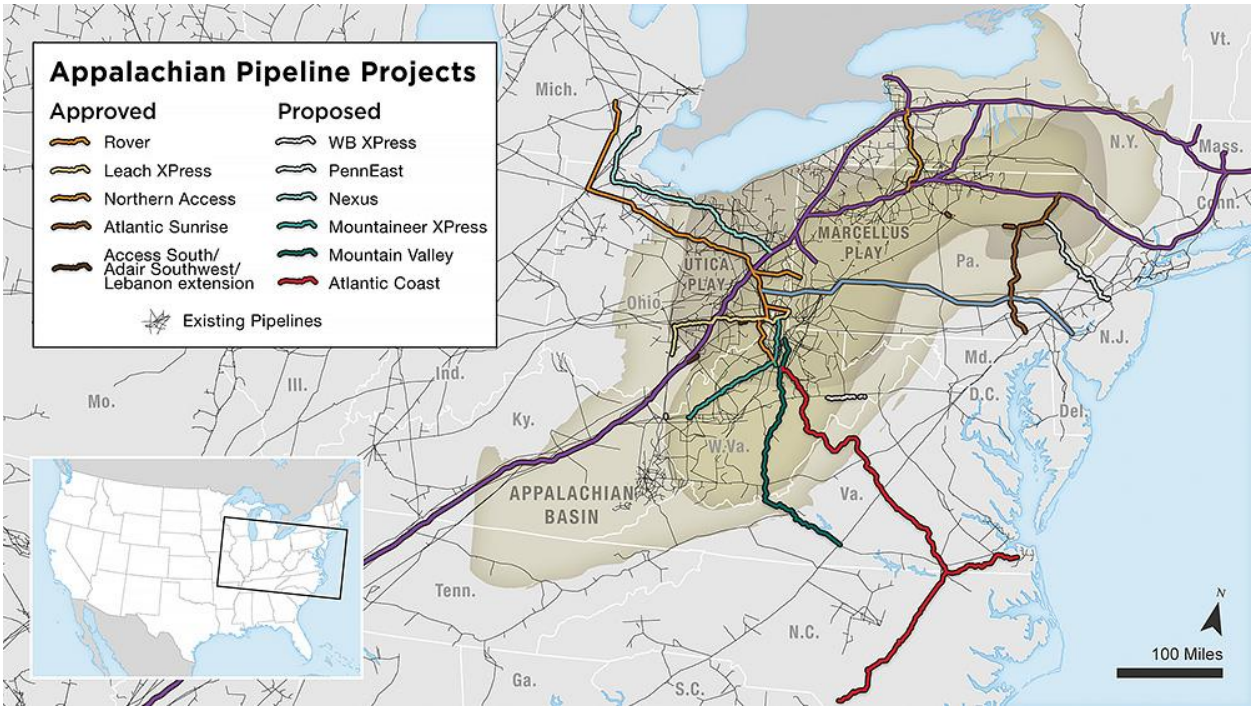
Rover Pipeline

In 2020, Rover made a deal with PTT Global Chemical America, the company planning to construct the ethane cracker plant in Belmont County. In the deal, Rover agreed to provide 15,000 barrels of ethane per day, which is less than 20% of the total ethane needed to run the plant. The Rover Pipeline follows along the Ohio River and will be ideal for delivering natural gas to the plant. In addition, gas will be transported to salt cavern for storage in Monroe County to ensure steady supply to the cracker plant.

Air Freight

The increasing demand for on-time deliveries is causing a significant shift of high price cargo from other modes to air. In Ohio, air freight is expected to grow from 342,000 tons in 2012 to 1,181,000 tons in 2045. Ohio has major airports with capacity to handle even larger volumes. In West Virginia, due to lack of major commercial airports, the air freight shipments are underwhelming, but growing. In 2012, 21,000 tons of freight were shipped by air. This is expected to rise to 62,000 tons by 2045. The hilly terrain and rural expanse of the state may be the reason why air is such a small contributor in statewide freight.

Figure 8-10
Map of Approved and Proposed Pipeline Projects in the Appalachian Region, 2018



Source: The Center for Public Integrity and NPR (Leanne Abraham, Alyson Hurt, Katie Park)

The Belomar region does not have a commercial airport. The closest major airport is an hour east in Pittsburgh, Pennsylvania. The Columbus, Ohio airport is two hours west. The local issues, if any, would be the last mile delivery of the air freight arriving from Pittsburgh International Airport. However, the Wheeling-Ohio County Airport is an asset for the region. This is the only airport with the FAA tower in the region. Its potential to serve as a regional hub for air freight may be worth exploring. Air freight bound for a destination in Tyler County to the south and Wellsburg to the north and Cambridge in the west can be distributed from this airport. In addition, the potential of this airport to serve as a hub for drones can also be explored.

Freight Strategies

A significant increase in freight movement is expected within the study area. The through traffic on I-70 is expected to increase considerably. There is a need to increase capacity on I-70. Within the limitation of fiscal constraints for this plan, capacity enhancing projects should be identified, and advanced. Statewide and local policies can be used as a tool to cultivate public-private partnerships to improve local roads. Roads needing improvements can be identified as part of the well and pipeline permitting process.

The I-70 and I-470 may soon see connected truck convoys. These convoys consist of a lead truck with a driver, while trucks following the lead truck are without an operator. The

connected trucks are electronically connected and maneuvered. The impact of these convoys on the traffic is not fully understood at this time. The outcome of pilot projects elsewhere in the country should be studied prior to its implementation in the local area.

On-time delivery receivers depend upon timely deliveries. The window of delivery may be narrow, and there may be restriction for loading and unloading. Due to the uncertainty of congestion or traffic events on the delivery routes, a truck may have to park overnight to make a delivery during the specified window. A survey of the local businesses can identify any issues regarding online delivery in the local area and a need for truck parking areas. It is important to understand the door-to-door distance of the from and to shipments. In the absence of affordable data, the statewide freight studies can be useful for this.

However, a local truck parking and staging study would be useful. The lack of truck parking is an issue and a truck parking and staging study will identify local issues, demand and solutions. The potential of Wheeling-Ohio County Airport for air freight should also be explored. Belomar will support statewide and local freight studies.

As freight evolves and new technology emerges, last-mile deliveries will change. The future seems to be leaning towards drones. Many large companies and delivery services have been putting drones to use. Some of these companies include DHL, UPS, Walmart, and Amazon. Drones will help make faster deliveries and burn less or no fuel in the process. It is very likely to see drones make a large impact on medical shipments such as blood or vaccines or other types of smaller time sensitive packages. Depending on range and weight limitations, drones can facilitate timely and critical movement of medical supplies among a network of providers over large geographic areas. WVU Medicine, based in Morgantown, West Virginia, has many facilities across the state, including one in Barnesville, Ohio. Belomar will follow the development of new technologies to determine their local applications and the need for associated policy and infrastructure changes/improvements.

On the distribution side, robotic loading and unloading systems are being put in place to minimize loading time. This could help with bottlenecking at large warehouse facilities by ensuring timely loading and more efficient scheduling for pickup and drop off times.

Although the shale gas/liquids production is a boom for the regional economy, concerns regarding ground water contamination and gas well accidents remain. To address these concerns there is a need for hazard mitigation and emergency management plans that are flexible. These plans should have a transportation component to mobilize resources and evacuate large numbers of residents at a short notice. Belomar will participate in the development of hazard mitigation plans for the area.

As new pipelines are laid for the transport of locally retrieved gas and liquids, Belomar will support enforcement of approved environmental regulations designed to minimize the impact of this activity on communities.

CHAPTER 9

HIGHWAY SAFETY

The objective of highway safety is to make the roadways safer by minimizing crashes, injuries and fatalities. Both states have taken initiatives to reduce the number of crashes and severity of crashes. Statewide strategies to reduce crashes include engineering solutions, driver education, enforcement and emergency response. Each state sets annual targets for improving safety on roadways. Bel-O-Mar's safety planning complements statewide planning and is not possible without the crash data collected, processed, maintained and made available by the Ohio Department of Public Safety (ODPS) and the West Virginia Department of Transportation (WVDOT). The crash data compiled by the states can be used to identify high hazard locations, study crash patterns at selected locations, determine predominant crashes and causes, and to identify countermeasures for improving safety.

Surface transportation acts, the Moving Ahead for Progress in the 21st Century (MAP-21) Act and the Fixing America's Surface Transportation Act (FAST Act), emphasize a transition to performance planning. In transitioning to performance based planning, states and MPOs are required to develop performance targets for the nationally identified performance measures. Roadway Safety is one of the seven performance areas. Annual targets to reduce crash severity on all roads are required. Of the seven national goals requiring performance measures, safety performance measures were established first by the Federal Highway Administration's (FHWA) Performance Management rule. This is often referred to as PM1 rule.

In accordance with the safety performance management final rule, state DOTs and MPOs are required to establish and report on targets for five performance measures as follows:

1. Number of fatalities
2. Rate of fatalities per 100 million Vehicle Miles Traveled (VMT)
3. Number of serious injuries
4. Rate of serious injuries per 100 million VMT
5. Number of non-motorized fatalities and serious injuries

States must develop the safety target. MPOs have the option to adopt statewide targets or set their own targets. Most MPOs in both states including Belomar have elected to support Ohio's and West Virginia's statewide targets. In doing so, Belomar plans and programs projects so they contribute towards the accomplishment of ODOT and WVDOT's statewide safety targets. The safety targets are set for the calendar year and adopted annually. The targets were first set in CY2018 and the most recent targets are for CY2021 and shown in Table 9-1.

Table 9-1
CY2021 Roadway Safety Target

Performance Measure	West Virginia		Ohio	
	Baseline (2015-2019)	Target	Baseline (2015 – 2019)	Target
Number of Fatalities	279.0	263.7	1,128.8	1,084
Number of Serious Injuries	1,077.8	1,002.4	8,434.2	8,101
Rate of Fatalities per 100 Million Vehicle Miles of Travel	1.459	1.46	0.97	0.93
Rate of Serious Injuries per 100 Million Vehicle Miles of Travel	5.619	5.02	7.25	6.97
Frequency of Non-Motorized Fatalities and Serious Injuries	96.8	86.2	844.8	811

The targets are based on the 5-year rolling average. CY2021 targets have a baseline of CY2015 to CY2019. ODOT targets are based on achieving 2% annual reduction across all five categories. WVDOT targets are based on a reduction of 50% in fatalities and fatality rate by the year 2030 and 66% reduction in the other 3 categories by the year 2030.

Belomar maintains the most recent five year crash data in two separate databases. The data for Belmont County is obtained from the Ohio Department of Public Safety (ODPS) and Ohio and Marshall County data is obtained from WVDOT. The current crash data includes records for CY2015 to CY2019. This data is used to study crash trends and to identify high hazard locations.

Summary tables from crash databases are generated for each county and are presented in Table 9-2, Table 9-3, and Table 9-4.

Roadway crashes are random occurrences and reference systems are needed to report their location. Location accuracy plays a significant role in locating crashes and identifying high hazard locations.

Historically, location reference has been challenging in crash data reporting. The use of Global Position System (GPS) has helped in improving this. As a result, the process of identifying high hazard spots has improved. Crash data for the years 2014 to 2018 is utilized to select locations that had 15 or more crashes, 10 or more injuries, or 5 or more fatalities.

Table 9-2
Belmont County Crash Summary
2015 - 2019

Time of Day	2015	2016	2017	2018	2019	Total
6AM - 9AM	249	188	223	269	212	1,141
9AM - 3PM	525	532	536	525	497	2,615
3PM - 6PM	359	332	362	376	366	1,795
6PM - 6AM	517	498	537	533	495	2,580
Total	1,650	1,550	1,658	1,703	1,570	8,131
Crash Type						
SINGLE VEHICLE	801	722	748	829	745	3,845
REAR END	357	330	338	359	304	1,688
HEAD ON	44	42	32	44	26	188
ANGLE	212	207	259	188	197	1,063
SIDESWIPE	191	199	219	229	210	1,048
OTHER	45	50	62	54	88	299
Total	1,650	1,550	1,658	1,703	1,570	8,131
Light Conditions						
DAY	1,079	1,033	1,128	1,122	1,037	5,399
NIGHT	496	455	443	499	449	2,342
DAWN/DUSK	67	53	83	74	77	354
OTHER	8	9	4	8	7	36
Total	1,650	1,550	1,658	1,703	1,570	8,131
Road Conditions						
DRY	1,194	1,187	1,273	1,098	1,154	5,906
WET	285	238	325	458	263	1,569
SNOW/ICE	161	113	53	138	150	615
OTHER	10	12	7	9	3	41
Total	1,650	1,550	1,658	1,703	1,570	8,131
Crash Severity						
FATAL	10	4	8	5	11	38
INJURY	389	388	397	406	378	1,958
PDO	1,251	1,158	1,253	1,292	1,181	6,135
Total	1,650	1,550	1,658	1,703	1,570	8,131

Table 9-3
Ohio County Crash Summary
2015 - 2019

Time of Day	2015	2016	2017	2018	2019	Total
6AM - 9AM	141	140	146	161	146	734
9AM - 3PM	518	478	427	438	447	2,308
3PM - 6PM	348	346	320	308	373	1,695
6PM - 6AM	422	365	374	376	360	1,897
Total	1,429	1,329	1,267	1,283	1,326	6,634
Crash Type						
SINGLE VEHICLE	334	332	328	347	297	1,638
REAR END	416	397	343	326	412	1,894
HEAD ON	37	19	31	32	25	144
ANGLE	316	264	284	282	286	1,432
SIDESWIPE	304	291	260	283	273	1,411
OTHER	22	26	21	13	33	115
Total	1,429	1,329	1,267	1,283	1,326	6,634
Light Conditions						
DAY	1,031	961	897	895	958	4,742
NIGHT	358	321	317	332	325	1,653
DAWN/DUSK	29	42	43	51	34	199
OTHER	11	5	10	5	9	40
Total	1,429	1,329	1,267	1,283	1,326	6,634
Road Conditions						
DRY	1,035	1,016	945	855	988	4,839
WET	237	201	279	327	256	1,300
SNOW/ICE	151	101	38	94	75	459
OTHER	6	11	5	7	7	36
Total	1,429	1,329	1,267	1,283	1,326	6,634
Crash Severity						
FATAL	6	3	2	2	5	18
INJURY	316	265	272	283	292	1,428
PDO	1,107	1,061	993	998	1,029	5,188
Total	1,429	1,329	1,267	1,283	1,326	6,634

Table 9-4
Marshall County Crash Summary
2015 - 2019

Time of Day	2015	2016	2017	2018	2019	Total
6AM - 9AM	94	74	81	114	80	443
9AM - 3PM	207	176	188	186	176	933
3PM - 6PM	162	116	119	169	143	709
6PM - 6AM	222	155	204	235	171	987
Total	685	521	592	704	570	3,072
Crash Type						
SINGLE VEHICLE	264	208	233	269	193	1,167
REAR END	109	89	96	135	119	548
HEAD ON	18	16	27	18	22	101
ANGLE	148	111	129	158	120	666
SIDESWIPE	131	83	99	116	109	538
OTHER	15	14	8	8	7	52
Total	685	521	592	704	570	3,072
Light Conditions						
DAY	461	368	400	456	400	2,085
NIGHT	190	136	179	218	151	874
DAWN/DUSK	29	13	12	27	15	96
OTHER	5	4	1	3	4	17
Total	685	521	592	704	570	3,072
Road Conditions						
DRY	482	369	451	479	428	2,209
WET	115	83	110	164	96	568
SNOW/ICE	84	61	25	52	34	256
OTHER	4	8	6	9	12	39
Total	685	521	592	704	570	3,072
Crash Severity						
FATAL	6	1	4	2	3	16
INJURY	157	120	152	140	124	693
PDO	522	400	436	562	443	2,363
Total	685	521	592	704	570	3,072

Locations in Belmont County are identified by geocoding the GPS coordinates and then accumulating crashes to select locations meeting the selection criteria. On the West Virginia side, locations were selected using 0.05 mile segments on each route and selected segments meeting the section criteria. Twenty-five locations from each county are shown in Figure 9-1 and Table 9-5.

Table 9-2, Table 9-3, and Table 9-4 for the three counties show that the roadway departure (single vehicle) crashes are most predominant in Belmont and Marshall Counties. This is consistent with the rural expanse of these counties. In Ohio County, while rear end crashes are the most predominant, the single vehicle crashes are the second most frequent crash type. Most of these single vehicle crashes are collisions with animal, with hit deer being the most common. It is consistent with the statewide crash experience with West Virginia ranked at the top in all states for animal collision crashes, according to a State Farm Insurance Company study. There is 1 in 37 chances of colliding with an animal in West Virginia and 1 in 102 chances of the same in Ohio.

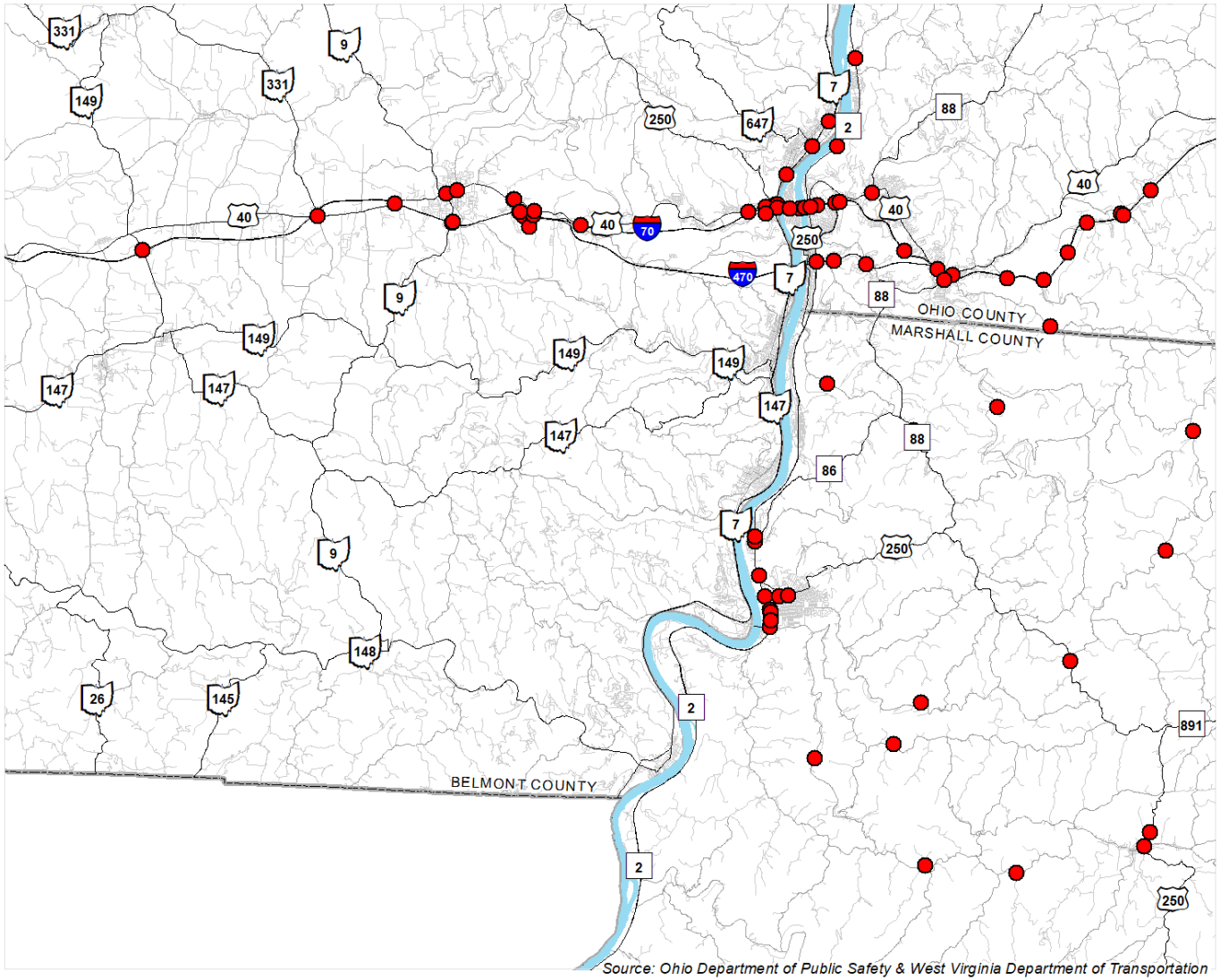
While single vehicle and rear end crashes are the two most prominent crash types in Ohio and Belmont Counties, angle crashes rank second in Marshall County. Angle crashes mostly occur at intersections. In general, rear end crashes occur at intersections and on freeways and expressways.

A majority of the crashes occur from 9 AM to 3 PM and 6 PM to 6 AM and most crashes are property damage only (PDO). A vast majority of crashes occur during daylight conditions and on dry pavements.

The crash data is also used to discern how the local crash experience matched with the statewide experience and the statewide targets. FHWA annually makes a determination if the state has achieved its target or made significant progress towards achieving the targets. The first FHWA determination was made in the year 2020 using the five year crash data from 2015 to 2019. Table 9-6 and Table 9-7 show the target achievement.

The actual data and targets in Table 9-7 are provided by WVDOT. Targets for Ohio and Marshall Counties are also provided by WVDOT for comparison and to view regional progress in achieving local and statewide targets. For the Ohio side, statewide targets are provided by ODOT and Belmont County targets are computed by Belomar based on annualized reduction of 2% in all five categories.

Figure 9-1
Selected Locations in Belmont, Ohio and Marshall Counties



Source: Ohio Department of Public Safety & West Virginia Department of Transportation

Table 9-5
Selected Crash Locations

Belmont County	Location Name	Frequency	Injuries	Fatalities
	SR-7 and Hanover St.	45	15	0
	SR-7 and Aetna St.	55	14	0
	US-40 and Mall Road	44	8	0
	Mall Rd. and I-70 ramps	43	8	0
	US-40 and Bannock Rd. (SR-331)	34	12	0
	US-40 and SR-7 ramps	38	8	0
	North Marietta and E. Main St.	43	6	0
	Mall Rd. and the Eastern Mall Exit	27	8	0
	Cadiz Pike, Lincoln Ave. and SR7	29	6	0
	US 40 and Sugar St.	37	5	0
	Main St. and West St.	26	6	0
	Main St. and Marion St.	28	5	0
	I-70 at South Marietta Overpass	22	6	0
	SR-149 and I-70 Ramp	21	6	0
	I-70 at Banfield Rd. Overpass	20	6	0
	I-70 and 40 Overpass	26	4	0
	Banfield Rd. and US-40	25	4	0
	US-40 at the Northern Mall Entrance	26	3	0
	SR-7 and North 5th St. (N. Zane Hwy.)	15	6	0
	US-40 and High Ridge Rd.	16	5	0
	I-70 at Mall Rd. Overpass	18	4	0
	Mall Rd. at I-70 Overpass	16	3	0
	South Marietta I-70 Overpass	15	3	0
	Marion St. and Howard St.	15	2	0
Ohio County	I-70 Milepost 0.49	96	21	0
	I-470 Milepost .99	62	15	1
	Dallas Pike Rd. and Fort Henry Rd.	76	20	0
	I-70 Milepost 10	80	16	0
	I-70 Milepost 5	78	15	0
	I-70 Milepost 9	45	15	1
	National Road and Bethany Pike	66	18	0
	I-70 Milepost 0.65	67	11	0
	I-70 Milepost 8	59	18	0
	I-470 Milepost .53	57	19	0
	Ohio River Road near I-70 ramp	51	12	0
	I-470 MP 1.97	51	11	0
	National Road and I-70 Exit 5 on ramp	44	17	0
	National Rd. and Kruger St.	47	10	0
	I-70 Milepost 0.99	45	11	0
	Stone Church Road and Walnut Grove Road	36	13	0
	I-70 Milepost 11	45	8	0
	Zane St. and South York St.	41	9	0
	I-70 Milepost 1.48	33	11	0
	I-70 Milepost 7	33	11	0
	I-70 Milepost 0.8	24	5	1
	I-70 Milepost 3.97	33	10	0
	I-70 Milepost 1.6	30	11	0
	Warwood Ave. and Nth 26th St.	29	11	0
	I-70 Milepost 12	31	9	0

Table 9-5
Selected Crash Locations
(Continued)

Marshall County	Location Name	Frequency	Injuries	Fatalities
	Rt 2 Milepost 13.86	78	20	2
	Big Grave Creek Rd. and Roberts Ridge Rd.	76	14	1
	Roberts Ridge Rd. and Rodriguez Lane	75	20	1
	Lafayette Ave. and Walmart Dr.	105	25	0
	Waynesburg Pike Rd. Milepost 19.60	67	20	0
	Fork Ridge Rd. Milepost 6.86	60	21	0
	Lafayette Ave. and 12th St.	67	17	0
	Middle Grave Creek Road Milepost .59	59	19	0
	Lafayette Ave. and 5th St.	51	12	0
	Number 2 Ridge Rd. and Turkey Run Rd.	40	10	0
	Lafayette Ave. and 7th St.	26	8	1
	Boggs Run Road and Marshall St.	41	9	0
	Fairmont Pike Milepost 3.55	37	10	0
	Waynesburge Pike Rd. and Hilltop Ln.	31	11	0
	New Bethel Rd. Milepost 2.91	36	8	0
	Wheeling Ave. Milepost 31.71	19	5	1
	Big Wheeling Creek Rd. near Claus Lane	27	9	0
	1st St. and Jefferson Ave.	27	8	0
	Dry Ridge Road and Lone Oak Rd.	27	8	0
	Waynesburg Pike Rd. Milepost 11.58	27	4	0
	Wheeling Ave. Milepost 32.62	22	7	0
	Lafayette Ave. and 6th St.	27	4	0
	1st Ave. and Fostoria Ave.	19	7	0
	Wheeling Ave. and 7th St.	18	6	0
	Lafayette Ave. and 10th St.	23	4	0

Table 9-6
Safety Performance Target Achievement
Belmont County, Ohio

Measure	2019				2020		2021	
	Ohio		Belmont		Ohio	Belmont*	Ohio	Belmont*
	Target	Actual	Target*	Actual	Target	Target	Target	Target
Fatalities	1,062	1,128.8	7.9	8	1,055	7.7	1,084	7.6
Fatality Rate	0.91	0.97	0.90	0.73	0.91	0.89	0.93	0.87
Serious Injuries	8834	8,434.2	50.1	43.4	8,348	49.1	8,101	48.1
Serious Injury Rate	7.60	7.25	5.0	4.26	7.21	4.9	6.97	4.8
Non-Motorized Fatalities and Injuries	836	844.8	5.9	3.6	824	5.8	811	5.72

* Target based on 2% annual reduction in 5 year rolling averages derived from Belmont County crash data and VMT information available from ODOT.

Table 9-7
Safety Performance Target Achievement
Ohio and Marshall Counties, West Virginia

Measure	2019				2020		2021	
	West Virginia		Ohio & Marshall		West Virginia	Ohio & Marshall	West Virginia	Ohio & Marshall
	Target	Actual	Target	Actual	Target	Target	Target	Target
Fatalities	274.2	279.0	6.2	7.4	271.4	7.1	263.7	6.7
Fatality Rate	1.470	1.459	0.844	0.994	1.465	0.880	1.465	0.991
Serious Injuries	1,123.5	1,077.8	41.2	39.8	1,040.1	38.4	1062.4	36.9
Serious Injury Rate	5.629	5.619	5.246	5.317	5.326	4.729	5.023	4.452
Non-Motorized Fatalities and Injuries	91.6	96.8	5.5	5.2	91.5	5.0	86.2	4.7

Note: Ohio and Marshall County Targets are estimated by WVDOT from crash data for the region.

The safety target achievement tables show that in West Virginia, two of the five targets were not met. Based on the targets and progress from the baseline data, FHWA determined that WVDOT met or made significant progress towards achieving 2018 targets. For the Ohio side, three of the five targets were not met and FHWA determined that ODOT has not met or made significant progress towards achieving its safety performance targets.

In comparison to the state, Ohio and Marshall Counties did not meet targets in three categories of fatalities, fatality rate and serious injury rate. Belmont County missed only on one target for fatalities.

Locally, significant low cost efforts are visible for improving safety. Figure 9-2 captures some of these efforts.

Figure 9-2
Regional Safety Initiatives

ODOT has launched several new statewide initiatives this year believing these will have a significant effect on reducing crashes in Ohio. These initiatives are:

- Additional $50 Million Annually for ODOT's Highway Safety Program
  > This includes the Governor's Intersection Safety Program targeting the top urban, rural and suburban intersections in our state.
  > Ohio now has the third largest Highway Safety Program in the country.

- Statewide Implementation of Centerline Rumble Stripes
  > ODOT is targeting more than 4,000 miles of high-speed, two-lane roads.
  > There are approximately 120 left of center deaths each year.

- ODPS Young Driver and Driver Training Initiatives
  > The department is launching new programs to reduce crashes among young adults age 15 - 25.
  > Young adults are involved in 28% of all traffic deaths and 35% of all serious injuries across Ohio each year.

- New $10 Million Pedestrian Safety Improvement Program, which will provide 8 cities with funding to implement proven safety counter measures such as medians, signals, marked crossings and related infrastructure.

Strategies:

An online survey was conducted by Belomar in September 2020 to seek public input for the improvements needed in the regional roadway system, setting priorities for the improvements needed and resource allocation. The majority of respondents (37%) chose highways as top priority from a choice set of Highway, Transit, Bike/Pedestrian facilities, Freight Movement, Economic Development and Air Quality. These respondents also indicated that maintenance of the existing facilities should be of upmost importance followed by the expansion of existing facilities (e.g., turn lanes, adding capacity, turn radius improvements, etc.). Safety was ranked third. It is noted that some of the roadway improvements mentioned also improve safety. The comments included in the survey also emphasized low cost measures such as installing guardrail on winding hilly roads. The following strategies are consistent with the survey findings and strategies identified as part of the Transportation Performance Management planning:

Belomar will continue to maintain five year crash data.

A pilot safety audit project that goes beyond traditional crash analysis will be considered.

Support state initiatives for safety improvement to achieve statewide safety performance measure targets.

Assist the states in developing and programming safety projects in the three county region.

Support safety improvements in Belmont County with sub-allocated funds particularly supporting guardrail installation and replacement projects, and roadway improvement countermeasures that enhance safety. Seek Highway Safety Improvement Program (HSIP) funds to support safety projects in the region.

CHAPTER 10

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Intelligent Transportation Systems (ITS) is the application of technology to monitor and manage roadway operations, while improving safety, mobility and efficiency. It includes sensing, control, communications, and information processing and dissemination of products and processes. The applications of these technologies are visible in electronic toll collections, touchless fare collection, advance warning signs, vehicle tracking, coordinated and fully activated traffic signals, vehicle detection, closed circuit television cameras, and many more. These technologies are also center stage in the development of automated and connected vehicles of the future. The success and wide use of emerging technologies is dependent upon the collaboration of many agencies to ensure technology is consistent and compatible across cities, regions and states.

A national ITS architecture is developed by USDOT to expedite the deployment and integration of ITS and to improve regional cooperation and operations planning for effective ITS deployment. It sets a framework around which multiple design approaches can be implemented within the context of a common approach. Following the national ITS standards, states prepared statewide ITS architecture plans and strategies. ODOT's architecture provides an overarching framework that spans all of the transportation organizations and transportation projects in the state. It includes the entire State of Ohio. WVDOT also prepared a statewide ITS architecture. It identified all stakeholders and needs. Ohio and Marshall Counties are included in the WVDOT ITS architecture. Belmont County is included in ODOT's ITS architecture plan. The relevant role of the MPO is to collect and archive traffic information, emergency information and transit

Dynamic Message Signs

information. The specific role of the MPO is to assist with data collection (e.g., traffic counts) and support ITS projects in the region. Belomar has purchased traffic counters and assists communities with the traffic counts, as needed. The MPO website is available for information dissemination. In Belmont County, MPO suballocated funds are also available for the implementation of ITS projects. ODOT has prepared a Traffic Engineering Manual that is followed for the ITS projects. Several dynamic message signs are installed on both sides of the Ohio River.

The principle ITS corridors in the MPO region are I-70 and I-470 in the east-west corridor and SR7 and WV2 in the north-south corridor. Ohio River bridges and Wheeling Tunnels are key features on these facilities. These corridors include multiple jurisdictions. Consistency and conformity are important attributes of a regional ITS. Belomar strives to coordinate the efforts of multiple jurisdictions and state agencies to achieve consistency and conformity of ITS projects in the region. FHWA is in the process of adding I-70 from the West Virginia state line to Cambridge, Ohio to a network of designated alternate fuel corridors. Alternate fuel corridors are designated based on the availability of a fuel type over a specified distance. For EV (Electric Vehicle) corridors the spacing is every 50 miles. I-70 corridor designation is for EV and LPG (Liquified Petroleum Gas).

WVDOT has installed Closed Circuit Television (CCTV) cameras in the Wheeling Tunnels and along various sections on I-70. Dynamic Message Signs (DMS) are installed on I-70 and I-470 on both sides of the river. Belomar will continue to provide input in the selection of locations for the placement of CCTV and DMS in the region.

The transit authorities have equipped buses with the Global Positioning System (GPS) receivers to track bus location on the system. Two-way radios on the buses allow drivers to communicate with each other and the base station. Although the location of each bus can be tracked and displayed in real time, a passenger convenience application related to this feature has not been implemented at this time. The transit authorities are working to provide real time information to riders to better time their arrival and reduce wait time at the bus stop. The WVDPT is working to assimilate information from all transit providers to provide "google transit" scheduling options. The buses have touchless fare collection. The transit website also interacts with the public to convey fixed route stops and schedules.

ITS corridors encompass multiple jurisdictions. Consistency and conformity are important attributes of a regional ITS. Belomar will strive to coordinate the management and operational efforts of multiple jurisdictions to achieve consistency and conformity of the ITS in the region.

Electric Charging Station

The numerous new applications of cutting edge technology are being tested across the nation. These have far reaching implications for our travel behavior, the automobiles we drive, the last mile deliveries of our online orders, and the ITS requirements. The most acceptable at this time is electric vehicle technology. Electric automobiles have been on the road for a few years. They are going to gain more traction with the increase in mileage range with a single charge and readily available charging stations.

A recent announcement by a consortium of six electric companies to provide electric charging stations throughout their service areas will soon eliminate concerns about the lack of

charging stations. The progress is also being made to enhance battery technologies that reduce the battery size and weight, while storing more charge. Major companies like AEP are committed to converting their entire fleet of vehicles (8,000+) by the year 2030. Several box stores are switching to electric box trucks for deliveries. Several last mile delivery companies are also switching away from the gasoline combustion engines. As more and more electric vehicles hit the road, there will be a need for advance signs showing the number of open electric charging spots. Some of the convenience services may also move to address spacing based on the electric vehicles' range.

Amazon's Drone

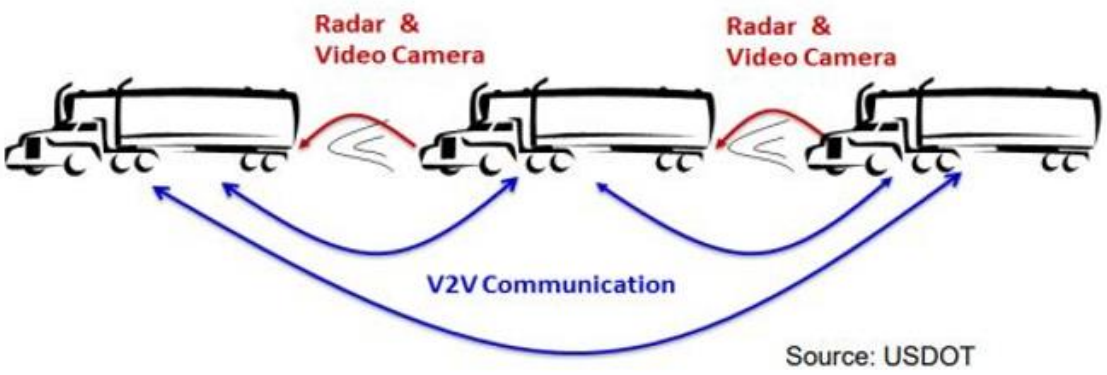
In granting approval to Amazon's Drone Delivery fleet, FAA issued a statement that it is trying to support innovation in the expanding drone arena, while ensuring that the devices operate safely. Amazon joins a select group of companies receiving this approval, including UPS. While drone service will be restricted to rural areas in the beginning, it is expected as the technology proves to be reliable and safe, its use may be extended to include all areas in only a couple of years. Drone deliveries have the greatest potential to address last mile delivery challenges of the truck freight.

In addition to deliveries, drones have a role in monitoring emergency events, in aerial photography applications, and in infrastructure inspections, among many more. There will be education and training challenges with this technology as drone operators will be needed and flights will be beyond the visible line of sight and would include night flights. The challenge would be to incorporate technologies that would avoid mid-air collisions as the space gets crowded with many more companies providing drone services. New ITS features may be necessary for the safe and reliable operation of this technology.

Another technology available at this time, but not approved or widely used, is the autonomous vehicles. Many pilot projects are done, and many more are underway. The closest one is in Pittsburgh, Pennsylvania. These driverless vehicles have tremendous potential. The Automated Driving Systems (ADS) for cars, trucks, and vans are on the way and poised to revolutionize the transportation industry. The implementations of these systems will require robust ITS, based on the sensory needs of ADS. Specific hardware and software most likely will be needed for implementation, monitoring and enforcement. Each unit on these systems may utilize cloud environment to minimize hardware and software load on the unit, but

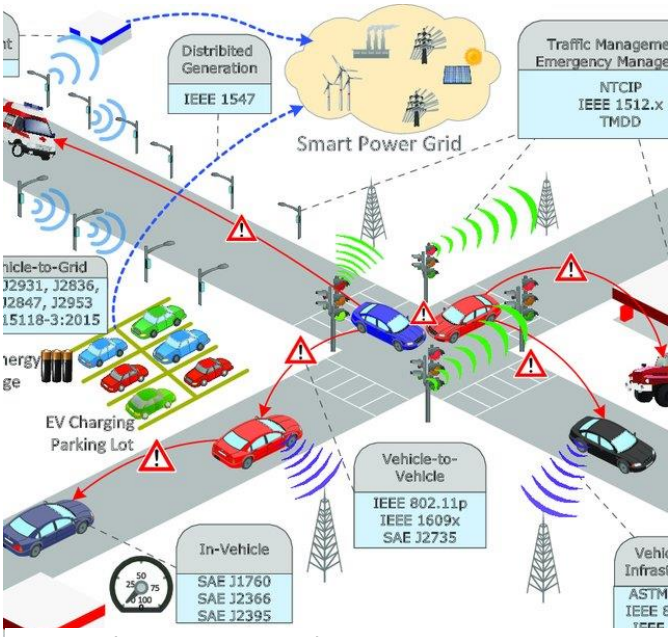
Automated Driving System

hardware and software would need to reside at a central location somewhere. Electronic giant Intel estimates that the global market for autonomous vehicles will be over $7 trillion by the year 2050. With increased emphasis on electronics and features needed for artificial sensory navigation, cybersecurity needs and safeguards will also be critical for the safe and acceptable rollout of these vehicles.



Further, the technologies are being tested for connected vehicles. A convoy of connected trucks with a driver in the lead truck only, and may be eventually a driverless convoy of trucks, is almost reality now. Other applications being tested include interconnected vehicle, where vehicle to vehicle communication systems work to prevent collisions and provide safe and reliable mobility options. These systems have the potential to increase the capacity of our existing roadway system by managing speed and shorter headways.

Figure 10-1
Synergy of ITS and Smart Grid Toward Smart Cities



Source: {swturner,uludag}@umich.edu

Most changes come with doubts and skepticism for the success of these new technologies. Although a lot remains to be proven, the potential for a safer, more reliable and human error free mobility application seems to be on the horizon. Some of the issues identified in this plan may find sound solutions in these applications. For example, seniors and people with disabilities need rides for out of town medical appointments that need a vehicle and driver's commitment for the entire day. Once autonomous vehicle technology is proven and implemented, the long wait time for these rides may be reduced significantly. With all the uncertainties surrounding these innovative travel means, it is certain that robust ITS will be needed before these become mainstream. A robust ITS will need, among other things, a guaranteed bandwidth capacity and availability, and smart electric grid. The need of sensors on the vehicles, based on roadway features, will also need to be addressed. For example, lane departure sensors monitor lane markings. This requires lane marking be maintained to meet certain pre-defined standards. The new technologies may need new rules of the roads. It will take some time to fully develop and integrate autonomous vehicles. Some functionality such as automated parking and auto pilot with hands on the wheel can be expected on newer models in the near future. A synergy of ITS and a smart grid, as illustrated in Figure 10-1, will be a catalyst in transitioning to smart environments and smart cities of tomorrow.

The cities and states need to follow these fast-developing technologies to address roadway and policy issues in a timely fashion for public safety and efficient use of our roadways.

Strategies

Belomar will monitor developments of new technologies and will work with local jurisdictions and both sates to address ITS needs for facilitating the transition to tested and safe systems.

Belomar will also support ITS projects of WVDOT and ODOT.

CHAPTER 11

TRAFFIC VOLUME PROJECTION

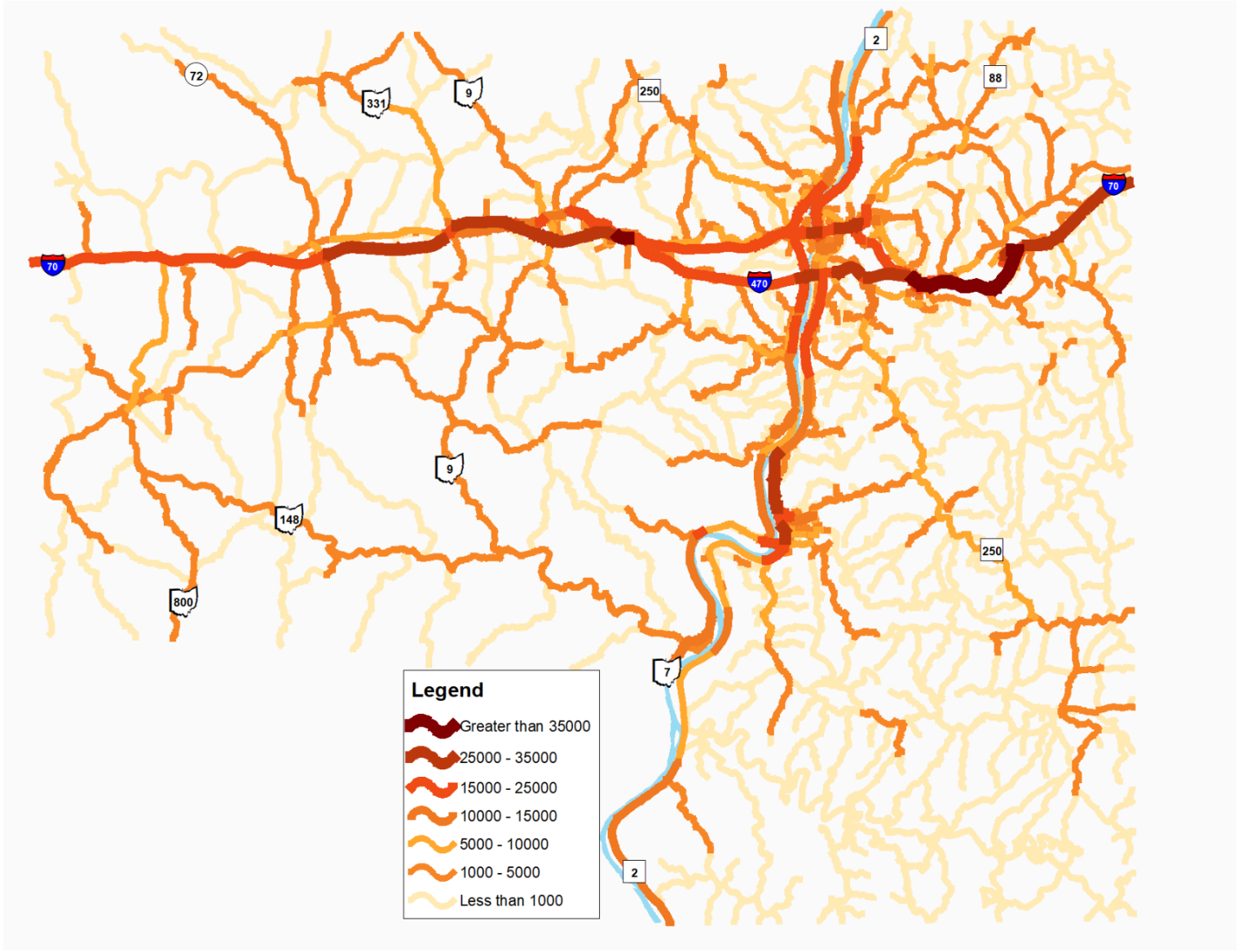
In order to identify potential traffic flow problem locations, and to plan resource allocation for correcting these problems, it is critical to forecast traffic volumes for the year of 2045. The forecasted volume can be analyzed to identify capacity deficiencies, that if left unaddressed, will result in delays and congestion. The traffic volume is projected for the year 2045 using a Travel Demand Model (TDM).

The TDM uses socio-economic projections and appropriate trip rates for the trip generation. A from and to trip table is produced for subareas called Traffic Analysis Zones (TAZ). The local region has 554 TAZs. These trips are assigned to the digital roadway network. The digital roadway network is derived from the existing roadway centerlines. It includes all functionally classified roads and a few local roads. Before assignment, trips can be split between auto and transit trips. Transit trips in the area are significantly low in relation to the auto trips; on an average there are less than 2,500 transit trips per day. Therefore, as agreed upon by the participating agencies, modal split phase of the model was not utilized. Thus, the assignment for the region consists of auto trips only. Increase in through trips and freight traffic is also utilized in the TDM.

The assignment of trips to the roadway is the traffic used to determine the future transportation needs of the region. When generating the future traffic, it is assumed that all existing and committed plan projects are open to traffic by the plan year. The need to sustain and attract economic development is addressed both within the model and independent of the model. Travel Demand Models are complex and resource intensive. Therefore, they are generally housed in State Departments of Transportation, consultants' offices and large metropolitan planning organizations. The TDM for the region is maintained and run by the Ohio Department of Transportation. Another run of the TDM is made to include the new fiscally constrained projects in the plan to see the effect of these projects. This run includes projects that are expected to be built in the future to alleviate identified deficiencies. Usually, follow-up studies are done prior to advancing a project.

The 2045 Average Daily Traffic (ADT) presented in the plan is generated by the TDM using socio-economic data that includes households, automobiles, employment and school enrollment in each TAZ. Figure 11-1 graphically shows the forecasted average daily traffic for the year 2045. The forecasted traffic volume includes internal, internal-external, external-internal, and pass through trips. On divided highways, including interstates, the AADT is directional. All other roadways show traffic in both directions.

Figure 11-1
Average Daily Traffic on
Existing and Committed Network



The highest volume as expected is on I-70 on the segments just before the I-470 split. The ADT on the segment east of Banfield Road in Belmont County and the segment east of the Triadelphia exit have volumes over 70,000. The I-70 segment between Elm Grove and Cabela Drive also is expected to have volumes over 70,000 during the life of this plan. The projected volume is also high on the I-70 segment between Mall Road and SR9. It is expected to be 66,000 vehicles/day.

Bridge crossings over the Ohio River are also expected to increase at a pace of almost 1.5% annually. This growth includes an increase in through traffic on this major east-west interstate. Over 127,000 vehicles/day are expected to cross the Ohio River daily.

On the two way streets, the highest volumes (33,000+) are estimated at Cabela Drive, north of the I-70 interchange, and US250/WV2, north of Moundsville and north of the US250 split. National Road, just east of Mt. DeChantal Road, will have over 25,000 vehicles/day. N. Lincoln Avenue in Bridgeport will also have volumes over 24,000 vehicles/day. Other high volume segments with ADT exceeding or approaching 20,000 vehicles/day are: National Road west of Commons Mall Crossing Road and east of Barton Road in St. Clairsville; N. Lincoln Avenue north of US40 and Marion Street south of US40 in Bridgeport; WV2 north of 7th Street in Wheeling and 12th Street Bridge over the Ohio River in Moundsville. In addition, Bethany Pike, just north of US40 will also have ADT of approximately 16,000.

In addition to I-70 and I-470, the east-west corridor also includes National Road (US40). US40 was the national highway for east-west travel before I-70 was built.

The highest traffic volume (25,500) on National Road occurs near the Mt. DeChantal Road intersection in Wheeling. This is a busy strip business environment and this segment services traffic from I-70 bound for Oglebay Park and West Liberty University. High volumes also occur in the Elm Grove neighborhood near the I-70 ramps at the Triadelphia exit. The lowest volume is under 1,000 and occurs close to the Pennsylvania state line near CR45.

In Belmont County, National Road carries the highest traffic volume near the Ohio Valley Plaza. The highest volume (22,000) is expected on the segment just west of the recently built Commons Mall Crossing Road. Over 19,000 vehicles cross the Ohio River back channel bridge connecting Bridgeport to Wheeling Island. The lowest volume (1,000) is near the partial I-70 interchange for CR100/US40.

WV2, traversing Ohio and Marshall Counties, is a major roadway for north-south travel in the region. It has four lane segments with and without access control. It also has two lane segments with one lane in each direction and a one-way pair, Main and Market Streets in Downtown Wheeling. The projected volumes range from under 8,000 vehicles/day at the Brooke County line to over 35,000 south of 26th Street. The section of WV2 from 18th Street in Wheeling to just north of Moundsville follows US250.

Within the City of Wheeling, Main Street just north of 10th Street, carries the highest volume of 21,300 vehicles per day. This drops to 20,500 north of 7th Street.

In Marshall County, the traffic volume ranges from a low of under 12,000 to over 35,000 at the Ohio County line. This drops to 32,800 just south of Benwood and further drops to under 26,000 south of McMechen. It picks up again near the WV2/US250 split. North of this split, there are almost 33,000 vehicles/day. Between 5th Street and 12th Street, the traffic is consistently close to 22,000 vehicles/day. The volume near 12th Street is over 23,000. Approximately 19,500 vehicles will be crossing the Moundsville Bridge over the Ohio River.

SR7 is a major expressway and principal arterial running along the Ohio River in a north-south direction. It is a divided expressway for most of its length, except through Martins Ferry, where there are a few at grade signalized intersections. It drops down to two lanes just north of Powhatan Point.

The highest volume is between Martins Ferry and Bridgeport. It occurs between Aetna Avenue and the National Road exit; the estimated daily traffic is 41,500. This drops down to 26,851 north of the Martins Ferry north corporation line. The lowest volume is at the county line south of Powhatan Point. The traffic volume ranges from a high of over 41,000 to almost 11,000. As expected, higher volumes are around Martins Ferry, Bridgeport, Bellaire and Shadyside.

The long range projections are always based on certain assumptions about the future. As the assumptions change, so do the projections based on them. Also, all projection tools have inherent shortcomings that can sometimes be overlooked when the end result is viewed. Therefore, it cannot be over emphasized that the projections be monitored and adjusted as needed in the future. The projections are revisited and revised every five years with the plan update cycle.

CHAPTER 12

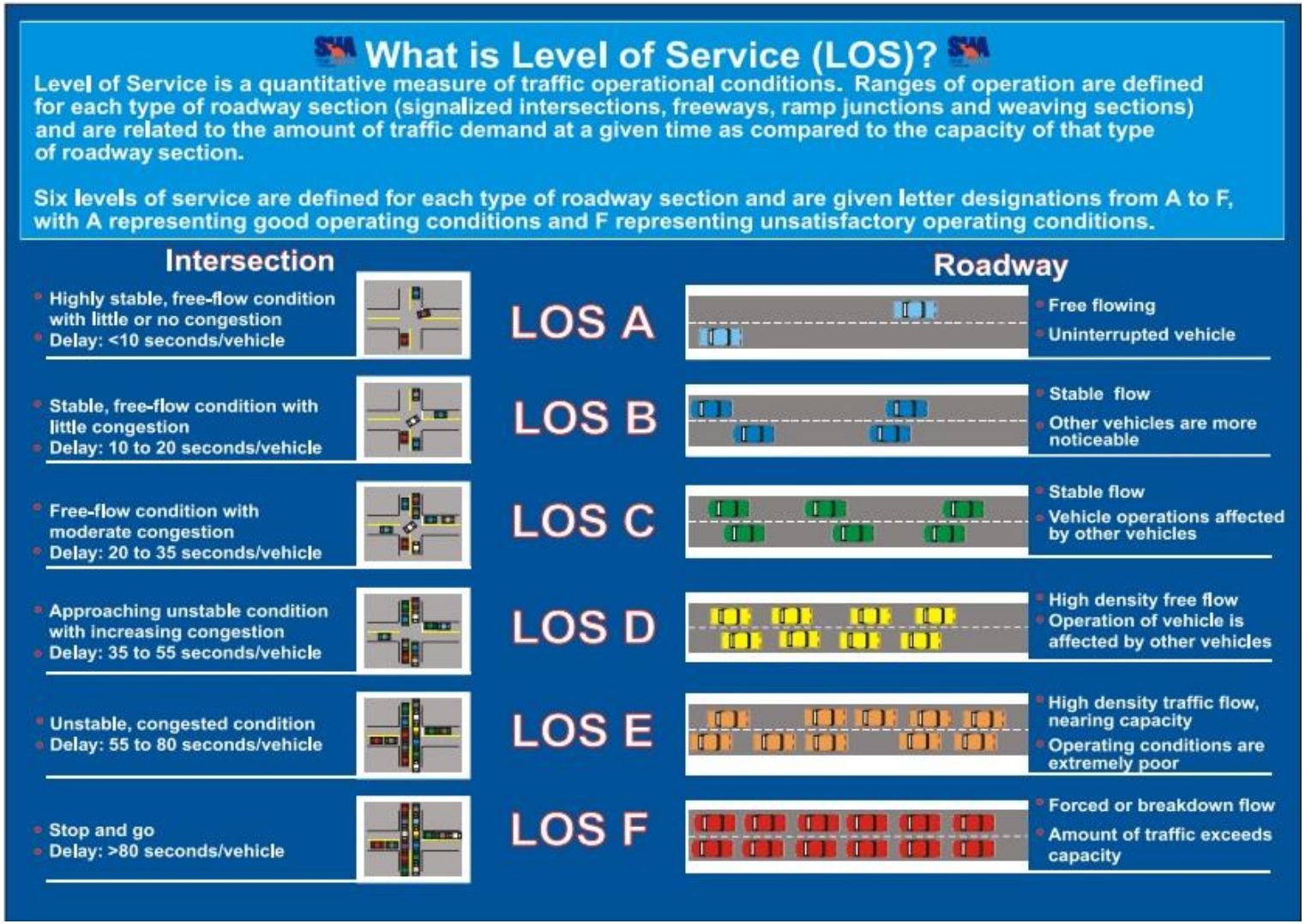
HIGHWAY CAPACITY/CONGESTION ANALYSIS

According to the Highway Capacity Manual[1] (HCM), the roadway capacity is the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic and control conditions. Congestion can be defined as the delay experienced due to the slow moving or stopped vehicles on the roadway. The congestion can be quantitatively estimated using the Level of Service (LOS) concept. Level of service takes into consideration speed, density, travel time, and the ratio of traffic volume to roadway capacity. There are six levels of service ranging from A to F. The levels of service on a freeway are shown in Figure 12-1. Each level is associated with a specific traffic flow condition. LOS A represents free flow conditions with low volumes and high speeds. LOS F on the other hand characterizes stop and go conditions with high volumes, low speeds and very little maneuverability. LOS C is generally accepted because at this level acceptable operating speeds can be achieved and reasonable freedom of maneuverability exists. In some urban areas LOS D is considered acceptable for certain time periods. LOS E characterizes at capacity conditions and is unacceptable. At LOS E extended delays are inevitable.

LOS D, E, and F are associated with congested conditions. Congestion can be categorized as recurring or non-recurring. Recurring congestion will occur on the facilities that handle near capacity or over capacity traffic volumes repeatedly. Non-recurring congestion can be unpredictable and can occur due to an obstruction to the normal traffic flow. A traffic crash, a disabled vehicle or roadway maintenance can cause non-recurring congestion. Potential future recurring congestion spots can be identified by the level of service analysis. Generally, roadway segments and intersections in the vicinity of deficient segments are more likely to fail. Traffic control devices (e.g. signals) can contribute to congestion, even while improving safety. Specific locations that are likely to fail under projected traffic conditions can be identified and improved/upgraded to alleviate future problems. A system-wide level of service analysis is possible using the travel demand model that forecasts and assigns future volumes to roadway networks. The Ohio Department of Transportation (ODOT) maintains and runs such a model for the Belomar region.

[1] The Highway Capacity Manual is developed under the auspices of the Transportation Research Board. It is based on extensive research and collective knowledge of many experts. It is widely used and is a de-facto standard for determining roadway capacity.

Figure 12 -1
Level of Service (LOS)



Source: Maryland Department of Transportation Policy Manual

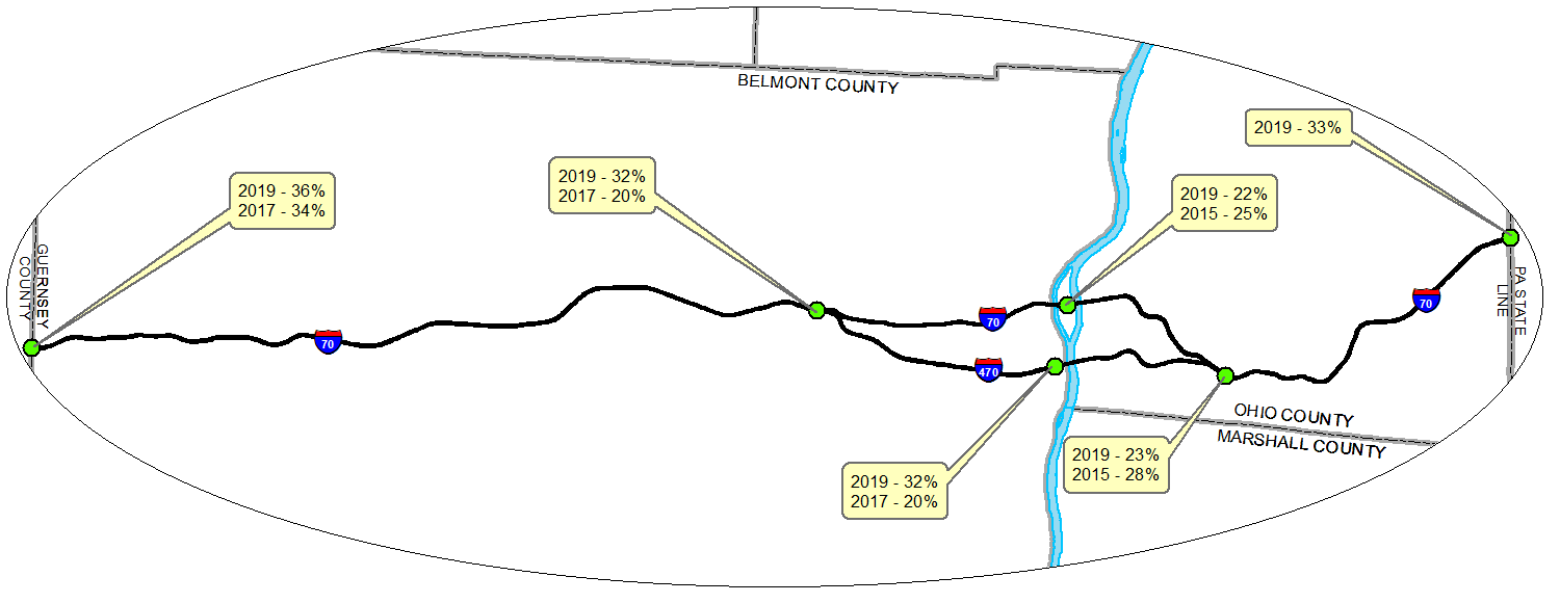
The Travel Demand Model (TDM) for the area estimates travel demand and assigns trips to the roadway network. The study area is divided into 554 geographic units known as Traffic Analysis Zones (TAZs). Trips generated within each TAZ are loaded at points, called centroids, in the digital network. In addition, 31 external stations on the outer boundary of the 3-county area load trips on the network. These vehicle trips are the forecasted traffic volume on the network. Using the forecasted volume, the future level of service for all facilities can be estimated. The TDM, using the year 2045 travel estimates on the existing and committed network, identified locations with estimated LOS D, E, and F. These locations are noted as the deficient locations.

The increase in truck traffic due to the shale natural gas/liquids production is observable in the region. A comparison of traffic counts from 2012 to 2015, in Belmont County, showed increases in truck traffic, as high as 500%. Recent traffic counts also show that truck volumes are increasing on the interstates in Belmont County. Truck volume as percent of AADT is shown on key locations in Figure 12-2. At the Guernsey County line, on I-70, 36% of the traffic was trucks in 2019. On I-70, before the I-470 split, the truck traffic grew at an annual rate of 4%. Similar growth rate is observed on I-470 near the West Virginia state line. However, in Ohio County, similar growth is not reflected in the WVDOT traffic counts. On I-70 in West Virginia, the truck traffic shows an annual drop of approximately 1%. The percent of truck traffic (33%) at the Pennsylvania state line is similar to the traffic at the Guernsey County line. Increase in truck traffic takes its toll on local roads. It adds to congestion and affects level of service. The unprecedented growth associated with shale activity will continue to affect level of service on local roads for years to come.

The future year traffic estimated by the travel demand model is first compared to the traffic-carrying capability of the existing roadway network which includes all previously committed roadway improvements. This estimated traffic assignment is known as the existing plus committed (E+C) assignment. In this assignment, the cracker plant employment estimates are included. The cracker plant and the magnitude of associated growth has tri-state implications. The current capacity of major roads in the region seems to accommodate additional traffic. However, it leaves no room for further expansion. A slight increase in traffic may push the level of service to the next worse level. This drop in service, where applicable, is discussed with the description of selected locations in this chapter.

On multilane facilities, the deficient segments are primarily on I-70. In Ohio County, segments from the Elm Grove Interchange to the Pennsylvania State Line are expected to operate at LOS D or worse. The most congestion is expected at the segment from the Elm Grove interchange to Cabela Drive interchange. This segment is projected to operate at LOS F. In the base year of 2010, both segments operated at LOS C or better. However, since then shale drilling and production related activities have added significantly more traffic on local roads. The truck traffic has also increased substantially. The upcoming cracker plant with labor drawn from the tri-state area will also add traffic. The cumulative effect is that I-70 east of I-470 will need additional capacity.

Figure 12-2
Truck Traffic on Interstates



National Road from the US40 spur to Bethany Pike will remain an area of concern. In Marshall County, four laning of WV2 should continue to the Wetzel County line and WV2 through Moundsville and Glen Dale should be monitored to see if further improvements are needed after the effects of committed improvements are fully known. Particular attention is needed for improvements at the WV2 spur intersection and the Ohio River Bridge crossing in Moundsville. Traffic circulation within "The Highlands" will also be an issue under the present conditions.

In Belmont County, additional capacity is needed on I-70 from west of I-470 to the SR9 interchange. The Ohio Valley Mall and Ohio Valley Plaza area will continue to have a few congested spots. The other problem location is at the I-470 and SR7 interchange. This is a key location for access to the proposed cracker plant. Improvements at this location will be needed to accommodate new cracker plant related traffic and existing shale activity related traffic. The area in the vicinity of I-70 and SR7 interchange in Bridgeport is also of concern, but options for improvements are limited due to the built urban environment.

Intersection approaches are identified based on expected delays at the intersection. Several locations are flagged by the TDM. From these, locations near the centroid were excluded. Also, approaches on low volume roads with stop signs were excluded. An overall intersection level of service analysis was not done. The selected locations with LOS "D" or worse reflect PM peak hour operating conditions for the future (Year 2045) on the existing and committed roadway network. The selected deficient locations are listed below and presented in Figure 12-3 and Figure 12-4.

Selected locations with LOS D or worse:

Belmont County

LB-1: I-70, SR7 and Lincoln Avenue in Village of Bridgeport.
LB-2: Intersections of SR7 with Hanover Street and 5th Street in Martins Ferry.
LB-3: I-470 ramps from SR7.
LB-4: SR7 southbound off ramp from 48th Street in Bellaire.
LB-5: SR7 northbound off ramp for 26th Street in Bellaire.
LB-6: SR7 and Dilles Bottom Road (CR54).
LB-7: Ohio Valley Mall and Ohio Valley Plaza Area.
LB-8: Barton Road (CR4) at National Road in St. Clairsville.
LB-9: I-70 from Mall Road to SR9.
LB-10: I-70 westbound off ramp for US40.
LB-11: Bond Drive and SR149 Intersection (Morristown).

Ohio County

LO-1: Wheeling Downtown.
LO-2: Wheeling Island.
LO-3: I-70 at Oglebay Park exit.
LO-4: US40 (National Road) and Bethany Pike (WV88).

Figure 12-3
Level of Service

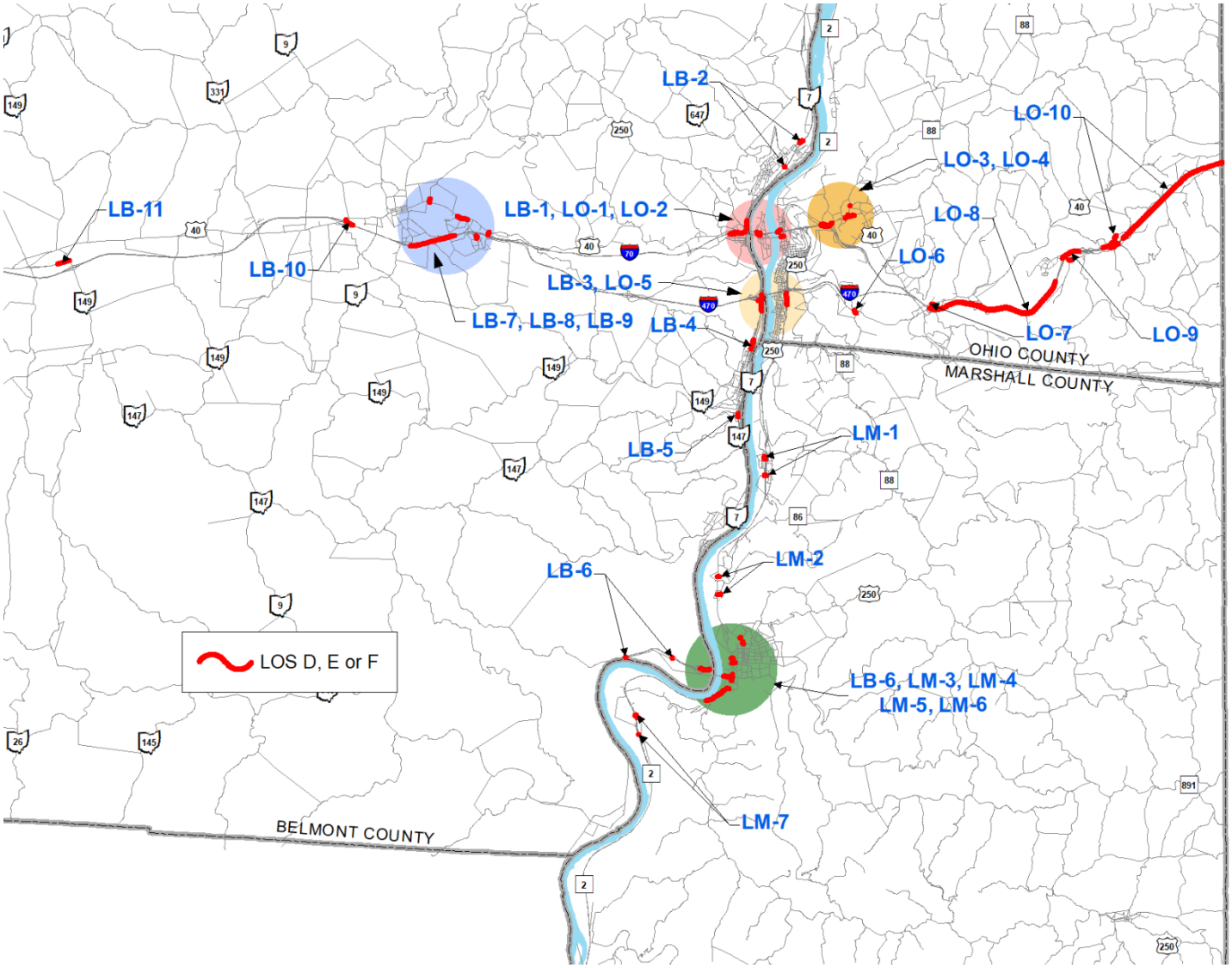
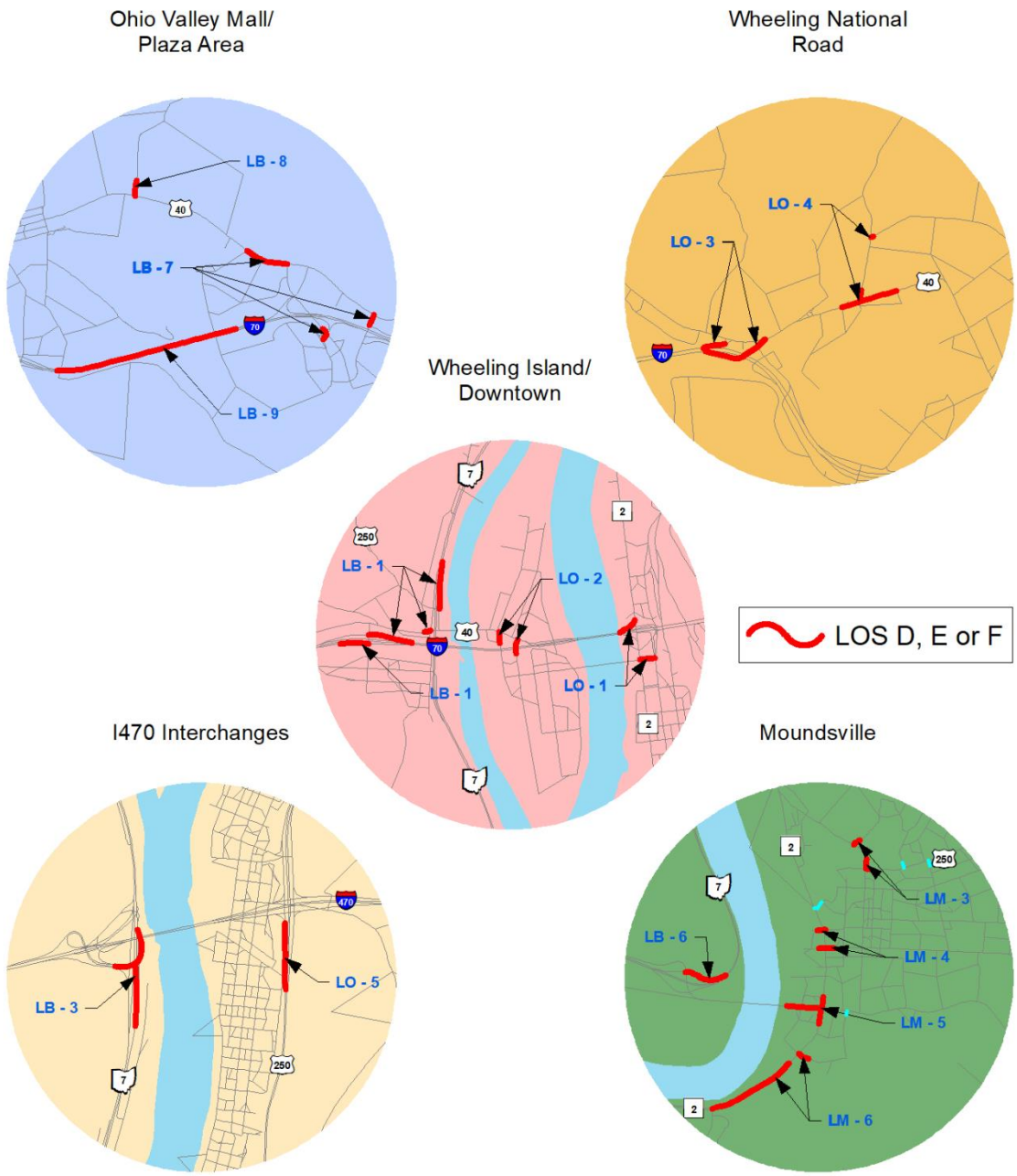


Figure 12-4
Level of Service Insets



LO-5: I-470 and US250 ramps in Wheeling.
LO-6: WV88 and CR6 in Bethlehem.
LO-7: National Road at Elm Grove Crossing Mall.
LO-8: I-70 from Elm Grove to Cabela Drive.
LO-9: Fort Henry Road and Cabela Drive intersection.
LO-10: Fort Henry Road and Dallas Pike intersection and I-70 from Dallas Pike to Pennsylvania State line.

Marshall County

LM-1: Industrial Park Road and 12th Street in McMechen.
LM-2: US250/WV2 intersections in Glen Dale.
LM-3: US250 (Jefferson Avenue extension) and 1st Street in Moundsville.
LM-4: WV2 and 7th Street intersection in Moundsville.
LM-5: WV2 and 12th Street intersection in Moundsville.
LM-6: WV2 and Teletech Drive intersection in Moundsville.
LM-7: WV2 intersection with Country Club Road and Washington Lands.

Belmont County

LB-1: I-70, SR7 and Lincoln Avenue in Village of Bridgeport

The Village of Bridgeport experiences high traffic volume with high percentages of truck traffic on local roads through its Central Business District (CBD). This is due to a lack of full service interchange of I-70 and SR7. All traffic between these two limited access roadways travels on Howard Street, Marion Street, US40 (Main Street) and Lincoln Avenue.

I-70 eastbound and westbound off ramps are regulated by a stop sign. The high traffic volume on Marion Streets limits opportunity for left turns from the off ramps. Due to excessive delays on the ramps, the projected LOS is "F". Installing signals at ramp intersections could improve overall intersection level of service. A warrant analysis is recommended for the installation of signals at this location.

SR7 northbound on ramp channels traffic from US40 (Main Street) via Lincoln Avenue and from Wheeling Island via a stop sign controlled intersection along railroad tracks. The projected ramp level of service is "F". Due to the built environment in the area and existing railroad tracks and the Ohio River, opportunities to add capacity through widening are limited. A traffic analysis study for this area was completed in 2018 by the consulting firm of AECOM. The recommendations of that study include: improving signage and pavement markings; new signal at Lincoln Avenue and US250 (Cadiz Pike); increasing storage length for left turns on the eastbound (US40) approach to the Lincoln Avenue intersection; modify or reconstruct signal at Lincoln Avenue and US40 (Main Street); and improve truck turning radii. There are local concerns

for some of the recommendations of the study. It is recommended that after building local consensus on proposed solutions, preferred improvements should be implemented. The estimated cost of the proposed improvements is $514,700.

LB-2: Intersections of SR7 with Hanover Street and 5th Street in Martins Ferry

Hanover Street provides access to CBD from SR7 in Martins Ferry. The eastbound approach at the intersection of Hanover Street and SR7 is projected to operate at LOS D. A project to improve safety and operations at this location was completed in 2017. The overall intersection level of service appears to be "C" or better.

Intersection of North. 5th Street with SR7 is controlled by a stop sign on North. 5th Street. SR7 is an expressway with partial control of access. The North. 5th Street intersection is an at grade intersection. Due to the stop sign related delays, the North. 5th Street approach is projected to operate at LOS "D".

LB-3: I-470 Ramps from SR7

The traffic between I-470 and SR7 operates through a signalized intersection channeling traffic to and from these facilities. The northbound and southbound traffic for I-470 from SR7 ramps at this intersection experiences delays consistent with LOS "F" and "E", respectively. These are significant delays. This is a key interchange of traffic between two major east-west and north-south facilities in the region. Access to transloading facilities on the Ohio River is through this intersection. Also, the cracker plant traffic will pass through the intersection.

The lack of a full service interchange between I-470 and SR7 and between I-70 and SR7 in Bridgeport results in traffic congestion in Bridgeport and at this critical intersection. The delays are critical for accessibility of key facilities along the Ohio River including an intermodal facility and soon to be built cracker plant and associated cluster development. There is a need to improve level of service. Consideration should be given to develop alternatives for the improvement at this location. Alternatives should include a full service interchange. A full service interchange of SR7 and the interstate system in the region is necessary to realize the full potential of the cracker plant related development in the region.

LB-4 and LB-5: SR7 Off Ramps in Bellaire

The 26th Street interchange on SR7 provides access to the Bellaire CBD and commercial developments along 26th Street in Bellaire. The SR7 northbound off ramp is projected to operate at LOS D. It is controlled by a ramp stop sign. The stop sign related delays affect the level of service.

The SR7 southbound ramp at 48th Street would be operating at LOS D or worse in 2045. The delays at this location are also related to the stop sign at the ramp. 48th Street interchange

provided easy access to the community hospital in Bellaire. The hospital is closed now. This location with other ramp deficiencies along SR7 should be part of a SR7 operational study after a cracker plant go ahead decision is made.

LB-6: SR7 and Dilles Bottom Road in Dilles Bottom

Dilles Bottom is home to a 500-acre site for the cracker plant. The plant, when built, will process 1.5 million tons of ethane annually to produce components for plastics and other chemicals. The plant could cost $10 billion to build and generate thousands of jobs during construction and later at plant and associated cluster industry in the region.

There will be a significant spike in traffic when the construction of the plant begins. As a result, the congestion of roadways in the vicinity of this site will increase. The 2045 PM peak hour traffic volume used for the LOS analysis does not include the anticipated spike in traffic during construction phase. Based on TDM generated traffic and level of service analysis, the southbound ramp from SR7 at the SR872 (Moundsville Bridge) interchange; Dilles Bottom Road (CR54) at the north and south end of the plant site; and on the West Virginia side WV2 and the 12th Street intersection are all showing LOS of "E" or worse. A cooperative effort between ODOT and WVDOT will be necessary to comprehensively address congestion on both sides of the river. A traffic study for the SR7 corridor from Shadyside to Powhatan Point is programmed by Belomar and ODOT. The study also includes improvements needed for plant access. The recommendations of the study will be part of this plan.

LB-7: Ohio Valley Mall and Ohio Valley Plaza Area

The Ohio Valley Mall and Ohio Valley Plaza area just east of St. Clairsville is a commercial hub for Belmont County and a regional attraction for shopping, health care and other service-related needs. A public-private partnership resulted in connecting the Mall with the Plaza via a new road and a new bridge over Interstate 70. The new road, CR29 (Commons Mall Crossing Road), opened to traffic in 2018.

The TDM assignment based LOS is "D" or worse on a few locations in this area. These are US40 (National Road) from CR29 to Mall Road (28B); Mall Road approach to I-70 ramps; Mall entrance exit; Banfield Road exit intersection approaches; Banfield Road (CR28A) from I-70 westbound off ramp to National Road. A traffic shift to the new road (CR29) has not happened at this time, but is expected before 2045. Several additional businesses and hotels have located in this area. The deficient locations should be monitored with the objective to identify solutions for the overall traffic flow improvements in this area.

LB-8: Barton Road (CR4) at National Road

The intersection of Barton Road and National Road in St. Clairsville have seen significant delay on the Barton Road leg of the intersection. Barton Road is a major collector connecting to

US40, a minor arterial. The Barton Road approach is controlled by a stop sign. Left turning movement is problematic from Barton Road and queuing routine occurs due to the lack of gaps in traffic on US40. US40 is posted for 25 mph. At one time, a new signal was considered, but was not installed due to local concerns. To alleviate delays on Barton Road, a signal may be necessary. Based on a warrant analysis, local consensus for a new signal will be necessary.

LB-9: I-70 from Mall Road to SR9

The I-70 segment from Mall Road to the SR9 interchange is approximately 2 miles long. The westbound direction has a steep slope and a truck lane is provided. However, the truck lane terminates before the interchange and the crest of the hill. This forces slow moving trucks to merge in the travel lane. This causes friction in the traffic stream and limits the capacity of this segment. The overall TDM projected LOS is "D" or worse. The segment also ranked high in the countywide crash analysis. In addition, any event on I-70 forces traffic on US40 through the City of St. Clairsville. The City is seeking solutions to alleviate this and has explored an 8 mile long bypass roadway.

An addition of a third travel lane in each direction is recommended for this segment. This addition will improve safety and LOS and provide opportunity to maintain a single lane of traffic for some events on Interstate 70.

LB-10: I-70 Westbound Off Ramp for US40

US40 interchange west of St. Clairsville provides access to Plaza West shops and commercial and institutional establishments located on US40 west of this interchange. The projected LOS is "D" on this stop sign regulated ramp. With the exception of this ramp, all roadways in the vicinity will be operating at LOS "C" or better.

LB-11: Bond Drive and SR149 Intersection (Morristown)

Significant strip development has occurred on SR149 in the vicinity of the I-70 interchange. The Union Local School District is also located here. Due to issues related to truck queues for left turns, ODOT has programmed a project to improve safety and operations on the SR149 interchange.

At a signalized intersection just north of this interchange, a large recreational vehicle (RV) park is accessed through Bond Drive. The RV park houses transient workers engaged in natural gas recovery. Bond Drive also services the ODOT field office and a regional environmental control material supplier. The intersection leg across from Bond Drive is the entrance to Union Local School. Bond Drive is projected to operate at LOS "D". This is a growing area of Belmont County; it is likely that the intersection level of service analysis will be needed in the future to optimize the operation of this intersection.

Recommended Projects

- Addition of third lane on I-70 from Mall Road to SR9 interchange.
- Upgrade I-470/SR7 interchange to full free flow interchange.
- Improvements in Bridgeport on Lincoln Avenue, Main Street and Cadiz Pike interchange as per local consensus.
- I-70/SR149 interchange improvement.
- SR147/SR800 Intersection improvement in Barnesville.
- New signal at the intersection of Barton Road and US40.

Recommended Studies

- SR7 traffic study for the cracker plant.
- Intersection Level of Service at Bond Avenue and SR149 Intersection near Morristown.
- Warrant Analysis for signals at I-70 EB and WB off ramps at Marion Street.

Ohio County

LO-1: Wheeling Downtown

US40 (10th Street) between Main Street and Market Street is projected to operate at LOS "D" or worse. The Wheeling Island traffic enters 10th Street via the Suspension Bridge. The Suspension Bridge has weight restrictions and is closed to traffic at this time. There are plans for the rehabilitation of this historic bridge. In addition, the I-70 westbound on ramp from Main Street will operate at LOS "F". The ramp is controlled by a stop sign. The stop sign related delays on this ramp affect the level of service. Given the historic nature of downtown buildings, the presence of tunnels and Fort Henry Bridge over the Ohio River, there is little room for widening or increasing the length of ramp or replacing the stop sign. A streetscape project planned for the downtown area will streamline traffic flow in downtown including the area around the Suspension Bridge.

As part of the streetscape project, a study to convert one way pair of Market and Main Streets to two way traffic was done. Due to a lack of local support, the two way conversion was not pursued, but many traffic calming elements were considered.

LO-2: Wheeling Island

South York Street from Delaware Street to Zane Street on Wheeling Island is projected to have LOS "D" and South Huron Street from Delaware Street to Zane Street will have a LOS "E". South York Street provides access to the Wheeling Island Hotel-Casino-Racetrack. The built environment on the Island prevents widening to add capacity.

LO-3: I-70 at Oglebay Park Exit

The eastbound off ramp at this exit has signals at the intersection with US40 spur. The ramp has two lanes. It often backs up during peak periods and is projected to operate at LOS "D". Also, the westbound on ramp from US40 will operate at LOS "E". It is a short ramp and provides access to I-70 westbound from a heavily traveled area of Wheeling. The ramp is accessed via a left turn from US40 westbound. The left turn lane storage is limited and it contributes to the traffic backup in this area. US40 (National Road) from WV88 (Bethany Pike) to I-70 westbound on ramp is one of the heavily traveled areas in Wheeling. Also, US40 in this area has gone through substantial improvements. Additional options are limited. To improve level of service here and in this corridor, it may be necessary to develop travel demand management initiatives and/or provide an alternate route such as the previously proposed Northern Parkway.

LO-4: US40 (National Road) and WV88 (Bethany Pike)

This intersection serves a busy east-west corridor including I-70 and US40. It also provides access to such regional attractions as Oglebay Park and the West Liberty University. The economic activity along US40 has been on the rise. This intersection has been flagged by the travel demand model consistently. Three approaches to this intersection are projected to operate at LOS D or worse. The overall intersection level of service is not determined at this time. A few years ago, major improvements were made on US40 (National Road) and at this intersection. Due to the urban built environment along National Road and Bethany Pike, the options for improvement are few. The traffic flow efficiency would need to be addressed by optimizing the signals timings and progression on this stretch of the roadway. The location should be monitored and a study may be needed to improve the overall operational efficiency in this corridor.

LO-5: I-470 and US250 ramps in Wheeling

I-470 traffic bound for north and southbound destinations moves through two signalized intersections. Long queues are observed at I-470 eastbound off ramp. The projected level of service of the ramp is "D" or worse. The ramp leg of the signalized intersection channel traffic through one yield controlled right turn lane for the southbound traffic and two left turn lanes for the northbound traffic. Revisiting the signal phases may improve the overall level of service of the intersection.

LO-6: WV88 and CR6 in Bethlehem

WV88 (Bethlehem Boulevard and Ridgecrest Road), CR6 and CR18/3 is a key signalized intersection in Bethlehem. Ridgecrest Road is a two lane road in the hilly terrain. Within Bethlehem, it has homes on both sides with direct driveway access. Lateral clearance varies throughout its length. The Ridgecrest Road level of service is projected to be "D" or worse. The traffic signal also contributes to queuing on the intersection approach. If unacceptable delays are observed in the future, an overall intersection level of service analysis may be necessary to improve mobility through this location.

LO-7: National Road at Elm Grove Crossing Mall

The entrance to the shopping center is via two signalized intersections on National Road and from Overbrook Avenue a short distance from the National Road. The traffic exiting the shopping center is controlled by a stop sign. The eastbound approach of National Road and the Overbrook Avenue approach to the intersection are projected to operate at LOS "D" or worse. The location should be monitored and if needed, the Overbrook Avenue entrance/exit should be improved by widening and channelization.

LO-8, LO-9 and LO-10: I-70 Elm Grove to Pennsylvania State Line and "The Highlands".

This segment has three interchanges: Elm Grove, Cabela Drive, and Dallas Pike. All three support significant economic activity and have additional growth opportunities. Of the three, the Cabela Drive interchange serves a large scale development, "The Highlands." Located within this development, Cabelas being a destination retailer, draws a large number of people every year from within and well beyond the immediate tri-state area. The Cabela Drive interchange was added to provide access to Cabelas and other economic developments at what was then known as the Fort Henry Business and Industrial Center. The new interchange opened to traffic in 2004 and over a decade later the development is known as "The Highlands." It houses over 100 businesses and has over 1.2 million square feet of retail space. The Highlands is more diversified than originally expected and its growth has also been beyond original expectations. It not only houses large retailers, but also a major distribution center, health care facilities, educational center, major customer support center, several restaurants, gas stations, multiplex theatre, automobile dealerships and hotels are located here. The latest addition is a large 200,000 square foot home improvement store with an addition of 150 new jobs.

When "The Highlands" interchange was added in 2004, the magnitude of existing, expected and potential development was inconceivable. The growth at this location has far exceeded the original expectations and additional land has been added to the original development which has brought and will continue to bring additional economic activity to the area. The traffic distribution within the development and overall growth of traffic, including the increase in truck traffic has exceeded the acceptable level of service on the interstate mainline

and within the development. Unless this issue is addressed, the growth in additional traffic can adversely affect the development efforts and the economic activity at this location.

The 2045 level of service is expected to be "E" or worse for the westbound I-70 segment from the Elm Grove interchange to the Cabela Drive interchange. In the eastbound direction, the level of service is "D". From Dallas Pike to the Pennsylvania state line, I-70 level of service is "D" or worse.

Within "The Highlands", the Fort Henry Road approach at the Cabela Drive intersection has a LOS "E". Level of service deficiencies are also projected on Cabela Drive in the vicinity of Distribution Road and Stewart Lane. In addition, segments of McCutcheon Road (WV65) are projected to operate at LOS "E" or worse.

There is a need to monitor locations flagged by the TDM and proactively address deficiencies before they negatively impact access and cause delays. "The Highlands" has only one access point from I-70 through the Cabela Drive interchange. The unprecedented growth and concentration of number of businesses, a large distribution center, an indoor sports complex, several hotels and West Liberty University campus is cause for concern for the emergency management services in the area. A development of this scale is ripe for another access point from I-70. Ohio County Development Authority (OCDA) has been pursuing a new interchange between Elm Grove and the Cabela Drive interchange for a few years. A new interchange is necessary to sustain the growth, improve traffic circulation within the development and alleviate EMS concerns regarding single entry/exit servicing a high concentration of employment and people. A six lane upgrade of I-70 is also needed to alleviate current and projected congestion on I-70 segment from Elm Grove to Cabela Drive. The nationwide growth in truck traffic will continue to erode level of service on this facility. At present, nearly one in three vehicles on I-70 is a truck and truck traffic is projected to grow nationwide.

In addition to model flagged locations, there are local concerns regarding traffic flow at the following locations:

- WV2 through Warwood, a two lane arterial with signalized intersections.
- Wheeling Hospital Access Road and intersection with Washington Avenue and related spillover to signalized I-70 ramp intersections.
- Bethany Pike and Edgewood Street intersection.
- WV88, East Cove Avenue, Junior Avenue and Idabelle Avenue. This is a five leg intersection.

Recommended Projects

- Upgrade I-70 to six lanes from Elm Grove interchange to Cabela Drive interchange.

- Add a new interchange between Cabela Drive and Elm Grove interchange.

- Wheeling Streetscape improvement project in Downtown Wheeling.

Recommended Studies

- A travel demand management study focused on mobility options to increase efficiency of travel in the National Road Corridor.

- Signal warrant study for Bethany Pike and Edgewood Street intersection.

Marshall County

LM-1: US250 of WV2 Intersections with Industrial Park Road and 12th Street in McMechen

The Industrial Park in Benwood is accessed through Industrial Park Road. Due to the truck movement to and from US250/WV2, a signal was installed at this intersection. The projected level of service on the Industrial Park Road approach is "D". Also, the 12th Street approach to US250/WV2 intersection will be operating at LOS "E". Both locations should be monitored to alleviate any congestion that may happen.

LM-2: US250/WV2 Intersections in Glen Dale

US250/WV2 is a four lane principle arterial. In addition to local trips, it carries north-south through trips. The land use, along the stretch through Glen Dale, is mixed and includes residential, retail, offices, restaurants, hotels, a major hospital and a high school. There is no access management along this roadway. Several signalized intersections control the traffic flow.

The peak hour traffic and event traffic affect the level of service of this facility. The travel demand model shows LOS E at the signalized intersection at the high school exit. The level of service on the 6th Street (WV86) approach to US250/WV2 intersection is "F". There is also concern locally about a need for another traffic signal at the 6th Street intersection. Given the intensity of the land use and economic activity along this road, there are few alternatives for improvements. A roadway widening project at the 7th Street intersection was completed by WVDOT. A center turn lane, if feasible within the existing right of way, will improve the traffic flow and a warrant study at the intersection of 6th Street may show the need for a new signal.

WV2 from Kent to Franklin

WV2 has two segments south of Moundsville that are programmed for a four lane upgrade. Recently, one of the segments from Proctor to Kent received "Roads to Prosperity" funds for construction. This leaves only one two lane segment on this facility. This is a two mile

segment from Kent to Franklin in Marshall County. This segment has been in the previous long range plan and is included in this update.

LM-3: US250 (Jefferson Avenue Extension) and 1st Street in Moundsville

1st Street is the main street through the Moundsville CBD and this is one of the key intersections in Moundsville. Two approaches are projected to operate at a LOS D or worse. The intersection is located in a built urban environment. The options for improvements, without displacing businesses located at the intersection, are limited. Improving the turning radii at this intersection will improve overall operations. Also, the Cherokee Drive approach at the intersection with Jefferson Avenue Extension will operate at LOS "D". Several residential developments, businesses and a Walmart Shopping Center are accessed through this road. In addition, the traffic bound for Grand Vue Park uses this road and the 1st Street intersection. The overall operation of this arterial should be monitored to identify and alleviate any future traffic flow problem.

LM-4, LM-5 and LM-6: Moundsville Intersections

WV2 intersections with 7th Street, 12th Street and Teletech Drive will have at least one leg of each intersection operating at LOS "D" or worse. On the 7th Street intersection, the 7th Street/Jefferson Avenue approach, is projected to have a level of service "D" or worse. The 12th Street intersection channelizes the traffic to and from Ohio SR7 via a bridge over the Ohio River. The traffic for the cracker plant will also pass through this intersection. The three approaches to this intersection are deficient. The WV2 NB approach has LOS "E", while the SB approach LOS is "D". The level of service of the approach from the bridge is also "E". Overall, intersection level of service will likely be "D" or worse.

After the cracker plant go ahead announcement is made, a comprehensive bi-state (WVDOT and ODOT) study will be necessary to ensure efficient access to the plant and efficient traffic flow on both sides of the river.

The Teletech Drive intersection is also a key intersection as it provides access of commercial developments and offices located on Teletech Drive. The signal at Teletech Drive also affects the WV2 capacity in the vicinity of this intersection. The WV2 segment south of the intersection is also flagged by the TDM.

LM-7: WV2 intersections with Country Club Road and Washington Lands

The Country Club property in Marshall County is a prime location for development due to its access to the Ohio River, WV2 and the railroads. Any new development will add new traffic on WV2. The traffic impact of the new development should be analyzed, and necessary improvements made accordingly. The Washington Lands intersection should also be monitored

with the new development at Country Club Road, as one of the approaches to this intersection is projected to operate at LOS “E”.

Recommended Projects

- Upgrade WV2 to four lanes from Kent to Franklin (near WV2).
- CR74 Big Tribble Bridge replacement.
- Fostoria Bridge replacement in Moundsville.
- CR74/2 replace Kaysooth Bridge over Fish Creek Bridge.
- US250 replace Parrs Camp Bridge.
- Radii improvements at the intersection of US250 and 1st Street/Jefferson Avenue in Moundsville.

Recommended Studies

- A bistate comprehensive study for access to the cracker plant and efficient traffic flow on both sides of the river and river crossing.
- A traffic study to address level of service issues in the vicinity of John Marshall High School and the need for a new signal at the intersection of US250 and WV86.

CHAPTER 13

SYSTEM PRESERVATION AND FINANCIAL CONSTRAINT

Preservation of existing transportation system is most important. The existing system covers the entire transportation network. The fiscal constraint contains all projects except public transportation. The public transportation and related financial constraint is presented in Chapter 16, titled "Public Transportation". This fiscal constraint analysis doesn't include projects funded by local jurisdictions on local roads.

It is important to ensure adequate funds are available for the existing roadway preservation before capital improvements are programmed. System preservation projects generally do not add capacity but ensure the existing system is in a state of good repair. Typically, preservation projects will include resurfacing, reconstruction, rehabilitation, and operational improvements. The primary preservation projects in the Transportation Improvement Program (TIP) include roadway resurfacing, bridge maintenance/rehabilitation, signal replacement/upgrade, drainage, slip repair, lighting, signage, etc. These projects are normally funded with federal funds. State and local funds can also be used for these projects.

For over 60 years, the Highway Trust Fund (HTF) has been the source of federal funds for the construction and maintenance of roadways and transit systems in the nation. HTF's major revenue source is gasoline tax. This tax has remained frozen since 1993, while the cost of construction has skyrocketed. For a few years, Congress has been supplementing the HTF revenues from other sources such as the general fund. According to the U.S. Treasury, the year over year revenues for HTF declined by 79% in May, 2020. Prior to this, HTF was projected to run dry in June of 2021. While the coronavirus pandemic has impacted HTF revenues, the decline in revenue trend had started before the pandemic. This is due, in part, to increased fuel efficiency of gasoline powered automobiles, electric vehicles and telecommuting. The current and future HTF deficits will also compete with COVID-Relief, Social Security fund deficit and other national needs for supplemental funds. The future stream of federal funding for roadway and transit infrastructure remains unclear at this time. According to the Access Ohio 2045 "The outlook for federal funding, which accounts for 40% of ODOT's highway funding, is unclear due to the constrained federal budget." The states are also seeing a drop in revenues due to eroding revenues from motor vehicle user fee accounts.

Roadway infrastructure is critical for the economic wellbeing and mobility needs of Americans. As noted in Access Ohio 2045, "Emerging technologies and data sources, combined with changing customer expectations, may provide greater opportunity for innovative approaches to transportation revenue." A few states have started to look at alternatives to gasoline tax. A road user fee approach, based on vehicle miles of travel, supported by available technologies (e.g. GPS), has been tested by Oregon, California and a few other states.

Each state has its own procedures for selecting projects which are to be implemented, which projects are to be included in the TIP, and which types of projects are considered to be system preservation. Projects may be selected for implementation on a competitive statewide or districtwide basis. In many cases, projects are selected based on quantified analyses. For example, resurfacing projects may be selected based on pavement condition rating systems and bridge projects may be selected based on structural integrity or functionality.

In Ohio, preservation projects using federal funds are included as a statewide line item group in the TIP. In West Virginia, these projects are grouped.

There are also some minor differences between the two states regarding whether a project is considered system preservation or a capacity improvement. An example of such a difference would be an intersection improvement project. In Ohio, for purposes of this Long Range Transportation Plan (LRTP), intersection improvement projects are considered to be system preservation, and financially accounted for accordingly. In West Virginia, intersection projects which add turning lanes are being considered as capacity improvements, and financially accounted for as such.

Each state projects available plan funding based on actual historical data. The process involves projecting total statewide funding levels and then establishing local control values.

Available Funds for Belmont County

In Ohio, ODOT used the historical investments in Belmont County from the years 2010 to 2021 to prepare the annual average amount. These annual averages serve as the baseline for future federal, state and local funding. ODOT chose to use a 0% growth rate for federal and local funding. For the state funding, a rate of 0.5% is used for fiscal years FY2022 – FY2025 and a 0% growth rate thereafter.

a. Federal
   Consistent with the 2020 ODOT Budget Proforma projections, and a 0% growth rate for FY2022 – FY2045, the average annual available amount is $21,104,567.

b. State
   Consistent with the 2020 ODOT Budget Proforma projections, and state funding level growth rates of 0.5% for FY2022 – FY2025, the average annual amount is $10,005,388 and $10,080,365 thereafter.

c. Local
   Based on historical data, local funds average $456,785 annually. In the past, these local funds have been generally used for preservation projects. This will continue to be a preference in the future. In rare instances, these funds are used to support regional capital improvement projects of utmost importance.

Total projected federal and state funds for the years FY2022 – FY2045 are as follows:

Federal:	$506,509,600
State:	$241,628,861
Total:	$748,138,461

Using the total above, it is assumed that 75% to 80% of these funds would be used for preservation projects and only 20% to 25% will be available for capital improvements. Capital projects are projects that add capacity. An estimated $150 million to $187 million will be available, in year of expenditure dollars. This value represents the financial constraint value for capital improvements in Belmont County over the life of this plan.

The recommendations of this plan also include studies that may result in additional projects. The cost of studies is not included in the fiscal constraint analysis. Any projects that are identified during the life cycle of this plan can be added as an amendment of the plan.

Available Funds for Ohio and Marshall Counties

In West Virginia, WVDOT undertook a detailed analysis in 2017 to calculate the financial constraint values for all MPOs in the State. Revenue and expenditures were tabulated for the period of FY2017 - FY2041. Values for non-improvement and improvement expenditures were tabulated. A distribution formula was developed which established a percentage of the statewide improvement funding level for each MPO. Tables were prepared for each MPO in 2017 dollars and in nominal dollars. The tables covered the period from FY2017 - FY2041. The projected revenue for Belomar's Long Range Transportation Plan is $136 million. This revenue could be adjusted to include four years from 2041 to 2045, while removing four years from 2017 to 2020 and accounting for inflation. However, since revenue estimation and providing the Long Range Transportation Plan (LRTP) estimate is the purview of WVDOT, it was assumed that adjusting the state provided revenue estimate will not result in substantial change. Also, the adjustment will not result in any consequential outcome for fiscally constrained projects in Ohio and Marshal counties. The total value in nominal dollars for the Ohio and Marshall Counties projects in the LRTP is $136. It should be noted that the "Roads to Prosperity" funds were not part of the WVDOT revenue projection in 2017.

The system preservation projects are funded separately. A fact sheet for West Virginia's 2050 plan states, "Deterioration of roads and bridges outpaces resources to repair" and "Increased maintenance costs exceeds inflation." Increasingly a lion's share of statewide revenues is spent on maintenance. The maintenance expenditures can hit almost 80% of the total Revenue. In West Virginia, county roads are also on the state system.

Revenue projection tables provided by ODOT and WVDOT are included in Appendix C.

Based on the analysis of 2045 Travel Demand Model assignment and peak hour level of service analysis, projects were identified for future improvements. Previously available project cost estimates prepared by WVDOT were adjusted to reflect the year of construction cost.

Plan recommendations also include the need for important studies. These may result in additional projects. Depending upon the need and local interest, this plan can be amended to include additional projects.

Recommended Projects for the Fiscal Constraint

Projects in this plan are selected from the Travel Demand Model (TDM) based on peak hour level of service analysis; projects included in the previous LRTP and capital improvement projects included in the TIP.

The available project cost estimates are updated to reflect an estimate for the year of construction. This adjustment is done using WVDOT blended Construction Price Index (CPI) as of 2017. This index includes FHWA construction price index. The 2017 CPI is based on the 20 year rolling average. The 2017 CPI of 4.30% is held constant and applied to the previously available estimate to reflect construction year cost. The dated estimates from projects in Belmont County are also adjusted using the 4.3% CPI. The following projects are the candidate projects for the fiscal constraint analysis.

Project	Source	Cost Estimate (thousands)	Anticipated Year
Belmont County:			
Add a third lane on I-70 from Mall Road to SR9 interchange	LOS; 2040 LRP	$20,500	FY2027
Upgrade I-470/SR7 interchange to full free flow interchange	LOS; 2040 LRP	239,550	FY2036
Improvement on Lincoln Avenue corridor and intersections with Main Street and Cadiz Pike in Bridgeport	LOS	1,956	FY2025
Operational improvements on SR9/I-70 ramps/ Thompson Drive	LOS; 2040 LRP	16,200	FY2027
I-70/SR149 interchange improvements	LOS, TIP	906	FY2022
New signal at the intersection of Barton Road and US40	LOS; 2040 LRP	350	FY2025

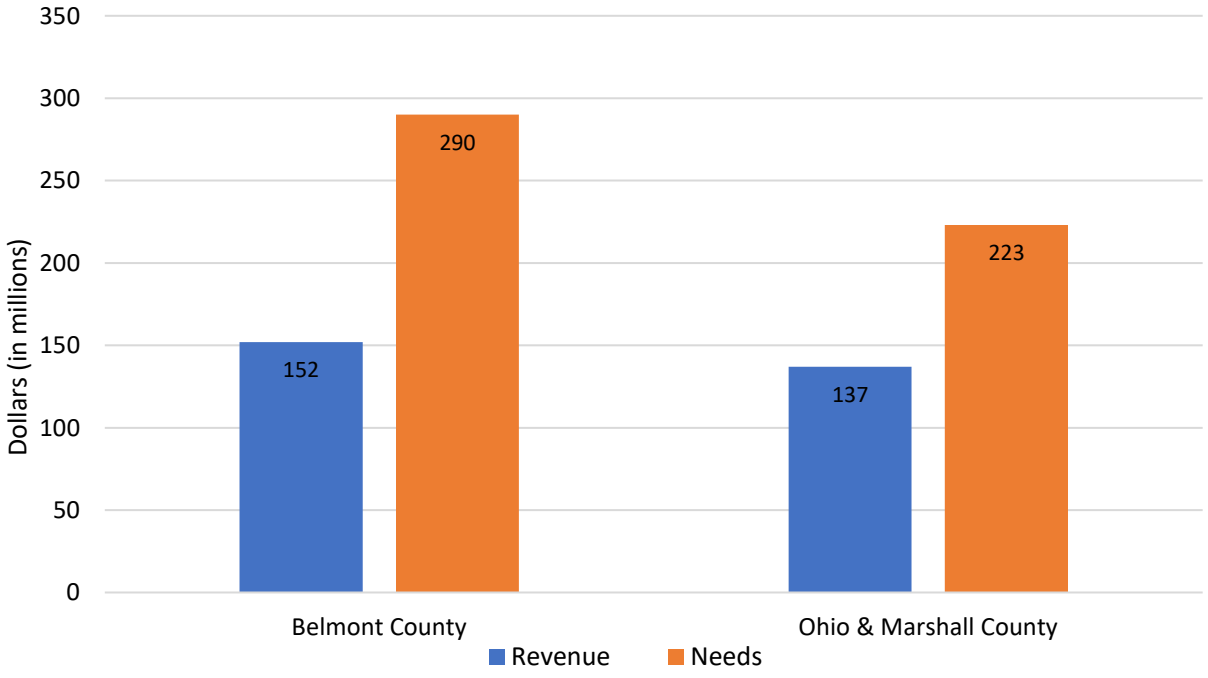
Project	Source	Cost Estimate (thousands)	Anticipated Year
SR147/800 intersection improvements Barnesville (PID# 107455)	TIP	400	FY2021
Barnesville Bikeway Project (PID# 108050)*	TIP	1,357	FY2023
Historic National Road Bikeway Project (St. Clairsville) (PID# 108774)*	TIP	1,192	FY2023
Great Stone Viaduct (PID# 106665) Bellaire	TIP	100	FY2022
Aetnaeville Bridge Rebuild for Bike/Ped.	2045 LRP	1,000	FY2027
** Excludes TAP funds*			
Marshall County:			
Upgrade WV2 to four lanes from Kent to Franklin *	LOS; 2040 LRP; TIP	35,000	FY2022
Radii improvements at the intersection of US250 and 1st Street/Jefferson Avenue in Moundsville	LOS; 2040 LRP	1,051	FY2025
Bridge replacement projects			
CR74 Big Tribble Bridge	TIP	800	FY2022
Fostoria Bridge replacement	TIP	860	FY2022
CR74/2 Kaysooth Bridge replacement	TIP	2,295	FY2023
US250 Parrs Camp Bridge replacement	TIP	895	FY2023
** WV2 upgrade from Proctor to Kent is not included due to $121 million dollar commitment from the Roads to Prosperity funds*			
Ohio County:			
Upgrade I-70 to six lanes from Elm Grove interchange to Cabela Drive interchange	LOS; 2040 LRP	98,800	FY2036
Add a new interchange between Cabela Drive and Elm Grove interchange	LOS; 2040 LRP	58,800	FY2030
Wheeling Streetscape Project (construction phase)	LOS; 2040 LRP; TIP	25,250	FY2022

Project	Source	Cost Estimate (thousands)	Anticipated Year
Aetnaville Bridge Rebuild for Bike/Ped.	2045 LRP	2,000	FY2017
US40 Monument bridge replacement	TIP	2,133	FY2022
US40 Bear Rock bridge replacement	TIP	825	FY2022
CR1 Mine bridge replacement	TIP	525	FY2024
CR41 Valley Grove bridge replacement	TIP	465	FY2022

Belmont County Fiscal Constraint

Based on revenue projections provided by ODOT, a sum of $759,101,310 will be available by Fiscal Year 2045. However, as per Access Ohio 2045, 68% of total statewide revenues are spent on roadway preservation and 20% are spent on transit systems. Given that 88% of all funds are spent on preservation, very little is left for capital improvements. For this plan, it is assumed that 80% of estimated funds will be spent on system preservation projects in Belmont County. This leaves only 20% for capital improvements. A total of $151,820,262 will be available over the next 25 years for capital improvements. The estimated need is over $280 million. A graph in Figure 13-1 shows the available estimated revenue and projected need through the year 2045.

Figure 13-1
Revenue and Needs Through 2045



The projects were prioritized for the fiscal constraint. The first group of projects are committed projects included in the FY2021 – FY2024 Transportation Improvement Program (TIP). The price tag for these projects is approximately $4 million. Of these, only about $1.5 million are capital projects. Only capital projects are considered for the fiscal constraint, maintenance projects are assumed to be funded by 80% set aside for preservation. Since over $18 million are available for capital improvements by FY2024, these projects have met the fiscal constraint test.

The second group of projects from FY2025 – FY2027 include $39.7 million worth of capital improvement projects. In addition, a preservation project with estimated cost of $350,000 is included. A total of $38 million is available by FY2027. This leaves a shortfall of approximately $1.7 million. Since this shortfall can be covered by available funds in FY2028 and since 96% of the need is met in FY2027, these projects have met the fiscal constraint test.

The third group of projects fall in Fiscal Years 2028 through 2045. This group has only one project. A full service I-470/SR7 interchange is estimated to cost $239.5 million in 2036. By FY2036, only $57 million will be available and by FY2045, approximately $120 million will be available, which is far short of the project cost. This project is important, as a lack of a full service interchange in Bridgeport causes traffic issues on local streets and at I-470/SR7 causes delays at a signalized intersection to move traffic from one route to another. The problem will only be compounded by additional traffic expected to be serviced by these facilities with the expected cracker plant traffic. The cost of this project will require additional discretionary funds from TRAC and/or BUILD/INFRA programs. Fiscally constrained projects are presented in Figure 13-2.

Fiscally Constrained Projects:

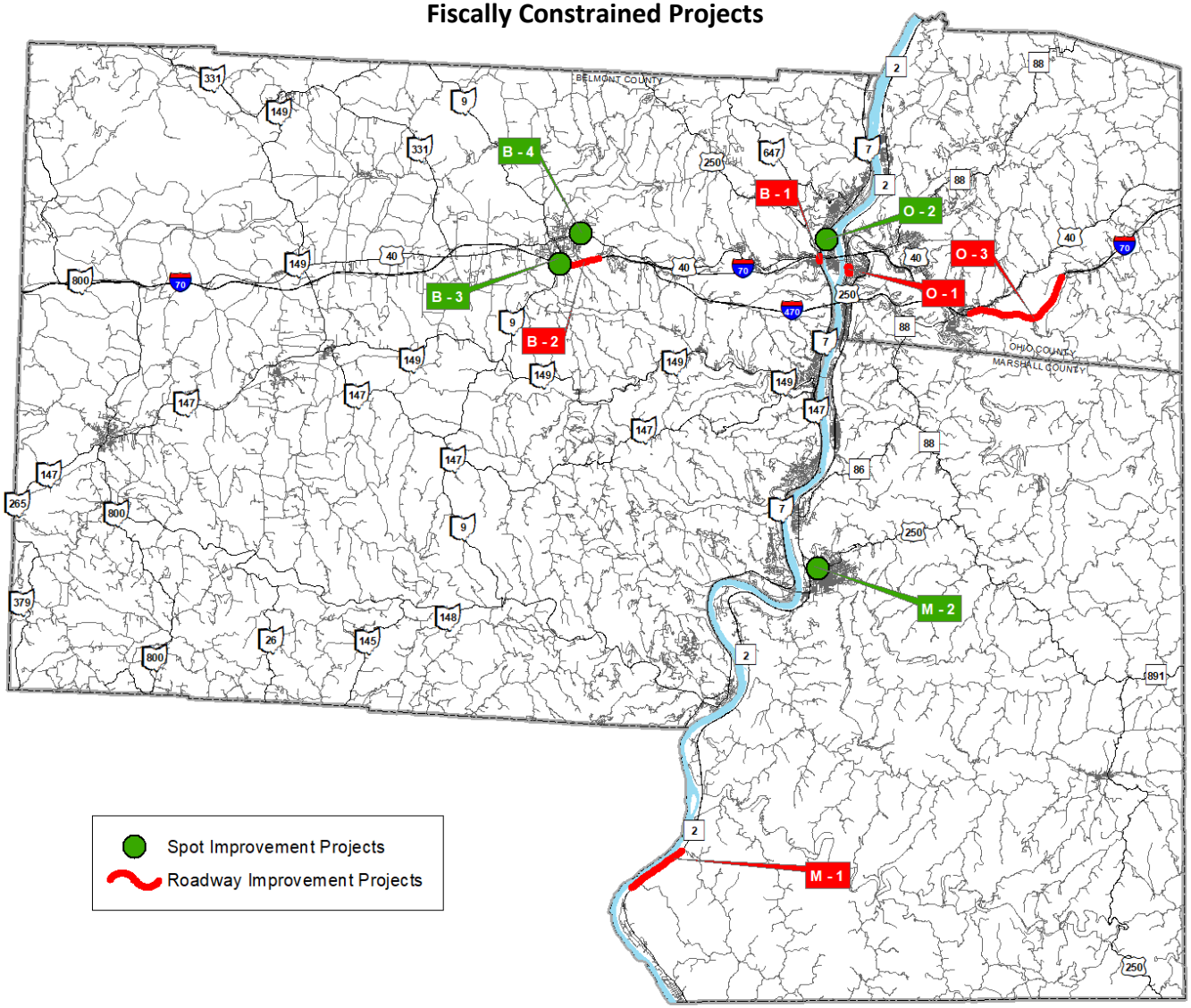
The projects in the current FY2021 – FY2024 TIP are considered to be fiscally constrained and are not listed here.

B-1 Improvements on Lincoln Avenue in Bridgeport (with local input and consensus)
Estimated Year: FY2025
Estimated Cost: $1.9 million

B-2 Upgrade I-70 to six lanes from Mall Road Interchange to SR9 Interchange
Estimated Year: FY2027
Estimated Cost: $20.5 million

B-3 Operational improvements on SR9/I-70 Ramps/Thompson Drive
Estimated Year: FY2027
Estimated Cost: $16.2 million

Figure 13-2
Fiscally Constrained Projects



B-4 New Signal at the intersection of US40 and Barton Road
Estimated Year: FY2025
Estimated Cost: $350,000

Ohio and Marshall County Fiscal Constraint

Based on revenue projections provided by WVDOT, a total of $136 million is available for fiscally constrained projects in Ohio and Marshall counties. Currently, a statewide LRTP for 2050 is being prepared. Needs and revenue analysis and discussion of a prospective solution are expected to be part of this plan. An annual funding gap approaching $1 billion/year is projected. Due to the hilly terrain subject to freeze thaw cycles, the cost of construction and maintenance is high. The local roads are also affected by the presence of high truck traffic on rural back roads servicing the natural gas recovery in the region. The photograph on this page shows the damage on local roads.

Local road deterioration and ever growing need for maintenance funds

The pressure to use the ever increasing share of available revenues on maintenance will continue to grow. At present, close to 70% of all revenues are spent on roadway maintenance.

The project need for the next 25 years is over $220 million. This leaves a shortfall of $84 million. The projects under consideration include TIP projects for which funds are yet to be obligated. For the purpose of this plan, these projects are considered fiscally constrained as they are included in the fiscally constrained TIP. These projects are included here as previously requested by WVDOT. The FY2021 – FY2024 projects in the current TIP are estimated to cost a total of $71.7 million. Of these, $8.9 million are for bridge reconstruction in Ohio and Marshall counties. The remaining funds are for two much needed capital improvements: WV2 upgrade to four lanes from Kent to Franklin in Marshall County and the Wheeling Streetscape Project in Ohio County. Bridge projects are expected to be part of the statewide bridge project group funded through the system preservation funds. The two capital projects are to be funded using

capital improvement dollars. For the fiscal years FY2021 to FY2025, only $19.6 million are available for this plan. The WV2 upgrade project is funded with "Roads to Prosperity" funds. However, since these projects are included in the current TIP, they are considered fiscally constrained.

The second group of projects included for fiscal constraint is for the FY2026 to FY2035. The estimated available funds for this 10 year period are $55.8 million. The three capital improvement projects included are 1) a new interchange on I-70 between the Elm Grove and Cabela Drive interchanges 2) reconstruction of the Aetnaville Bridge on back channel of the Ohio River for bike and pedestrian use and 3) the turning radii improvements at the intersection of 1st Street and US250 in Moundsville. The combined cost of these projects is almost $62 million. The available funds ($55.8 million) fall far short of estimated project cost. The new I-70 interchange project alone is estimated to cost $58.8 million. From this group, the Aetnaville Bridge reconstruction and radii improvements project on 1st Street and US250 intersection are considered fiscally constrained. Ohio County Development Authority (OCDA) is actively pursuing the new interchange. This plan can be amended to include this project as and when funding sources are identified and OCDA is ready to proceed.

During the 10 years from FY2036 to FY2045, a total of $98.8 million are needed. The only project for this period is the six lane upgrade on I-70 from the Elm Grove interchange to Cabela Drive. It is estimated to cost $98.8 million. $60.5 million are available for this group from the WVDOT total estimate of $136 million. However, since only approximately $3 million are used from the $55.8 million available, for the previous group (FY2026 – FY2035), sufficient funds are available for this project.

Overall, the estimated cost of all fiscally constrained projects in Ohio and Marshall counties is under $102 million, while $136 million are available. However, this leaves out a key new interchange project that would have exceeded the $136 million available for the plan. The available funds for this plan preclude the one major capital project needed in the region. The truck traffic is increasing on I-70 following national trends. The pace of economic growth at "The Highlands" will continue to add pressure on I-70 operation. A single exit from this development poses safety and emergency response risks due to a large concentration of business and people at one location. A deterioration in LOS on I-70, a major east-west national interstate, is certain due to increasing traffic including truck traffic that has already surpassed one in three vehicles in the traffic stream. Continued loading of additional local trips and through truck traffic will create bottlenecks on I-70 that will cause traffic delays in this corridor.

The new interchange on I-70 will ease internal circulation within "The Highlands" and relieve projected traffic congestion on I-70. The new interchange and I-70 six lane upgrade projects should be developed simultaneously, even though one is fiscally constrained at this time. Other sources such as BUILD and/or INFRA programs should be explored to fund these projects.

It is recommended for additional projects that may be identified through studies or otherwise, funding sources such as BUILD/INFRA/TAP should be pursued as appropriate.

Fiscally Constrained Projects:

The following projects in Marshall and Ohio Counties are fiscally constrained.

Marshall County:

M-1 WV2, 4 lane upgrade from Kent to Franklin
Anticipated Year: FY2022
TIP Cost (FY2021): $35,000,000
Plan Cost: $0

M-2 Radii Improvements at the intersection of 1st Street and US250, Moundsville
Anticipated Year: FY2025
Estimated Cost: $1,051,000

Ohio County:

O-1 Wheeling Streetscape Project
Anticipated Year: FY2022
TIP Cost (FY2022): $25,250,000
Plan Cost: $0

O-2 Aetnaville Bridge for Bike/Ped
Anticipated Year: FY2027
Estimated Cost: $2,000,000

O-3 Upgrade I-70 to six lanes from Elm Grove to Cabela Drive Interchanges
Anticipated Year: 2036
Estimated Cost: $98.8 million

The capital improvement projects of regional significance that are excluded due to a lack of funding, should be included if funds could be secured in the future. Other maintenance and operational improvement projects are excluded as they are funded through the statewide revenues separate from the funds for this plan. Only capital improvement projects are analyzed for fiscal constraint and are included here.

Qualitative Environmental Justice Analysis of Financially Constrained Projects

In order to ensure that there is no disparate treatment in project selection and the overall planning process, environmental justice target areas were identified. An environmental justice (EJ) area is a geographic area with concentration of low income and/or minority populations that must be considered in the planning process for disproportionate impacts of transportation planning projects and programs. These areas were identified using 2010 decennial census results and the Census Bureau's American Community Survey using samples from 2006-2010. The target

areas and the selection process are included in Appendix D. New target areas will be identified based on the 2020 Census count and the latest available American Community Survey (ACS).

Out of 149 census block groups in the region, 17 were identified as target areas. The target areas are generally located along the Ohio River and US40. SR7 and WV2 run along the Ohio River in north-south direction. I-70 runs parallel to US40 in east-west direction. As the National Highway System (NHS) includes all of I-70, I-470, WV2 and SR7 within the urbanized area, all target areas are located adjacent to the designated NHS routes. As such, a quantitative analysis of accessibility to the NHS of target areas versus non-target areas was deemed unnecessary. For households with automotive availability, within the target areas, the existing highway system is considered to provide, at a minimum, equitable and comparable service to the target areas. All target areas are also served by transit. This implies that access to employment, retail, medical and recreational centers and other major generators, from the target areas is comparable or better than that of non-target areas not served by public transit.

Three fiscally constrained projects are located in the EJ target areas. One project is in Bridgeport, Ohio and two projects are in the City of Wheeling. The Bridgeport project is for improving traffic flow and creating a pedestrian friendly environment on Lincoln Avenue. This street carries traffic between two limited access highways, SR7 and I-70. Improvements here will be of regional significance. The population in EJ target areas surrounding this location will have a positive impact due to improved access for pedestrians and smooth flow of traffic.

The two projects in the City of Wheeling are also aimed at improving accessibility for pedestrians and bicyclists. The Aetnaville Bridge project benefits the EJ population by providing pedestrian crossing over the Ohio River to link previously connected target areas on both sides of the river. The Aetnaville Bridge is closed to all traffic at the present time. A new pedestrian bridge will not only connect the Ohio and West Virginia communities, it will also provide a much needed river crossing for an interconnected bikeway system. The other project in Wheeling is the downtown streetscape project. It is also expected to provide a pedestrian friendly environment and improve accessibility for pedestrians and bicyclists.

Other fiscally constrained projects in Ohio and Belmont Counties are spatially removed from any identified EJ target area. Two projects on I-70 are for alleviating projected traffic congestion. Additionally, two projects in Belmont County are in the City of St. Clairsville. One is the installation of a new traffic signal and the other is improving traffic flow at ramp intersections with SR9. None of these projects have adverse or disparate impact on identified EJ target areas.

There are two fiscally constrained projects in Marshall County. No EJ target area is located in Marshall County. One project is an intersection improvement project in the City of Moundsville and the second project is a Route 2 upgrade to four-lanes. None of these projects have any impact on identified EJ target areas. The benefits of these projects are considered neutral from the EJ standpoint.

None of the fiscally constrained projects in the plan have any adverse or disparate impact on any identified EJ target area.

Additional discussion regarding environmental justice is included in the Public Transportation section of this Plan.

Future Conditions

The Travel Demand Model (TDM) provided the estimate of traffic for the year 2045. A system wide Level of Service (LOS) analysis was also included in the TDM output. The LOS identifies areas of potential delays and congestion. Using the 2045 LOS, several locations were identified for further action. From these locations, only a small number of projects could be included in the financially constrained plan. Ohio County has three projects. One project is carried forward from the expiring plan. The need for improvements at other locations remains valid, but could not be addressed in this plan due to fiscal constraint. The unfunded projects are listed elsewhere in this chapter. Given that only a small number of capacity enhancing projects are included in the fiscally constrained plan, there are few changes between the existing and future conditions.

In Belmont County, two projects are carry forward projects from the previous plan and two projects are new. Lincoln Avenue improvements in Bridgeport and a new traffic signal on US40 in St. Clairsville are new projects. The major change in the level of service is on the projects where capacity is increased. The LOS on the existing and committed network (E&C) in key areas, and the LOS in the same areas after fiscally constrained projects are added to the TDM network, is shown on the next page.

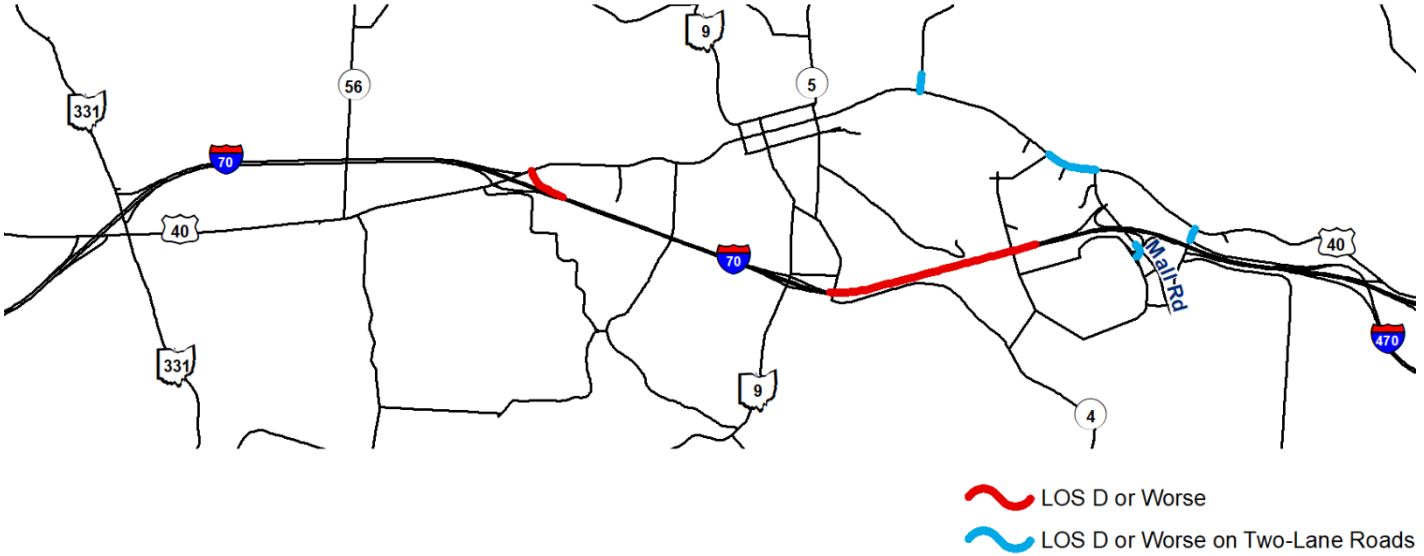
In Marshall County, two projects are carry forward projects from the previous plan. The E & C and future conditions in the vicinity of “The Highlands” area in Ohio County and the Mall/Plaza area in Belmont County are shown in Figures 13-3 and 13-4.

On the West Virginia side, in Ohio County, the six lane upgrade of I-70 from the Elm Grove interchange to the Cabela Drive interchange, was in the expiring plan and is carried forward. The six lane upgrade project will relieve congestion on this section of I-70. Internal circulation within "The Highlands" will be of concern due to a lack of alternate access points. During the peak shopping season in December, delays of over 15 minutes are experienced at "The Highlands". This condition will only exasperate in the future as “The Highlands” is not fully built at this time and new businesses continue to locate there. The lack of another access point will continue to cause delays and congestion in this area. Congestion will also affect freight movement in this major east-west corridor.

Figure 13-3

St Clairsville/Mall/Plaza Area

Existing & Committed Conditions



Future Conditions 2045

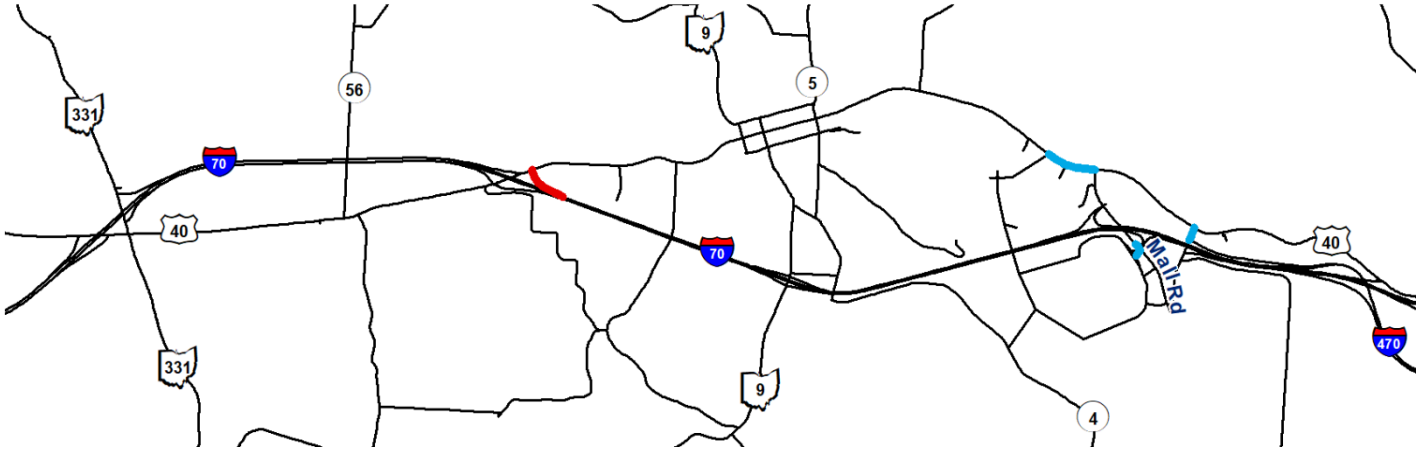
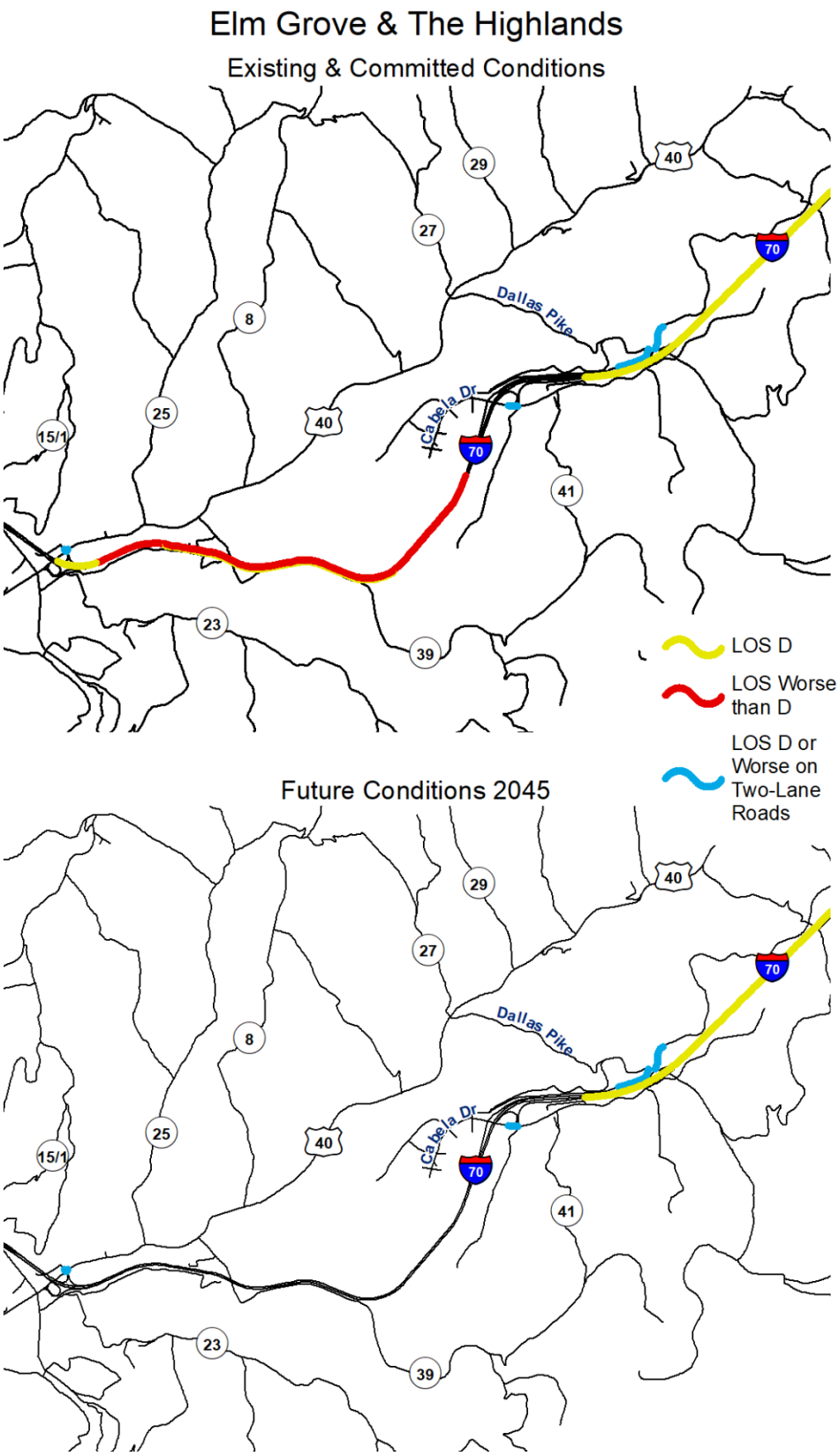


Figure 13-4


Elm Grove & The Highlands
Existing & Committed Conditions
Future Conditions 2045
Dallas Pike
Cabela Dr
LOS D
LOS Worse than D
LOS D or Worse on Two-Lane Roads
29
40
27
70
8
25
15/1
41
23
39

CHAPTER 14

TRAVEL DEMAND MANAGEMENT AND LIVABLE COMMUNITIES

According to the American Association of Retired People (AARP), "a livable community is one that has affordable and appropriate housing, supportive community features and services, and adequate mobility options," which together facilitate personal independence and the engagement of residents in civic and social life. Based on this definition they have developed a livability index. The Livability Index scores communities on a broad range of community features and characteristics within seven categories: housing, transportation, neighborhood, environment, health, engagement, and opportunity.

The livability index of above 50 is considered above average. Wheeling has an overall livability index of 52 and Ohio County has a score of 51. For transportation alone, the index is 52 for Wheeling and 47 for Ohio County. The index for Moundsville is 55, but for transportation the index is 56; and Marshall County has a score of 52 with a transportation index of 47. For St. Clairsville, the livability index is 51 and for Belmont County, it is 48 and the transportation index is 43 for St. Clairsville and 38 for Belmont County, which are the lowest values for transportation in the region[1]. The transportation index is based on convenient transportation options such as frequency of local transit services and options for walk trips, level of congestion, household transportation costs, safe speed limits, crash rates, and accessible system design with Americans with Disabilities Act (ADA) accessibility. The lowest value for transportation in St. Clairsville needs closer examination, as St. Clairsville and Wheeling have successfully converted abandoned railroads to multi-use trails. Also, while the transit service in Belmont County is similar to Marshall County, the difference in their transportation values is in the neighborhood streets speed limits and crash rate. Ohio and Marshall Counties also get credit for having a human services transportation coordination plan. A state sponsored and funded human services coordination plan was updated in 2019. This included West Virginia Region X, which includes Ohio and Marshall Counties. The Belmont County Human Services coordination plan was updated in 2019.

While our livability score is above average, the transportation index leaves a lot to be desired. Out of six jurisdictions, four have transportation indexes below average with Belmont County receiving 38. Since these standardized values are out there for public consumption, it is important to understand why this value is low and where there is room for improvement.

The rails-to-trails programs provide options for walking and bicycling. However, the location of these facilities in abandoned railroad right of ways is not conducive for work trips. The trails are generally accessible by automobile and they are primarily used for recreation.

[1] Scores taken from AARP's Livability Index Tools.

The next step is to develop an interconnected system of bike paths that will serve multiple trip types. A recently completed Wheeling Access Study has made recommendations for improvements in Downtown Wheeling and surrounding areas to improve accessibility by non-motorized modes. St. Clairsville and Moundsville are the county seats for Belmont and Marshall Counties, respectively. Both cities are not served by transit. A transit levy was rejected in Moundsville and has not been considered in St. Clairsville. As per AARP, "How easily and safely we're able to get from one place to another has a major effect on our quality of life. Livable communities provide their residents with transportation options that connect people to social activities, economic opportunities, and medical care, and offer convenient, healthy, accessible, and low-cost alternatives to driving." Our dependence on automobile has precluded many options for other alternatives; the region's residential density is not optimal for efficient transit service. Transit service is also a component of active transportation, as people walk to and from the bus stop. With our aging population, the need for transit will grow.

Ridesharing is also known to reduce demand by combining single auto occupant trips. It improves air quality by reducing emissions. In urban locations, where room for improvements or expansion may be limited by the built environment or cost, managing demand may be the only viable solution. Previously conducted rideshare surveys have shown little interest and no formal ridesharing program exists. However, informal Park and Ride locations can be spotted at many key locations in the area. The following picture shows such a location along I-70 near St. Clairsville.

Ridesharing on a vacant lot on National Road in Belmont County

Additional locations have been spotted on I-70 and SR7. On the West Virginia side it is believed existing commercial parking lots at "The Highlands" and Elm Grove Crossing shopping center are used for this purpose. Potential also exists along WV2. Until recently, no formal Park and Ride facility existed in the region. The first such facility was constructed on SR800 in Belmont

County. Metropolitan Planning Organization (MPO) sub-allocated funds were used for the construction. Recently, a new park and ride facility was added on I-470. A new approach to ride sharing is needed and a new facility provides a visual to promote this activity. While MPO sub-allocated funds can be used in Belmont County for Park and Ride lots, no such option exists on the West Virginia side. A plan to construct Park and Ride lots, in consultation with WVDOT and ODOT, is needed. Additional surveys may also be needed to reassess interest in ridesharing. The additional traffic and traffic generation by the new cracker plant may stimulate a desire for ridesharing in the region. In addition to ridesharing, opportunities exist for staggered hours and telecommuting. Post COVID-19 changes in work environment will affect travel demand in the future.

ADA Compliance

Mobility options exist for all individuals in livable communities. Any barriers to mobility can be addressed by making sidewalks, buildings and other public spaces accessible and ADA compliant. WVDOT and ODOT maintain an inventory of ADA assets. WVDOT ADA GIS inventory is available at https://gis.transportation.wv.gov/ada/crb and ODOT assets are accessed through the TIMS web portal at https://gis.dot.state.oh.us/tims.

Belomar has taken a proactive advocacy role in removing mobility barriers for people with disabilities. In the mid-nineties a move was made to relocate offices from a non-accessible office building to an accessible strip shopping center. With deliberate planning, all offices and other spaces were made accessible and a unisex accessible restroom was included. For the last several years, on the Ohio side, sub-allocated surface transportation funds have been used to help communities with improving sidewalks and providing accessible curb ramps. Substantial investments were made in the communities of Brookside, Bridgeport, Shadyside and St. Clairsville to improve sidewalks with accessible curb ramps. All resurfacing projects on the federal-aid system on both sides of the river, comply with the accessibility requirement. Accessible ramps are also constructed in the Elm Grove section of Wheeling. A pilot pedestrian accessibility study of transit and trails in the area was recently completed. The Wheeling Accessibility Study identified locations in downtown and surrounding areas that need crosswalks and fully accessible curb ramps. Most of these locations are within a streetscape project in downtown Wheeling. Lessons learned from the pilot study will be applied to the entire region. The complete street project in Wheeling will also lay the groundwork for improving streets elsewhere in the region.

The City of Wheeling has planned a downtown streetscape project, which is scheduled to begin in the summer of 2021. This project, which is estimated to cost over $25 million and include the major thoroughfares of the downtown area, will provide upgraded ADA crosswalks and curb improvements. These enhancements will provide for safer pedestrian access and will be compliant with ADA requirements, which will improve the transportation livability index for the City of Wheeling. In addition to these improvements, WVDOT has programmed fifteen ADA compliant curb ramps in Marshall County and ten in Ohio County. In Belmont County, ODOT constructed ADA ramps on state roads within local communities. The ramp maintenance and

building additional ramps, where needed, is part of the resurfacing projects on both sides of the Ohio River.

The livability of our communities can be improved by finding ways to improve pedestrian and bicycle access to transit and existing trails. We can identify gaps in accessibility to key locations and find ways to make them more accessible. Ensuring that sidewalks are accessible and ADA compliant is another way to improve the transportation livability index in our region. Speed limits can be revisited and crash rates, if found to be high, can be reduced by implementing appropriate countermeasures. Human services coordinated plans can also serve as a vehicle for providing transportation alternatives and improving accessibility.

Strategies

- Promote and support complete street initiatives in the region.
- Undertake a crash analysis to develop crash rates on local streets.
- Assist local communities in seeking grants to make necessary improvements on local streets.
- Explore rideshare potential after the construction of the cracker plant.
- Monitor post COVID-19 changes and their impact on the work commute.

CHAPTER 15

ENVIRONMENTAL CONSIDERATION OF PLAN IMPACTS

National Surface Transportation Acts have established the requirements for long range transportation plans. The Fixing America's Surface Transportation Act (FAST Act), much like its predecessors, requires that the impacts of plan projects on the environment, both natural and human, be discussed along with the mitigation strategies. It is anticipated that in doing so, conflict areas and potential mitigation strategies will be identified early in the planning process, saving valuable time and resources. This activity is to be undertaken with the involvement of federal, state, tribal and other resource (regulatory) agencies.

In consultation with ODOT, WVDOT and FHWA, Bel-O-Mar prepared a list of resource agencies for the early and continued involvement in the transportation planning process. This list is included in the Appendix E. These agencies are now invited to comment on the transportation planning products at various stages of development.

During the year 2007, the Ohio Department of Transportation took the initiative to obtain, organize and provide relevant data to all MPOs in the state in order to accelerate the project delivery. The data provided for Belmont County included:

- Wetlands
- Threatened and Endangered Species
- Indiana Bat Habitat
- Parklands and Conservation Areas
- State and National Scenic Rivers
- National Register Features
- Superfund Sites and Watershed Areas

On the West Virginia side, all of the above data sets, except threatened and endangered species and superfund sites were available and used. Since then data for the threatened and endangered species and superfund sites have been obtained and used. In addition, 100 year flood plain dataset is also added for all three counties. Although the data themes essentially remained the same, the most recent available data sets are used in this plan. This data is used within a vector Geographic Information System (GIS) for overlaying the plan projects to identify potential areas of conflict.

Transportation projects vary in size, type and potential to affect the environment. The impact on the environment can be from negligible to significant. The National Environmental Policy Act (NEPA) requires specific actions with documented process to address the variations in environmental impact of transportation projects.

- An Environmental Impact Statement (EIS) is required for projects with known significant impact on the environment.

- An Environmental Assessment (EA) is required of projects with no known significant effect on the environment. A Finding of No Significant Impact (FONSI) is required for these projects.

- Categorical Exclusions (CE)/Project Memorandum. These are projects/actions that do not individually or cumulatively have a significant effect on the natural and built environment. CE projects do not require mitigation unless unusual circumstances (e.g., significant impact, environmental controversy, etc.) exist.

In order to view potential effect of plan projects, the operational improvements and system preservation type of projects were separated from the project list. No separate or cumulative effect is anticipated from these projects. A one quarter mile buffer was created around projects involving capacity upgrade, new construction and interchange modification/upgrade. These buffered areas were overlaid on each digital data set obtained from the relevant regulatory agencies.

Overlay of fiscally constrained plan projects on each dataset is used to determine project effect, if any, on the environment. The overlay maps are included in the Appendix F. All projects in this plan are within the Indiana Bat habitat. Project developers should refrain from site clearing activities during Indiana Bat nesting season. Projects in Marshall County and Ohio County are within the 100 year flood plain. However, for the most part, the I-70 project in Ohio County will not be affected due to vertical separation. In Belmont County, all projects are out of the 100 year flood zone.

In Ohio County, the I-70 upgrade project (O-3) shows that Shepherd Hall (Osiris Temple) at the intersection of WV88 and Kruger Street and Feay Inn on Burkham Court are within the project buffer. However, the interstate has a vertical separation at this location and it appears there will be no negative impact on these structures. Several historical buildings are located in the buffer zone for the Wheeling Streetscape Project (O-1) and Aetnaville Bridge Bike/Ped Bridge Project (O-2). The streetscape project is within the existing cross-section of the streets so none of the historical structures will have any additional impact. The Aetnaville Bridge project is essentially a downgrade of the previous two lane vehicular traffic bridge. It involves a 10' bike/ped lane on existing piers. Therefore, no additional environmental impact is foreseen.

In Moundsville, the 1st Street and US250 Intersection Improvement Project (M-2) includes the historic Moundsville Commercial District and the West Virginia State Penitentiary. However, this intersection improvement project will have no environmental impact on the state penitentiary and little or no impact on the commercial district.

No other area of conflict is readily visible as a result of overlays. In reviewing the overlays, the limitations and generalization of the data should be understood. Datasets vary from 1:24,000

to 1:100,000 scale with horizontal accuracy ranging from 40' to over 160'. There are inherent problems in overlays involving datasets from multiple sources and of multiple scales and origins. In light of these issues, only generalized observations can be made from the available data. The objective of observations in this section is to start a preliminary discussion on environmental conflicts and potential mitigation actions.

Environmental Mitigation Strategies

The NEPA process for project development will be followed for all projects. Detailed mitigation actions will be identified as part of the project development process and NEPA requirements. The resource agencies input will be sought throughout the planning process and suggested mitigation actions will be addressed. Relevant mitigation policies/actions will be identified and acted upon as needed. Belomar will strive to seek alternatives with minimal or no negative impact on the environment.

Concepts for implementing mitigation can take many forms depending on the type of resources and level of transportation impacts at the regional level. Other factors such as agency consultation, funding, availability of land, etc. also determine where, when and how mitigation is approved. Examples of mitigation strategies that have been developed through consultation with the resource agencies include:

- Wetland acquisition and restoration
- Detention and sediment basins
- Purchase of buffer strips along streams and rivers
- Enhancement of parkland or recreation areas for a community
- Habitat connectivity strategies to prevent fragmentation
- Watershed based strategies
- River cleanups

The vector GIS databases used for the plan project overlays lack necessary detail and precision. The vector datasets are not conducive for environmental analyses involving simultaneous stacking of multiple datasets for identifying multiple overlapping conflicts and comparing cumulative conflict of one scenario to another in a quantitative way.

In the overlay exercises, the conflict areas were identified by visual inspection only. In contrast, raster datasets lend themselves to operations resembling matrices and are very suitable for spatial modeling and analyses requiring stacking of GIS layers and answering queries that cannot be answered in vector GIS environment. Thus, Belomar will explore the use of raster GIS and look into the availability of raster datasets to enhance the quality of environmental analyses and mitigation actions.

CHAPTER 16

PUBLIC TRANSPORTATION

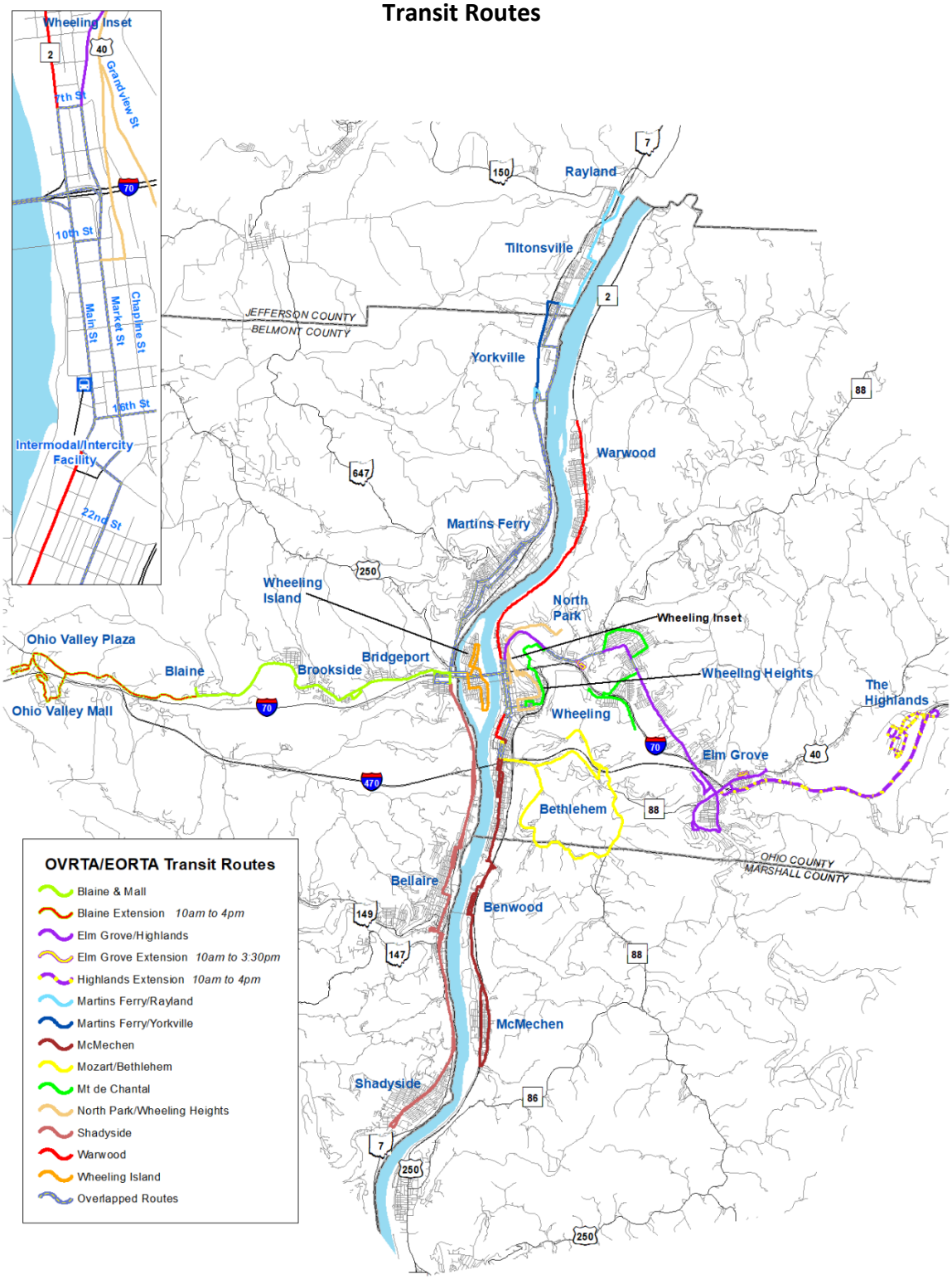
Multimodal transportation system is pivotal for addressing community needs. It provides mobility choices to all citizens, irrespective of age, auto ownership or disability. The need and demand for modal choices is on the rise and increasingly communities are adopting and supporting sustainable development that includes access to transit.

OVRTA/EORTA Garage

Fixed route public transportation and curb-to-curb paratransit services are available in the region. Public transportation provides an alternative mode of transportation for the residents of the valley and, in particular, a mobility option for people without an automobile, senior citizen and people with disabilities. Being a bi-state Metropolitan Planning Organization, public transportation is provided by the Ohio Valley Regional Transportation Authority (OVRTA) in West Virginia and the Eastern Ohio Regional Transit Authority (EORTA) in Ohio. While having separate boards, service is provided through a cooperative agreement between the Authorities and operated from a single facility.

OVRTA currently operates seven fixed bus routes with its active fleet of thirteen buses. The bulk of the service continues to be provided to the four West Virginia communities of Wheeling and Bethlehem in Ohio County, as well as Benwood and McMechen in Marshall County. EORTA operates four fixed bus routes with its fleet of six buses that primarily serve the Ohio communities of Bellaire, Bridgeport, Brookside, Martins Ferry, Rayland, Shadyside, Tiltonsville, Yorkville and the communities located along the Blaine route west of Brookside (e.g., Wolfhurst, Lansing and Blaine) in Belmont and Jefferson Counties. The four EORTA bus routes, however, do cross the Ohio River and offer service to and from downtown Wheeling in West Virginia. Wheeling is the central city and the Robert C. Byrd Intermodal Transportation Center in downtown Wheeling is the transfer point for all routes. Further, OVRTA/EORTA jointly operate an advance reservation, curb-to-curb paratransit van service that meets ADA requirements with a four vehicle fleet. The transit route map is shown in Figure 16-1. The service area includes all environmental justice target areas in the region.

Figure 16-1
Transit Routes



Buses have two way radios that allow drivers to communicate with each other and the base station. Each bus is also equipped with a GPS receiver and can be tracked in real time. Although the location of each bus can be tracked and displayed, a passenger convenience application related to this ability has not been fully implemented at this time. The transit authorities are working to provide this feature to allow passengers to better time their arrival at a bus stop, minimizing their wait time. The West Virginia Division of Public Transit (WVDPT) is actively working to assimilate information from all transit providers. The state is to provide "google transit" scheduling option.

Transit service is sustained, in part, by the federal funds provided through the Urbanized Area Formula Funding program (49 U.S.C. §5307). Section 5307 provides federal funds for transit capital and operating assistance. Other revenue sources include the fare box and local levies. EORTA also has access to a number of programs funded by the Ohio Department of Transportation. In addition, federal Section 5339 funds can be utilized for capital improvements.

Robert C. Byrd Intermodal Transportation Center

The transit authorities continue to face many challenges beginning with federal funding levels that have remained relatively unchanged or had only minor increases along with operational costs that rise every year. Also, attracting more riders, expanding service, improving headways and reevaluating current routes remain a challenge. The fixed routes essentially have remained unchanged since the inception.

In consultation with the transit authorities, the following assumptions are made for this plan:

OVRTA

- Due to the reluctance at the national level to find a permanent solution for increasing revenues for surface transportation, and in light of the expiring Fixing America's Surface Transportation Act (FAST Act), it is uncertain if funding levels will see an increase in a new Surface Transportation Act. For this plan, it is assumed that the Section 5307 funds will increase at an annual pace of 2.1%. The available funding share will further drop by 10% after each decennial census in the years 2020 and 2030. The census related drops will be effective starting in the years 2024 and 2034. It is also assumed, based on the past utilization, that all of these funds will be used for operating assistance.

- The property tax levy revenue will increase by 3% annually. This assumption is based on the fact that the levy rate will not be bumped up during the life of this plan.

- The current fares collected will grow at an annual rate of 2.5%. This item includes bus fares, paratransit van fares and bus passes sold.

- If the SOR (State Opioid Response) Program continues in West Virginia, it will grow at a rate of 4% each year. So far, this program is guaranteed until 2022.

- OVRTA did receive CARES Act monies in the amount of $2,186,653 in FY2020. These funds have been used to meet its payroll expenses and COVID-19 expenses at 100% federal assistance. No local match was needed for these funds. They should last until June of 2021.

- If OVRTA is able to expand into Moundsville, fares will grow an additional 2.5%. OVRTA anticipates pursuing this option by 2025.

- Revenues generated under the "Other" category will be $10,000 per year. A constant dollar amount will be used for each year and this reflects revenues generated by local specials/charters.

- The revenue sources noted in the assumptions above will be the only available ongoing annual revenue sources for the life of this plan. Access to federal Section 5339, CMAQ and other funding sources will be pursued for primarily capital purchases, but there is no guarantee of being awarded any of these funds.

- Operating expenditures will grow at an annual rate of 4%. The current funding split of 68% for OVRTA and 32% for EORTA will be maintained. If either authority modifies service, the ratio may be subject to change, and may impact the operating cost of the other authority. It would be impractical to assume any of the numerous cost sharing ratio changes that may occur over the life of this plan.

EORTA

- Similar to the assumptions for OVRTA, the federal Section 5307 funding is expected to grow by 2.1% annually. The local share of this funding will drop by 10% after each decennial census in 2020 and 2030. The census related drops will be effective from the years 2024 and 2034. All of the Section 5307 funds will be used for operating assistance.

- State funding through ODOT will be held constant at $85,000 per year.

- Property tax revenues generated by the EORTA vary only slightly from year to year without an increase in the levy rate. For the purpose of this plan, levy revenue has been held constant at $685,000 per year.

- There have been marginal fluctuations in the fare box based revenue. However, for the purpose of this plan, the fare revenue will be held constant at $97,500 per year.

- EORTA did receive CARES Act monies in the amount of $2,036,987 in FY2020. These funds have been used to meet its payroll expenses and COVID-19 expenses at 100% federal assistance. No local match was needed for these funds. They should last until December of 2021.

- Under the "Other" category, the revenues will be constant at $2,500 per year.

- The revenue sources noted in the assumptions above will be the only available ongoing annual revenue sources for the life of this plan. Access to federal Section 5339, CMAQ and other funding sources will be pursued for primarily capital purchases, but there is no guarantee of being awarded any of these funds.

- Given the cost sharing arrangement described previously, the projected increase in operating expenditures should be the same as OVRTA. Thus, EORTA's operating expenses are also estimated to grow at an annual rate of 4%.

Based on the assumptions above, the annual operating revenue and expense projections through the year 2045 for OVRTA and EORTA are shown in Table 16-1 and Table 16-2. The long-term outlook shows significant deficits. However, these deficits are based on the assumptions that present the most conservative view. This plan is revised every five years and the assumptions are revisited with every update cycle. Also, this plan can be amended at any time if a significant change occurs. To address short term deficits through fiscal year 2025, both authorities have reasonable options. The reserves alone are greater than the projected deficit. The cumulative deficit through FY2025 for OVRTA is $1,312,659, while the reserve as per the audit is $1,634,693. It should be noted that the reserves dropped at a rate of 3.4% per year for the previous five years. For EORTA, the reserve is $1,676,063 and the deficit through FY2025 is $1,520,845. Although no immediate urgency exists, other options to address the deficit include bumping up the levy rate to the maximum allowed. Neither authority has maxed out the allowable levy rate. Also, the service can be reevaluated to reduce expense and/or increase ridership. OVRTA is also considering extending the McMechen route to Moundsville. This will bring additional levy and farebox revenue with increase in ridership. This extension will result in net gain in OVRTA revenue, reducing the estimated deficits shown in Table 16-1.

Table 16-1
OVRTA Revenues and Expenses

Revenues							Expenses	Difference
Year	Federal	State	Levies	Other	Fares	Total		
2022	782,181		2,049,816	10,000	360,425	3,204,444	3,406,708	(202,264)
2023	798,607		2,111,310	10,000	369,436	3,291,376	3,542,976	(251,600)
2024	718,746		2,174,649	10,000	378,672	3,284,091	3,684,695	(400,604)
2025	733,840		2,239,888	10,000	388,139	3,373,892	3,832,083	(458,191)
2026	749,251		2,307,085	10,000	397,842	3,466,204	3,985,366	(519,162)
2027	764,985		2,376,298	10,000	407,788	3,561,098	4,144,781	(583,683)
2028	781,050		2,447,587	10,000	417,983	3,658,648	4,310,572	(651,924)
2029	797,452		2,521,015	10,000	428,433	3,758,929	4,482,995	(724,066)
2030	814,198		2,596,645	10,000	439,144	3,862,017	4,662,315	(800,298)
2031	831,296		2,674,544	10,000	450,123	3,967,994	4,848,808	(880,814)
2032	848,753		2,754,780	10,000	461,376	4,076,941	5,042,760	(965,819)
2033	866,577		2,837,423	10,000	472,910	4,188,943	5,244,470	(1,055,527)
2034	779,919		2,922,546	10,000	484,733	4,199,232	5,454,249	(1,255,017)
2035	796,297		3,010,222	10,000	496,851	4,315,405	5,672,419	(1,357,014)
2036	830,092		3,100,529	10,000	509,272	4,451,929	5,899,316	(1,447,387)
2037	847,524		3,193,545	10,000	522,004	4,575,110	6,135,289	(1,560,179)
2038	865,322		3,289,351	10,000	535,054	4,701,765	6,380,701	(1,678,936)
2039	883,494		3,388,032	10,000	548,430	4,831,995	6,635,929	(1,803,934)
2040	902,047		3,489,673	10,000	562,141	4,965,901	6,901,366	(1,935,465)
2041	920,990		3,594,363	10,000	576,195	5,103,589	7,177,421	(2,073,832)
2042	940,331		3,702,194	10,000	590,560	5,245,127	7,464,518	(2,219,391)
2043	960,078		3,813,260	10,000	605,324	5,390,705	7,763,099	(2,372,394)
2044	980,240		3,927,658	10,000	620,457	5,540,399	8,073,623	(2,533,224)
2045	959,985		4,045,488	10,000	635,968	5,653,486	8,396,568	(2,743,082)

Table 16-2
EORTA Revenues and Expenses

Revenues							Expenses	Difference
Year	Federal	State	Levies	Other	Fares	Total		
2022	464,379	85,000	685,000	2,500	97,000	1,335,901	1,603,157	(267,256)
2023	474,131	85,000	685,000	2,500	97,000	1,345,654	1,667,283	(321,629)
2024	426,718	85,000	685,000	2,500	97,000	1,298,242	1,733,974	(435,732)
2025	435,580	85,000	685,000	2,500	97,000	1,307,105	1,803,333	(496,228)
2026	444,829	85,000	685,000	2,500	97,000	1,316,355	1,875,466	(559,111)
2027	454,170	85,000	685,000	2,500	97,000	1,325,697	1,950,485	(624,788)
2028	463,708	85,000	685,000	2,500	97,000	1,335,236	2,028,504	(693,268)
2029	473,446	85,000	685,000	2,500	97,000	1,344,975	2,109,644	(764,669)
2030	483,388	85,000	685,000	2,500	97,000	1,354,918	2,194,030	(839,112)
2031	493,539	85,000	685,000	2,500	97,000	1,365,070	2,281,791	(916,721)
2032	503,903	85,000	685,000	2,500	97,000	1,375,435	2,373,061	(997,626)
2033	514,485	85,000	685,000	2,500	97,000	1,386,018	2,467,983	(1,081,965)
2034	463,037	85,000	685,000	2,500	97,000	1,334,571	2,566,702	(1,232,131)
2035	472,761	85,000	685,000	2,500	97,000	1,344,296	2,669,370	(1,325,074)
2036	482,689	85,000	685,000	2,500	97,000	1,354,225	2,776,145	(1,421,920)
2037	492,825	85,000	685,000	2,500	97,000	1,364,362	2,887,191	(1,522,829)
2038	503,174	85,000	685,000	2,500	97,000	1,374,712	3,002,679	(1,627,967)
2039	513,741	85,000	685,000	2,500	97,000	1,385,280	3,122,786	(1,737,506)
2040	524,530	85,000	685,000	2,500	97,000	1,396,070	3,247,697	(1,851,627)
2041	535,545	85,000	685,000	2,500	97,000	1,407,086	3,377,605	(1,970,519)
2042	546,790	85,000	685,000	2,500	97,000	1,418,332	3,512,709	(2,094,377)
2043	558,273	85,000	685,000	2,500	97,000	1,429,816	3,653,217	(2,223,401)
2044	569,997	85,000	685,000	2,500	97,000	1,441,541	3,799,346	(2,357,805)
2045	581,967	85,000	685,000	2,500	97,000	1,453,512	3,951,320	(2,497,808)

Transit Asset Management and Performance Targets

The Transit Assets Management (TAM) plan and performance targets are required by federal acts MAP-21 and FAST Act. The TAM plan includes State of Good Repair (SGR) targets. SGR is defined as the condition in which capital asset is able to operate at a full level of performance. These targets are updated annually. In addition, transit authorities are required to set transit safety targets. Small providers (Tier II) can set their own targets or participate in a group plan. OVRTA is participating in the TAM plan prepared by WVDPT. EORTA developed its own plan, since a group plan was not provided by ODOT Office of Transit. The targets are presented below:

EORTA Performance Targets

Rolling Stock

The performance measure for rolling stock to be improved on is the percentage of vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB). EORTA seeks to achieve/maintain the target of 0% of these assets meeting or exceeding ULBs for all vehicles in this category. The fleet replacement schedule is developed to achieve this target.

Equipment

The performance measure for equipment is the percentage of equipment over $50,000 and nonrevenue vehicles that have met or exceeded their defined ULB. EORTA seeks to maintain the target of 0% of these assets meeting or exceeding their ULB. This category includes garage service truck, supervisor vehicle, bus shelters and a bus washer.

Facilities

EORTA does not own any facilities. Both OVRTA and EORTA operate from one facility.

OVRTA Performance Targets

OVRTA is participating in the group plan prepared by WVDPT. The performance targets of the group TAM plan are presented in Table 16-3 on the next page.

OVRTA capital replacement schedule is prepared to support the targets of the group TAM plan.

Table 16-3
OVRTA Performance Targets

Category	Class	Performance Measure	Dependency	2021 Targets
Rolling Stock	12 Year/500K Miles	SGR %	TAM Plan	100%
	10 Year/350K Miles	SGR %	TAM Plan	96%
	7 Year/200K Miles	SGR %	TAM Plan	82%
	5 Year/150K Miles	SGR %	TAM Plan	90%
	4 Year/100K Miles	SGR %	TAM Plan	90%
			AVIS	
			WVDOT System Reviews	
Facility	Admin, Maintenance, Storage	SGR %	WVDOT System Reviews AVIS	100%
	Transfer Center	SGR %		100%
Equipment	Support Vehicles	SGR %	WVDOT System Reviews AVIS	95%
	Maintenance Equip	SGR %		50%

WVDOT defines SGR as a system meeting the following criteria: --- All assets are functioning at their ideal capacity within their design life. --- The state's asset management system, AVIS, includes consistent, accurate and relatively current information on the status of each capital asset covered by the TAM. --- Each system has a maintenance program to ensure maintenance is performed per manufacturer requirements and intervals. --- No rolling stock assets are placed in revenue service with identified safety defects.

Transit Safety Management

The FTA has set measures for transit safety. The categories of safety performance measures for transit include:

- Fatalities: total number of reportable fatalities and rate per total unlinked passenger trips by mode.
- Injuries: total number of reportable injuries and rate per total unlinked passenger trips by mode.
- Safety events: total number of reportable events and rate per total vehicle miles by mode.
- System reliability: mean distance between failures by mode.

OVRTA/EORTA has an option to participate in the statewide PTASP or develop its own PTASP. OVRTA has opted to participate in the WVDOT (Division of Public Transit) preferred plan. EORTA has opted to participate in ODOT Office of Transit Plan. In doing so, OVRTA/EORTA agrees to support statewide efforts and projects to promote transit safety. The transit safety targets for OVRTA and EORTA are included in the statewide plans and are presented below.

EORTA Safety Target For 2021

For Bus Service:

Safety Performance Category	Target
Fatalities (total number of NTD-reportable fatalities and rate per total vehicle revenue miles by mode)	0 annually 0 per 100k vehicle revenue miles
Injuries (total number of NTD-reportable injuries and rate per total vehicle revenue miles by mode)	0 annually 0 per 100k vehicle revenue miles
Safety events (total number of NTD-reportable events and rate per total vehicle revenue miles by mode)	0 per Year 0 per 100k vehicle revenue miles
System reliability (measured as revenue miles operated divided by the number of major mechanical failures)	Distance between failures 5,300.51 miles

For Demand Response Service:

Safety Performance Category	Target
Fatalities (total number of NTD-reportable fatalities and rate per total vehicle revenue miles by mode)	0 per year 0 per 100k vehicle revenue miles
Injuries (total number of NTD-reportable injuries and rate per total vehicle revenue miles by mode)	0 per year 0 per 100k vehicle revenue miles
Safety events (total number of NTD-reportable events and rate per total vehicle revenue miles by mode)	0 per year 0 per 100k vehicle revenue miles
System reliability (measured as revenue miles operated divided by the number of major mechanical failures)	Distance between failures 8,584.90 miles

OVRTA Safety Target For 2021

For Bus Service:

Safety Performance Category	Target
Fatalities (total number of NTD-reportable fatalities and rate per total vehicle revenue miles by mode)	0 annually Less than .05 per 1,000,000 vehicle revenue miles
Injuries (total number of NTD-reportable injuries and rate per total vehicle revenue miles by mode)	Less than 8 injuries per year Less than 10 major/minor injuries per 1,000,000 vehicle revenue miles
Safety events (total number of NTD-reportable events and rate per total vehicle revenue miles by mode)	Less than 8 major/minor reportable events per year Less than 10 major/minor reportable events per 1,000,000 vehicle revenue miles
System reliability (measured as revenue miles operated divided by the number of major mechanical failures)	Distance between Major Failures: Greater than 80,000 miles Distance between Minor Failures: Greater than 3,200 miles

For Demand Response Service:

Safety Performance Category	Target
Fatalities (total number of NTD-reportable fatalities and rate per total vehicle revenue miles by mode)	0 annually Less than .05 per 1,000,000 vehicle revenue miles
Injuries (total number of NTD-reportable injuries and rate per total vehicle revenue miles by mode)	Less than 1 injury per year Less than 10 major/minor injuries per 1,000,000 vehicle revenue miles
Safety events (total number of NTD-reportable events and rate per total vehicle revenue miles by mode)	Less than 1 major/minor reportable event per year Less than 10 major/minor reportable events per 1,000,000 vehicle revenue miles
System reliability (measured as revenue miles operated divided by the number of major mechanical failures)	Distance between Major Failures: Greater than 80,000 miles Distance between Minor Failures: Greater than 3,200 miles

Capital Replacement

Assets of the transit authorities include fixed assets and the vehicle fleet. Fixed assets include the facilities, bus shelters and service equipment. The fleet includes buses, vans, service trucks and administrative vehicles.

The OVRTA/EORTA office-garage facility is considered to be in good condition. It was discovered in FY2020 that there is a structural issue with the storage garage and the roof. However, authorities will be repairing these items by the end of FY2021. The outside of the building is also in need of attention. The WVDPT has provided 5339 funds to replace the outside walls of the building with metal walls to improve facade of the building. 5339 funds were also provided for the roof replacement. Once these repairs are completed, the building should not be in need of any other major structural expenses over the remainder of the life of this plan. The only other major expense is replacement of a bus washer. In addition, bus shelters have a service life of 15 years. OVRTA has 16 bus shelters and EORTA has 14 bus shelters.

OVRTA's fleet consists of 13 buses, 2 vans, 1 service truck and 1 supervisor's vehicle. All thirteen buses are medium size, medium duty.

EORTA's fleet consists of 6 buses, 2 vans, 1 service truck and 1 supervisor's vehicle. Only one bus is medium size, heavy duty. EORTA plans to replace five buses with medium size, medium duty buses. In the future, the medium heavy duty bus will be replaced with another medium heavy duty bus. For the purpose of this plan, in conjunction with the transit authorities, the following service life assumptions are used:

Medium size, heavy duty bus – 7 years
Medium size, medium duty bus – 7 years
Medium size, light duty bus – 5 years
Paratransit van – 10 years
Service Truck – 15 years
Supervisor vehicle – 12 years
Bus Washer – 12 years
Bus shelter – 15 years

Based on the above service life assumptions, Table 16-4 identifies the year of replacement for buses and vehicles operated by the transit authorities.

Tables 16-5 and 16-6 show the cost of all anticipated capital needs with the associated year of replacement. The capital needs include the vehicle fleet, and fixed assets such as bus shelters and the bus washer. An annual inflation rate of 2% is used. The last known price of each item and the associated year is used for the cost calculation.

TABLE 16-4

FLEET REPLACEMENT SCHEDULE
EORTA

VEHICLE	YEAR	DESCRIPTION	OWNER	Service Life yrs.	Replacement Vehicle	Service Life Yrs.	Replacement Years																								
							2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
ACTIVE FLEET																															
26	2009	28' MED MEDIUM-DUTY	EORTA**	7	MED MEDIUM-DUTY	7	✓							✓							✓							✓		
40	2010	30'MED HEAVY-DUTY	EORTA**	7	MED HEAVY-DUTY	7			✓							✓							✓							✓
42	2017	MED LIGHT-DUTY	EORTA**	7	MED MEDIUM-DUTY	7			✓							✓							✓							✓
43	2017	MED LIGHT-DUTY	EORTA**	7	MED MEDIUM-DUTY	7			✓							✓							✓							✓
44#	2018	MED LIGHT-DUTY	EORTA**	7	MED MEDIUM-DUTY	7				✓							✓							✓						
6	2009	FORD VAN	EORTA**	10	VAN	10	✓										✓										✓			
7#	2014	MV-1 VAN	EORTA**	10	VAN	10			✓										✓										✓	
TRUCK	2009	SERVICE TRUCK	EORTA**	15	TRUCK	15			✓															✓						
SUV	2010	EXPLORER	EORTA**	12	SUV	12				✓													✓							
VAN	1997	CLUB WAGON	EORTA**																											
CONTINGENCY FLEET																															
20	2011	28' MED MEDIUM-DUTY	EORTA																											

FLEET REPLACEMENT SCHEDULE
OVRTA

VEHICLE	YEAR	DESCRIPTION	OWNER	Service Life yrs.	Replacement Vehicle	Service Life Yrs.	Replacement Years																								
							2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
ACTIVE FLEET																															
30	2020	28' MED MEDIUM-DUTY	OVRTA*	7	MED MEDIUM-DUTY	7						✓							✓							✓				
31	2020	28' MED MEDIUM-DUTY	OVRTA*	7	MED MEDIUM-DUTY	7						✓							✓							✓				
32	2020	28' MED MEDIUM-DUTY	OVRTA*	7	MED MEDIUM-DUTY	7						✓							✓							✓				
33	2020	28' MED MEDIUM-DUTY	OVRTA*	7	MED MEDIUM-DUTY	7						✓							✓							✓				
34	2020	28' MED MEDIUM-DUTY	OVRTA*	7	MED MEDIUM-DUTY	7						✓							✓							✓				
35	2020	28' MED MEDIUM-DUTY	OVRTA*	7	MED MEDIUM-DUTY	7						✓							✓							✓				
51	2015	28' MED MEDIUM-DUTY	OVRTA**	7	MED MEDIUM-DUTY	7	✓							✓							✓						✓			
52	2015	28' MED MEDIUM-DUTY	OVRTA**	7	MED MEDIUM-DUTY	7	✓							✓							✓						✓			
53	2015	28' MED MEDIUM-DUTY	OVRTA**	7	MED MEDIUM-DUTY	7	✓							✓							✓						✓			
55	2015	28' MED MEDIUM-DUTY	OVRTA**	7	MED MEDIUM-DUTY	7	✓							✓							✓						✓			
56	2015	28' MED MEDIUM-DUTY	OVRTA**	7	MED MEDIUM-DUTY	7	✓							✓							✓						✓			
57	2018	28' MED MEDIUM-DUTY	OVRTA*	7	MED MEDIUM-DUTY	7				✓							✓							✓						
58	2018	28' MED MEDIUM-DUTY	OVRTA*	7	MED MEDIUM-DUTY	7				✓							✓							✓						
4	2008	FORD VAN	OVRTA**	10	VAN	10	✓										✓										✓			
5	2008	FORD VAN	OVRTA**	10	VAN	10	✓										✓										✓			
8	2018	FORD VAN	OVRTA**	10	VAN	10							✓										✓							
TROLLEY BUS	2001	28' MED LIGHT-DUTY	OVRTA																											
TRUCK	2015	PICKUP W/SNOWPLOW	OVRTA	15	TRUCK	15									✓															✓
SUV	2006	JEEP GRAND CHEROKEE	OVRTA**	12	SUV	12	✓												✓											
CONTINGENCY FLEET																															
50	2015	28' MED MEDIUM-DUTY	OVRTA**																											
54	2015	28' MED MEDIUM-DUTY	OVRTA**																											

* VEHICLE EQUIPPED WITH LIFT THAT MEETS ADA STANDARD

** VEHICLE LEASED TO OVRTA, WITH TITLE HELD BY THE WEST VIRGINIA DIVISION OF PUBLIC TRANSIT (WVDPT)

*** VEHICLE OPERATED FOR THE EASTERN OHIO REGIONAL TRANSIT AUTHORITY (EORTA) BY OVRTA UNDER THE MOU

\# VEHICLE EQUIPPED WITH RAMP THAT MEETS ADA STANDARD

TABLE 16-5

REPLACEMENT COST BY YEAR

OVRTA		
Year	**Fleet Replacement**	**Cost**
2022	5 medium, medium duty buses, 2 vans, 1 suv	780,545
2025	2 medium, medium duty buses	278,158
2027	6 medium, medium duty buses	868,186
2028	1 van	54,082
2029	5 medium, medium duty buses	752,717
2030	1 truck	45,431
2032	2 medium, medium duty buses, 2 vans	436,596
2034	6 medium, medium duty buses, 1 suv	1,034,321
2036	5 medium, medium duty buses	864,635
2038	1 van	61,144
2039	2 medium, medium duty buses	367,023
2041	6 medium, medium duty buses	1,145,553
2042	5 medium, medium duty buses, 2 vans	1,116,440
2045	1 truck	61,144
	Total Fleet Replacement	7,865,975
	Fixed Assets Replacement	
2021	Building roof and outside walls of building	880,000
	Bus Shelters (service life 15 years)	
2022	16 bus shelters	117,136
2037	16 bus shelters	157,600
	Total Fixed Asset Replacement	1,154,736

TABLE 16-6

REPLACEMENT COST BY YEAR

EORTA		
Year	**Fleet Replacement**	**Cost**
2022	1 medium, medium duty bus, 1 van	179,080
2024	2 medium, medium duty buses, 1 medium heavy duty bus, 1 van, 1 truck	772,489
2025	1 medium, medium duty bus, 1 suv	172,634
2029	1 medium, medium duty bus	147,592
2031	2 medium, medium duty buses, 1 medium heavy duty bus	777,484
2032	1 medium, medium duty bus, 1 van	213,708
2034	1 van	59,388
2036	1 medium, medium duty bus	169,537
2038	2 medium, medium duty buses, 1 medium, heavy duty bus, 1 suv	933,180
2039	1 medium, medium duty bus, 1 truck	234,519
2042	1 van	69,583
2043	1 medium, medium duty bus	194,745
2044	1 van	72,393
2045	2 medium, medium duty buses, 1 medium heavy duty bus	1,025,862
	Total Fleet Replacement	5,022,194
	Fixed Assets Replacement	
	Bus Washer (service life 12 years)	
2022	1 bus washer	97,694
2034	1 bus washer	123,892
	Bus Shelters (service life 15 years)	
2022	14 bus shelters	102,494
2037	14 bus shelters	137,900
	Total Fixed Asset Replacement	461,980

As shown in Table 16-5, over the life of this plan, OVRTA would need a total of $7,865,975 for fleet and $1,154,736 for fixed asset replacement. Using local funds alone, and without an increase in levy rates, OVRTA will not have sufficient funds to meet its needs. A 10% local match for capital replacement needs will be $786,597 for fleet and $115,474 for fixed assets. Previously, WVDPT has purchased buses and shelters using 5339 funds and also provided the 20% local match. OVRTA has been acquiring buses under an agreement, where WVDPT owns buses and OVRTA operates them as a lessee. It is reasonable to expect that OVRTA will meet capital replacement needs with the state's assistance.

Essentially all existing major capital items for both authorities have been acquired using what was known as Section 5309 funds. These funds have been replaced by Section 5339 funds. Since funds are competitively distributed statewide, some variation in the actual year of acquisition should be expected. For example, OVRTA may not be able to acquire 5 medium size, medium duty buses in the same year (2022). As long as these funds are available, OVRTA will be able to meet the capital needs. As these funds have been available historically, for the purpose of fiscal constraint, it is reasonable to assume that federal funds will be available in the future.

The projected fleet replacement cost for EORTA is $5,022,194. Fixed assets will need an additional $461,980. EORTA's first option is to pay for these using local funds. However, given that local funds may be needed to offset operating deficits, the transit authority will likely replace these with Section 5339 funds. Historically, buses have been purchased using federal funds that have been "flexed" from highway funding programs and from the Ohio Transit Preservation Partnership Program (OTPPP). These funds are provided by the state based on statewide needs. A 20% local match is generally provided by EORTA. Awarded Section 5339 and OTPPP funds may also be used for the purchase of some vehicle(s), bus shelters and a bus washer.

The 20% local match for capital needs will be $1,096,835. Given that a deficit also exists in operations funding, EORTA will need additional funds. The options include reducing local match to 10% by soliciting additional state funds and/or MPO suballocated funds. The assumptions used also are on the conservative side. It is likely that an assumed 10% drop in revenue after each decennial census may be less than that; more levy revenue may be generated after the next cycle of property reassessment; and there may be additional funds available in the next Surface Transportation Act. Based on the available reserves and options for additional funds, it is reasonable to assume that EORTA will meet capital replacement needs.

Both authorities enjoy strong local support. The recent levies of OVRTA and EORTA passed with over 70% approval rate. The levies are passed for 3 years. Both levies were approved in 2020. The Wheeling Comprehensive Plan recognizes transit as an essential part of local growth. A nationwide online survey conducted for the American Planning Association (APA) found that two-thirds of the respondents believe transportation choice and walkability strengthens local economies. The local area is also actively engaged in attracting more residents to the downtown area by repurposing vacant buildings to luxury apartments and providing mode choices including transit and a safe walk/bike environment. The need for transit service, availability of viable

funding options, and the national emphasis on providing alternative transportation modes and addressing mobility of all people will likely keep the buses rolling for a long time.

Transit System Security and Safety

OVRTA and EORTA have taken actions to improve security at the office-garage facility through providing controlled access and the installation of surveillance cameras. Cameras have been additionally installed on buses as a means to monitor and deter undesirable activities. Cameras have also been used occasionally for passenger count. OVRTA/EORTA also participate in the local emergency management agencies' efforts to address security and ensure preparedness for any unforeseen event. Transit authorities also received CARES Act funds to comply with COVID-19 guidelines and providing safe public transportation service. These funds were used for operations. No local match was needed for these funds.

Advanced Public Transportation System (APTS) Technology

All buses have a two way radio system with a base station and are equipped with cameras and GPS equipment. However, an online application has not yet been fully developed to take advantage of the onboard technology. An application to display the real time location of buses to reduce wait time at bus stops is being worked on at this time. At present, GPS is used for monitoring adherence to the schedule. The transit authority may explore apps for displaying vehicle location in real time to reduce wait time and make transit more attractive.

Environmental Justice (EJ) Analysis

Using the 2010 Census and 2006 to 2010 American Community Survey (ACS) data, EJ target areas were identified. These target areas are included as Appendix D. The EJ target areas are census block groups whose minority population and low income population exceeded the regional percentage by 125%. Only a few new target areas, adjacent to the previously identified areas, were added after the 2010 Census. The transit service and roadway network are virtually the same as existed before. Thus, the travel time benchmarks previously developed by the RLS Associates remain unchanged. The travel time analysis from the target areas to major destinations was conducted in the year 2005. It was found that for the majority of destinations, transit time was less than an hour. However, for three routes with transfers to the Blaine route traveling to the Ohio Valley Mall in St. Clairsville exceeded the one hour benchmark by seven (7) minutes. Also, two of the nine trips transferring to the Elm Grove route and traveling east to the Elm Grove Crossing Shopping Center exceeded one hour by ten (10) minutes. In addition, this route is extended to the Highlands. However, in spite of this, the service to and from the EJ target areas is comparable to service to and from all other areas within the service area. Also, the service essentially is provided along National Road in the east-west corridor and along SR7 and WV2 in the north-south corridor. All target areas are in these two corridors and enjoy the same service as all other areas. Based on this, no revisions to the service are warranted due to the environmental justice considerations.

Fiscal Constraint Analysis

The fiscal constraint analysis for each authority is presented separately.

OVRTA

As shown in Table 16-1 and Table 16-7, OVRTA's expenses exceed revenues every year. The gap, although narrow in the beginning, is significant in the later years. Starting with the year 2037, the deficits are greater than 50% of the levy revenues. Over the past five years, reserves have been dropping by 3.4% per year. The projections are for losses in the future. This is, in part, due to the rising cost of operations and federal funding that has been relatively stagnant or at best falling well short of the needs. Also, the assumptions being used are conservative in light of uncertainties surrounding the available federal funds, specifically for capital purchases. Over the years, ridership has also declined. The assumptions used in this plan are revisited every five years with the plan update cycle.

As per the FY2019 audit, OVRTA has a financial reserve of $1,634,593. At the current pace, reserves will continue to shrink unless revenues are boosted. The new Surface Transportation Act may increase federal funding. Also, if OVRTA is successful in extending the McMechen route to Moundsville, the revenues will increase significantly.

However, based on the assumptions for this plan, the transit authorities have options to address the projected shortfall. Levy revenues are a predictable source of funding. The most recent levy was renewed in the year 2020. The overall approval rate was over 70%. The levy renewal is up in the year 2023. The levies are not maxed out to the allowable rates at present. Wheeling's levy is at 65.3%, McMechen's is at 79.5%, Benwood is at 72.6%, and Bethlehem is at 65%. In addition to operating losses, over $9 million will be needed for capital expenses through the life of this plan. Assuming only 20% will be needed for local match, OVRTA would still need $1.8 million for matching funds. At present, OVRTA's expenses exceed revenue. The deficit for now will be covered by reserves built over the years. In addition to the deficit in operating expenses, reserves are also needed for the capital needs. The capital needs through the year 2025 are $2,116,303. Based on the past practices, it is reasonable to assume that the fleet replacement will be at 100% through WVDPT and no local funds will be used. In this case, WVDPT will also assist with the 20% local match and OVRTA will continue to be the lessee. This leaves $1,057,600 needed for the fixed asset improvements. OVRTA will need to secure additional funds for the fixed asset improvements. Of these, $288,724 were received through 5339 funds for the garage roof replacement. The balance of $768,876 would have to be funded in large part through other grant funds. Assuming 25% of this amount will be local, OVRTA will need $192,219 for capital improvements through FY2036. No additional fix asset improvements are programmed before the year 2037.

Table 16-7

OVRTA Levy Options

Year	Difference (Revenue - Expenses)	Additional Revenue at 85%	Difference at 85%	Additional Revenue at 100%	Difference at 100%	Reserves at 85%	Reserves at 100%
2022	(202,264)	319,596	117,332	736,430	534,166	1,752,025	2,168,859
2023	(251,600)	280,697	29,097	705,867	454,267	1,781,122	2,623,126
2024	(400,604)	142,339	(258,265)	576,013	175,409	1,522,857	2,798,535
2025	(458,191)	95,611	(362,580)	537,958	79,767	1,160,277	2,878,301
2026	(519,162)	45,716	(473,446)	496,910	(22,252)	686,830	2,856,049
2027	(583,683)	(7,508)	(591,191)	452,710	(130,973)	95,640	2,725,077
2028	(651,924)	(64,225)	(716,149)	405,197	(246,727)	(620,509)	2,478,350
2029	(724,066)	(124,613)	(848,679)	354,198	(369,868)	(1,469,188)	2,108,482
2030	(800,298)	(188,856)	(989,154)	299,531	(500,767)	(2,458,342)	1,607,715
2031	(880,814)	(257,143)	(1,137,957)	241,011	(639,803)	(3,596,299)	967,913
2032	(965,819)	(329,675)	(1,295,494)	178,443	(787,376)	(4,891,793)	180,536
2033	(1,055,527)	(406,660)	(1,462,187)	111,620	(943,907)	(6,353,980)	(763,371)
2034	(1,255,017)	(593,173)	(1,848,190)	(64,527)	(1,319,544)	(8,202,170)	(2,082,915)
2035	(1,357,014)	(681,933)	(2,038,947)	(142,714)	(1,499,728)	(10,241,117)	(3,582,643)
2036	(1,447,387)	(758,804)	(2,206,191)	(208,801)	(1,656,188)	(12,447,308)	(5,238,831)
2037	(1,560,179)	(857,825)	(2,418,004)	(296,821)	(1,857,000)	(14,865,312)	(7,095,832)
2038	(1,678,936)	(962,535)	(2,641,471)	(390,311)	(2,069,247)	(17,506,782)	(9,165,079)
2039	(1,803,934)	(1,073,204)	(2,877,138)	(489,537)	(2,293,471)	(20,383,921)	(11,458,550)
2040	(1,935,465)	(1,190,121)	(3,125,586)	(594,780)	(2,530,245)	(23,509,506)	(13,988,795)
2041	(2,073,832)	(1,319,016)	(3,392,848)	(707,974)	(2,781,806)	(26,902,354)	(16,770,601)
2042	(2,219,391)	(1,441,930)	(3,661,321)	(812,557)	(3,031,948)	(30,563,675)	(19,802,549)
2043	(2,372,394)	(1,571,609)	(3,944,003)	(923,355)	(3,295,749)	(34,507,679)	(23,098,298)
2044	(2,533,224)	(1,708,416)	(4,241,640)	(1,040,714)	(3,573,938)	(38,749,319)	(26,672,236)
2045	(2,743,082)	(1,893,530)	(4,636,612)	(1,205,797)	(3,948,879)	(43,385,930)	(30,621,115)

The levies renew in 2023. Through 2023, the operating deficit is $453,864 and through 2025 it is $1,312,659. OVRTA needs $1,504,878 through fiscal year 2025 to meet its operating and capital needs. The current reserve of $1,634,693 is sufficient to meet both operating and capital needs through FY2025. However, OVRTA will need to address mounting operating deficits prior to that. After a new Surface Transportation Act to replace FAST Act is enacted, a fiscal reassessment will be needed. OVRTA has the option to bump up the levies that are not maxed out. At 100%, as shown in Table 16-7, OVRTA will have enough funds to sustain at the current level through the year 2032.

For later years, additional revenues will be needed. The other options are realignment or reduction in service. Although increasing fares is an option, fare box revenue fluctuates and will not generate significant revenue to offset remaining balances in the later years. In the year 2022, the fare box revenue will be less than 11% of the total revenue. OVRTA's Board may decide to raise fares, but the net effect with the potential of ridership loss may make any fare increase insignificant. A marginal reduction in mid-day service could reduce expenses by approximately $150,000 per year.

Given that the assumptions of future revenues are conservative, and availability of federal funding after the expiry of the FAST Act is unpredictable, transit authorities may address the future operating shortfall by generating additional revenues through local levies, while making minor reduction in service, if needed. However, revenues will increase significantly if OVRTA was successful in extending the McMechen run to Moundsville. Levy revenue may also increase after the next property assessment cycle.

OVRTA also has been fortunate to receive vehicles from the WVDPT. These vehicles are owned by the WVDPT, but operated and maintained by OVRTA. This arrangement frees up funds for other fixed assets and also frees up funds for operating expenses. Based on the past acquisition, it is likely that OVRTA will not incur the capital expense shown for the bus replacement. Even with 20% local match, 80% of the local funds become available for offsetting the operating cost. Although a small amount, the interest on reserves will also be available to offset expenses.

For the purpose of this plan, OVRTA currently has adequate reserves to maintain service at the current level and meet its capital needs for the next five years. At that time, assumptions are revisited and new revenue and expense projections are developed. For the long term, options are available to generate additional revenue and sustain service.

Given the complexity of the funding mechanisms, uncertainty of federal funds and conservative assumptions, adequate revenues and options exist to sustain service through the life of this plan.

EORTA

Unlike OVRTA, the funding sources for EORTA also include state funds. As shown in Table 16-2 and 16-8, the expenses exceed available revenues every year. The revenues and expenses are projected based on assumptions developed in consultation with the transit authorities. Given the uncertainty of federal funds and complexity of the revenue mechanisms, the assumptions are conservative and result in higher deficits.

After the audit in 2019, EORTA had a reserve fund of $1,676,063. The reserves have almost doubled in the past five years. The current levy rate is 2.5 mill, while the maximum allowable is 5 mill. The levy rate was increased from 2 mill to 2.5 mill in FY2015.

The operating deficit is growing year after year. By the year 2025, the operating deficit will be $1,520,845. In addition, by the same year, $264,879 will be needed for the local share of capital needs. Based on the available reserve fund and expected shortfall, it is reasonable to assume that sufficient funds will be available for the next five years. However, funding situations should be assessed prior to the next scheduled levy renewal in three years.

Given the magnitude of the shortfall, any increase in fare or marginal reduction of service will not generate enough revenue to offset the deficit. The most predictable funding source is local levies. In Table 16-8, two levy options are presented. With the levy at 4 mill, an additional $411,000 is generated, and at 5 mill the revenues are doubled from the current level.

At 5 mill, EORTA continues to accumulate reserves until the year 2027. After meeting operating and capital needs, funds would be accumulated for expenditure during the years when deficits are the largest. Using all reserves for operating the service at the current level will carry the operations though the year 2036. However, EORTA also needs funds for capital needs. These are estimated to be $1,324,391 before FY2029 for fleet replacement and $200,188 before FY2034 for replacing fixed assets. EORTA has historically acquired buses through Section 5339 and/or the Ohio Transit Preservation Partnership program (OTPPP) and provided 20% local match. At 80%, the share for fleet replacement will be $224,841. If all fixed assets were replaced using local funds, EORTA will have enough funds until FY2035.

After that, additional funds will be needed if all assumptions made in 2020 were to hold. Federal funding will most definitely change with new surface transportation acts during this period. A 10% drop in revenue after each census may also not happen. Funding received through the CARES Act may also supplement costs otherwise absorbed by the transit authorities. Although a small amount, the interest on reserves will also be available to offset expenses.

Table 16-8

EORTA Levy Options

Year	Difference (Revenue - Expenses)	Additional Revenue at 4 Mill	Difference at 4 Mill	Additional Revenue at 5 Mill	Difference at 5 Mill	Reserves at 4 Mill	Reserves at 5 Mill
2022	(267,256)	411,000	143,744	685,000	417,744	1,819,807	2,093,807
2023	(321,629)	411,000	89,371	685,000	363,371	1,909,178	2,457,178
2024	(435,732)	411,000	(24,732)	685,000	249,268	1,884,446	2,706,446
2025	(496,228)	411,000	(85,228)	685,000	188,772	1,799,218	2,895,218
2026	(559,111)	411,000	(148,111)	685,000	125,889	1,651,107	3,021,107
2027	(624,788)	411,000	(213,788)	685,000	60,212	1,437,319	3,081,319
2028	(693,268)	411,000	(282,268)	685,000	(8,268)	1,155,051	3,073,051
2029	(764,669)	411,000	(353,669)	685,000	(79,669)	801,382	2,993,382
2030	(839,112)	411,000	(428,112)	685,000	(154,112)	373,270	2,839,270
2031	(916,721)	411,000	(505,721)	685,000	(231,721)	(132,451)	2,607,549
2032	(997,626)	411,000	(586,626)	685,000	(312,626)	(719,077)	2,294,923
2033	(1,081,965)	411,000	(670,965)	685,000	(396,965)	(1,390,042)	1,897,958
2034	(1,232,131)	411,000	(821,131)	685,000	(547,131)	(2,211,173)	1,350,827
2035	(1,325,074)	411,000	(914,074)	685,000	(640,074)	(3,125,247)	710,753
2036	(1,421,920)	411,000	(1,010,920)	685,000	(736,920)	(4,136,167)	(26,167)
2037	(1,522,829)	411,000	(1,111,829)	685,000	(837,829)	(5,247,996)	(863,996)
2038	(1,627,967)	411,000	(1,216,967)	685,000	(942,967)	(6,464,963)	(1,806,963)
2039	(1,737,506)	411,000	(1,326,506)	685,000	(1,052,506)	(7,791,469)	(2,859,469)
2040	(1,851,627)	411,000	(1,440,627)	685,000	(1,166,627)	(9,232,096)	(4,026,096)
2041	(1,970,519)	411,000	(1,559,519)	685,000	(1,285,519)	(10,791,615)	(5,311,615)
2042	(2,094,377)	411,000	(1,683,377)	685,000	(1,409,377)	(12,474,992)	(6,720,992)
2043	(2,223,401)	411,000	(1,812,401)	685,000	(1,538,401)	(14,287,393)	(8,259,393)
2044	(2,357,805)	411,000	(1,946,805)	685,000	(1,672,805)	(16,234,198)	(9,932,198)
2045	(2,497,808)	411,000	(2,086,808)	685,000	(1,812,808)	(18,321,006)	(11,745,006)

Other options include increasing the fares and reduction in service. The revenue generated through fare increase can be unpredictable as ridership may decline. A minor service reduction by cutting back mid-day service could reduce expense by approximately $150,000 per year. A combination of the levy at 5 mill and marginal service reduction would be sufficient to carry on operations beyond the year 2035.

Using the 2020 Census based demographics, the transit authorities can also reevaluate service, including route modifications to attract more riders.

If needed, EORTA is also eligible to receive MPO suballocated Surface Transportation Block Grant Program (STBG) and Congestion Mitigation and Air Quality (CMAQ) funds.

Given the complexity of the funding mechanisms, uncertainty of federal funds and conservative assumptions, adequate revenues and options exist to sustain service through the life of this plan. Thus, full funding is reasonably available for sustaining the transit operations through the life of this plan.

Recommendations

The transit authorities nationwide are experiencing the effects of shrinking revenues for the operating assistance. Increasing fares and levy rates are options, but not popular and have limitations. OVRTA and EORTA are facing increasing deficits and depend upon assistance from the state for capital replacement. Public transit serves important community needs and is the only mobility option for some. It is important that the new surface transportation act that will replace FAST Act, address funding needs of the public transit systems.

OVRTA/EORTA needs to undertake a comprehensive study of fiscal needs and opportunities, service frequency, service area and destinations. The study should look at how technology and alternative fuels and engines can improve efficiency and reduce expenses. A recently completed Wheeling Accessibility Study recommends improving frequency and extension of service. While transit authorities are facing mounting deficits, the local needs assessment survey also reveals a desire for expanded and more frequent service. In addition, public private partnerships should be explored for improving service to rural areas not serviced by the fixed route service. The states should take the leadership role in evaluating the future acquisition of rolling stock. In particular, the electrical and hydrogen-cell technologies that may improve efficiency and reduce operating expenses, while reducing emissions should be explored.

CHAPTER 17

COORDINATED PUBLIC TRANSIT-HUMAN SERVICES TRANSPORTATION

According to the National Conference of State Legislatures (NCSL), "Transportation is crucial for all people, especially those who, because of age, disability or income, cannot afford or safely operate a vehicle. Others may not have public transportation available to them. In coming years, more U.S. residents, especially those over age 65, will need access to alternative modes of transportation." In recognition of changing needs of the population, the U.S. Congress, as part of surface transportation acts, has emphasized the need to address the mobility of all people.

Source: Regional Transportation Authority, Chicago, IL

As part of the Fixing America's Surface Transportation Act (FAST Act), funding is provided to the transit systems in urbanized areas. These systems address the mobility needs in urban areas. For nonurbanized areas, the Rural Transit Assistance Program (RTAP) provides assistance for projects and other support services designed to meet the needs of transit operators in rural areas. This program (Section 5311) supports the public transit options for the rural population. In addition, a separate program, Enhanced Mobility of Seniors and Individuals with Disabilities (Section 5310), provides assistance for the mobility of senior adults and people with disabilities in all areas. Both Section 5310 and 5311 programs are run by nonprofits who assume the responsibility of meeting the needs in their service areas. Multiple nonprofit groups provide these services within a county or region. This results in service overlap. Thus, FAST Act requires that the recipients of Section 5310 and 5311 programs must be part of a "locally developed coordinated public transit-human services transportation plan." This plan is required to be developed through a process that includes representatives of public, private and non-profit transportation services, human services providers, Title VI population and the general public.

Coordinated public transit and human services transportation plan is prepared for Ohio and Marshall Counties as part of a statewide contract with the consultants RLS Associates. The plan was prepared and approved in 2019. It is updated every five years. The Belmont County plan was prepared as a part of Area Agency on Aging Region 9's coordination effort among eight counties represented by the Ohio Mid-Eastern Government Association (OMEGA). This plan was completed in 2018.

The 2019 pre-census population estimate for the region shows a drop of 3% from the 2010 population. The composition of the population is also changing. In the year 2010, 24% of

the population was over 60 years of age. In 2019, it is estimated to be 30%. In comparison, the 2010 statewide proportion of 60 plus population in West Virginia and Ohio was 22% and 19%, respectively. The statewide estimates for 2019 are 27% for West Virginia and 23% for Ohio. The regional population is aging at a faster rate than the states. The aging population presents new challenges and opportunities.

Approximately 15.4% of the regional population has a disability, as per the recent American Community Survey. Over 12% of households in Ohio County have no vehicle and approximately 8% of households in Marshall and Belmont Counties have no vehicle.

A need assessment survey for the coordinated plan for Ohio and Marshall Counties revealed that the critical need is for long distance medical transportation and there is need for access to jobs. It was felt that frequency of fixed route service for "The Highlands" in Ohio County is not adequate. The absence of service to West Liberty University was also noted. In Marshall County the lack of transit service for the majority of county residents, including the county seat in Moundsville, was noted. In particular, hardships due to a lack of service in Cameron and Hundred, was mentioned. In Belmont County, service in the western half of the county is not available. The county seat of St. Clairsville also does not have transit service. The higher densities of seniors and households without an automobile in and around Barnesville and Bethesda, also need mobility options. Some nonprofit groups who need transportation for their clients also suffer from the lack of service. United Way of the Upper Ohio Valley needs rides for transporting clients, especially during the hours when service is not available.

The demand for the service in almost 1,000 square miles of the region far exceeds the supply. Therefore, it is very important that available resources are efficiently used with careful planning. The duplication of service and/or overlapping service area must be minimized. Where possible, public-private partnerships should be formed for improving mobility of at-risk populations. A ride schedule can also be such that a part of on-demand ride feeds into the fixed transit routes. The critical need for long-distance medical transportation is of utmost concern. These rides often involve trips to Wheeling, Pittsburgh, Columbus, Youngstown or Akron and need commitment of a vehicle and a driver for the entire day. The solution for these rides may also be in public-private partnerships.

Funding for the Section 5310 and 5311 programs is available on a competitive statewide basis and administered by WVDOT and ODOT. Specific roles for the MPO are established for the Section 5310 program. Eligible non-profits in the three county area have received funding through this program in recent years. The coordinated plans for the three counties emphasize the need to maintain existing programs and services. It is assumed that as long as the federal programs remain a viable source, existing services will be maintained and improved through coordination efforts. The service extension and frequency remain a challenge, given the available resources and geographic expanse of the region. However, innovative funding options should be considered to extend and realign fixed route transit service to serve the county seats of St. Clairsville and Moundsville and to develop a feeder service that brings riders from unserved and underserved areas to the fixed routes.

Strategies

- Support the preparation and update of coordinated public transit and human services plan.
- Support the local providers in acquisition of 5310 vehicles.
- In coordination with other providers, include paratransit service in the public transit plans.
- Explore options to expand service and reduce wait time and lead time for appointments.
- Support and seek public-private partnership to enhance service and meet demand.

CHAPTER 18

ACTIVE TRANSPORTATION

Active transportation refers to any self-propelled mode of travel, such as walking, cycling or inline skating. Walking and biking are healthy and sustainable means of transportation and along with public transit, are essential components of a multi-modal transportation system. Increasingly active transportation is being recognized as an essential part of daily life for healthy lifestyles and physical fitness. A recent America's Health Ranking Report for 2019 ranks West Virginia at 45th and Ohio at 38th in the nation. Over four decades, as shown in Table 18-1 on the next page, West Virginia's ranking changed from 48th to 45th, at the same time Ohio slipped from 27th to 38th. West Virginia also ranks at the top in overweight and obesity rankings. The health ranking of the three metro counties in the region is presented by the ZipDataMaps. Ohio County is ranked 10th in West Virginia and Marshall County is ranked 16th out of 55. However, Belmont County is ranked 51st out of 88 counties in Ohio.

Active transportation provides opportunities for healthy lifestyles and mode choice for work commute and other trips. A multi-modal transportation system provides safe access to all modes. A recent transportation needs and priorities survey in the region revealed that after highways, active transportation was ranked as the next top priority. Over 20% of respondents picked this as their first priority in the region. Even respondents (18%) who chose economic development as their first choice, overwhelmingly (46%) selected multi-modal accessibility as the most important tool for economic development.

A popular tool to evaluate the current state of pedestrian access within municipalities is "Walk-Score". The Walk Score is available from www.walkscore.com. This tool measures the walkability of municipalities and neighborhoods by analyzing "population density and road metrics, such as block length and intersection density" and examines the distance from specific addresses to amenities. The scores are ranked as follows:

Walk Score	Category	Description
90 – 100 points	Walker's Paradise	Daily errands do not require a car
70 – 89 points	Very Walkable	Most errands can be accomplished on foot
50 – 69 points	Somewhat Walkable	Some errands can be accomplished on foot
25 – 49 points	Car-Dependent	Most errands require a car
0 – 24 points	Car-Dependent	Almost all errands require a car

Table 18-1

Rankings by decade listed by 2019 ranking

	2019 Ranking	2010 Ranking	2000 Ranking	1990 Ranking
Vermont	1	1	12	20
Massachusetts	2	2	5	11
Hawaii	3	5	2	4
Connecticut	4	4	7	8
Utah	5	7	4	3
New Hampshire	6	3	3	9
Minnesota	7	6	1	2
New Jersey	8	17	22	21
Washington	9	11	8	14
Colorado	10	13	6	10
New York	11	24	32	40
California	12	26	19	23
Rhode Island	13	10	18	18
North Dakota	14	16	10	1
Virginia	15	22	21	22
Idaho	16	9	16	15
Nebraska	17	12	15	5
Maryland	18	21	24	31
Wyoming	19	19	25	16
Iowa	20	15	9	6
Maine	21	8	13	19
Oregon	22	14	17	28
Wisconsin	23	18	11	7
Montana	24	25	23	13
South Dakota	25	20	14	17
Illinois	26	29	30	34
Alaska	27	30	26	37
Pennsylvania	28	27	27	26
Kansas	29	23	20	12
Delaware	30	32	40	38
Arizona	31	31	29	29
Michigan	32	28	28	35
Florida	33	36	34	39
Texas	34	40	37	33
Nevada	35	47	43	45
North Carolina	36	35	38	36
New Mexico	37	34	35	25
Ohio	38	33	31	27
Missouri	39	39	36	24
Georgia	40	37	39	43
Indiana	41	38	33	30
South Carolina	42	41	45	44
Kentucky	43	44	41	47
Tennessee	44	42	42	42
West Virginia	45	43	47	48
Oklahoma	46	46	44	32
Alabama	47	45	46	45
Arkansas	48	48	48	41
Louisiana	49	49	49	50
Mississippi	50	50	50	49

TOP 10
11 TO 20
21 TO 30
31 TO 40
BOTTOM 10

Source: America's Health Rankings 2019 Annual Report by United Health Foundation

"Walk-Score" was examined for the largest municipalities in the Belomar region and the results are as follows:

Municipality	Walk Score/Category
Wheeling, WV	36/Car-Dependent*
Moundsville, WV	82/Very Walkable
Martins Ferry, OH	76/Very Walkable
St. Clairsville, OH	53/Somewhat Walkable
Shadyside, OH	47/Car-Dependent

** Specific neighborhoods (i.e., Downtown, East Wheeling, Elm Grove score much higher).*

Belomar has been actively facilitating the development of multi-use trails, including transition from rails to trails. The first regional bikeway plan was prepared in 1982. Recently, a pilot study was completed to determine accessibility of trails, transit and healthy food options. It was a cooperative effort of the City of Wheeling, OVRTA, Wheeling Heritage Corporation and Belomar.

"The Wheeling Access Plan" examined how to connect local food network uses and selected key designations with pedestrian trails and other transportation services and facilities via a multi-modal transportation system for the downtown area of the City and surrounding neighborhoods. This is the first time a plan of this scale dedicated to bike, pedestrian and public transit infrastructure was undertaken as a cooperative effort of a city, transit authorities and a regional entity in this area. The plan examined the location, routes and time of travel for vulnerable populations to access healthy food options and key destinations on foot or bicycle. The plan also examined the ability of these populations to access healthy food options via the local public transportation system.

Although the study was focused on Downtown Wheeling and surrounding neighborhoods, its broader purpose was to develop transferable process and parameters for other communities in the region. The lessons learned can be applied elsewhere in the region. Several of the recommended projects would also have a regional impact, as they would provide the vital connections to link residential areas to dedicated multi-use transportation network.

The three components of active transportation are presented separately.

Bikeways

The opportunity to promote active transportation initially surfaced when major railroads serving the area abandoned their tracks. In the year 1982, to facilitate this transition, Belomar completed a survey of local bikers to determine interest, need and potential bikeway corridors. The first regional bikeway plan was prepared. This followed with local advocacy groups pursuing and bringing rails to trails projects to Wheeling. The persistent efforts of a few dedicated individuals, with the support of City fathers, brought bike/ped projects and the fruit of their efforts is a crown piece of Wheeling environs known as "Wheeling Heritage Trail". A regional multi-use map (Figure 18-1) shows the Wheeling Heritage and other trails in the region. The Wheeling Heritage Trail's success led to other developments in the region. The

National Road Bikeway in St. Clairsville, Pioneer Trail, Glen Dale to Moundsville trail, proposed and funded Barnesville trail and interest in the McMechen trail all followed the success of Wheeling Heritage Trail. The Heritage Port in Wheeling also ties into the trail system and associated developments.

The Wheeling Heritage Trail and Pioneer Trail cover 18 miles along the Ohio River. Another 3.4 mile long trail runs along the Ohio River from Moundsville to Glen Dale with the potential for further extension to McMechen. It is reasonable to assume that these Marshall County trails will eventually connect to the Wheeling Heritage Trail along the Ohio River.

Other trails in the area include trails at the Oglebay Resort, 22 miles of trail in Marshall County that is part of the Warrior Trail, additional 1.9 miles of various trails in Ohio County and 5.8 miles in Marshall County. There are trails in local jurisdictions in Belmont County with St. Clairsville having the largest network of trails. Both Barnesville and Shadyside have trails as well. Belmont County has also developed an interconnected network of back roads for biking. The backroads in this network are signed for this use. Local and regional trails are shown in Figures 18-1 and 18-2.

Signed back trails in Belmont County.

In addition, Ohio Valley Trails Association, with support from local officials, established "Eastern Ohio Back Road Biking Trail". The designated shared roadways used for this trail are also signed. These back trails are being promoted with brochures and other graphic materials. To provide access to residential areas and key destinations in and around the City of St. Clairsville, potential roadways for shared use are identified. The potential bike routes are identified in consultation with local officials by May Engineering of St. Clairsville. These new additions to the bikeway network will connect the National Road Bikeway to residential areas and key activity areas, including the Ohio Valley Mall and the Ohio Valley Plaza.

On a larger scale, the National Park Service and other tri-state initiatives involving Ohio, West Virginia and Pennsylvania promote a trails network as shown in Figure 18-2, which stretches from Wheeling to Washington D.C. Most of this trail has been completed, with just a 7 mile connection from the Wellsburg Yankee Trail to the Panhandle Trail in Brooke County still needed. Considering the popularity of multi-use trails and regional and national initiatives, an interconnected network of trails that stretches all the way to Washington D.C. would be very useful and well received. As the trail network in Wheeling extends east and south, the Ohio River presents a challenge for connections to the west. In order to create a regionally interconnected system of trails, it is necessary that a solution for crossing the Ohio River be found. One such solution uses the Suspension Bridge to get to Wheeling Island.

Figure 18-1
Existing and Proposed Multi-Use Trails

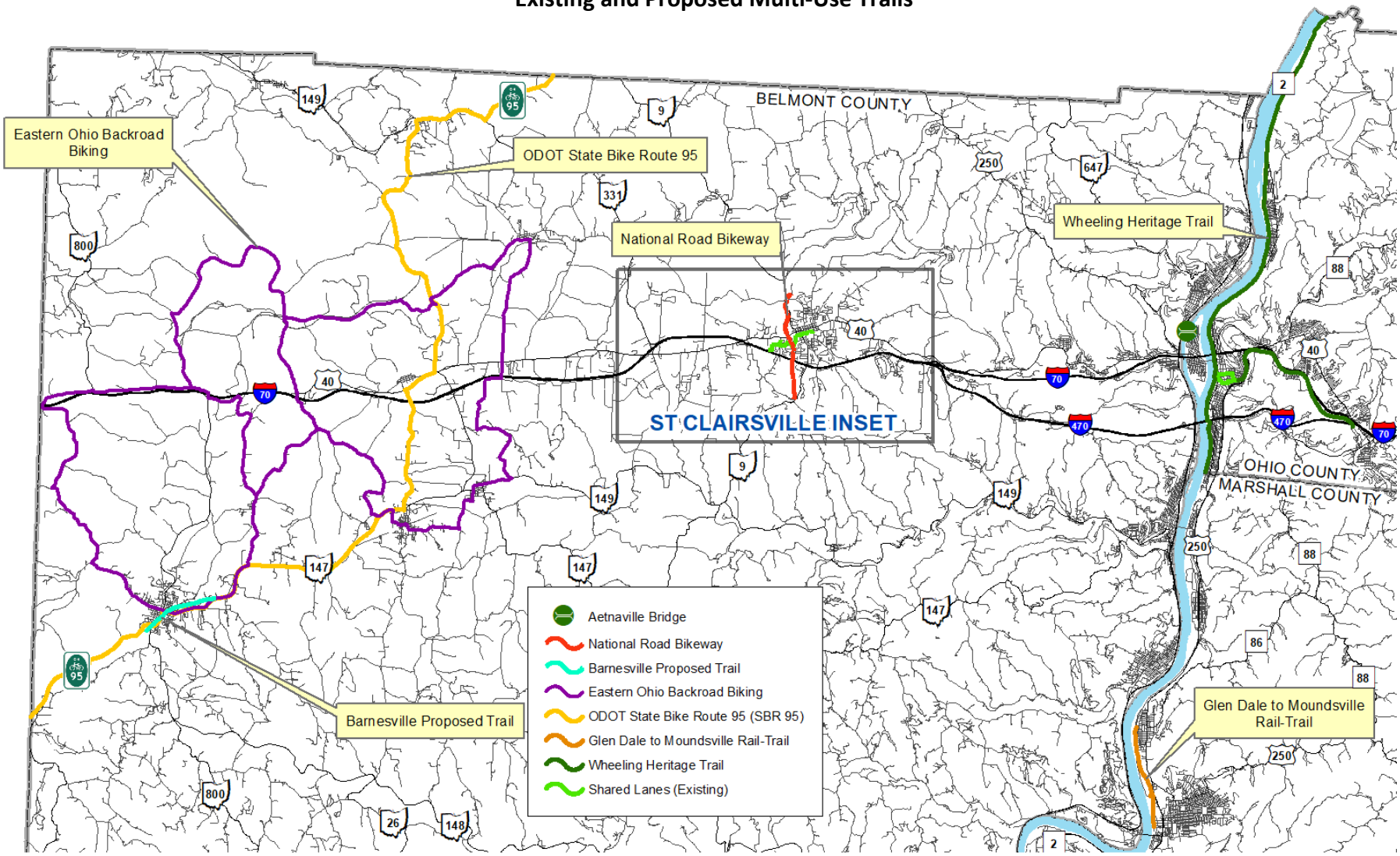
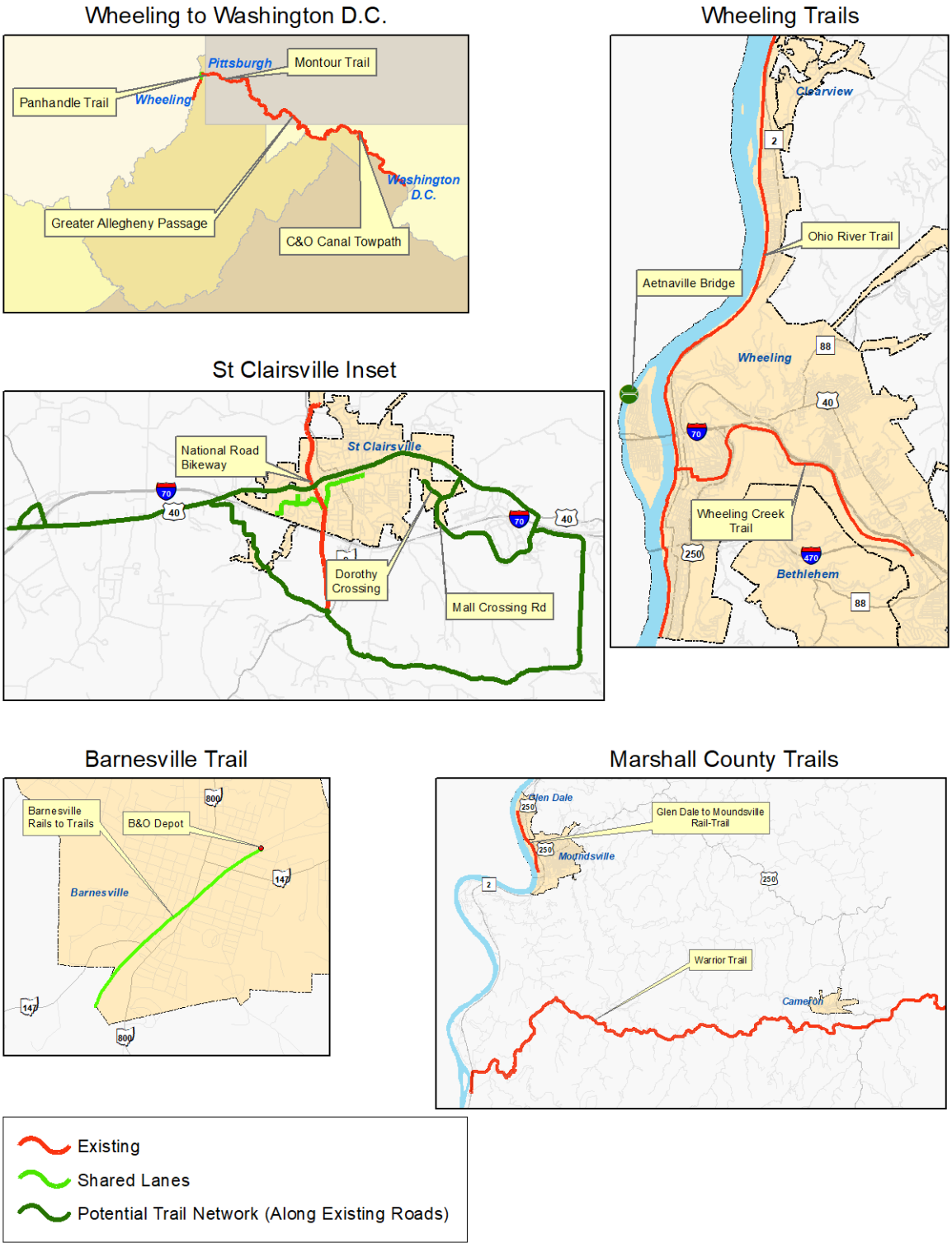


Figure 18-2
Regional Trails



Aetnaville Bridge Closed
Source: Times Leader online

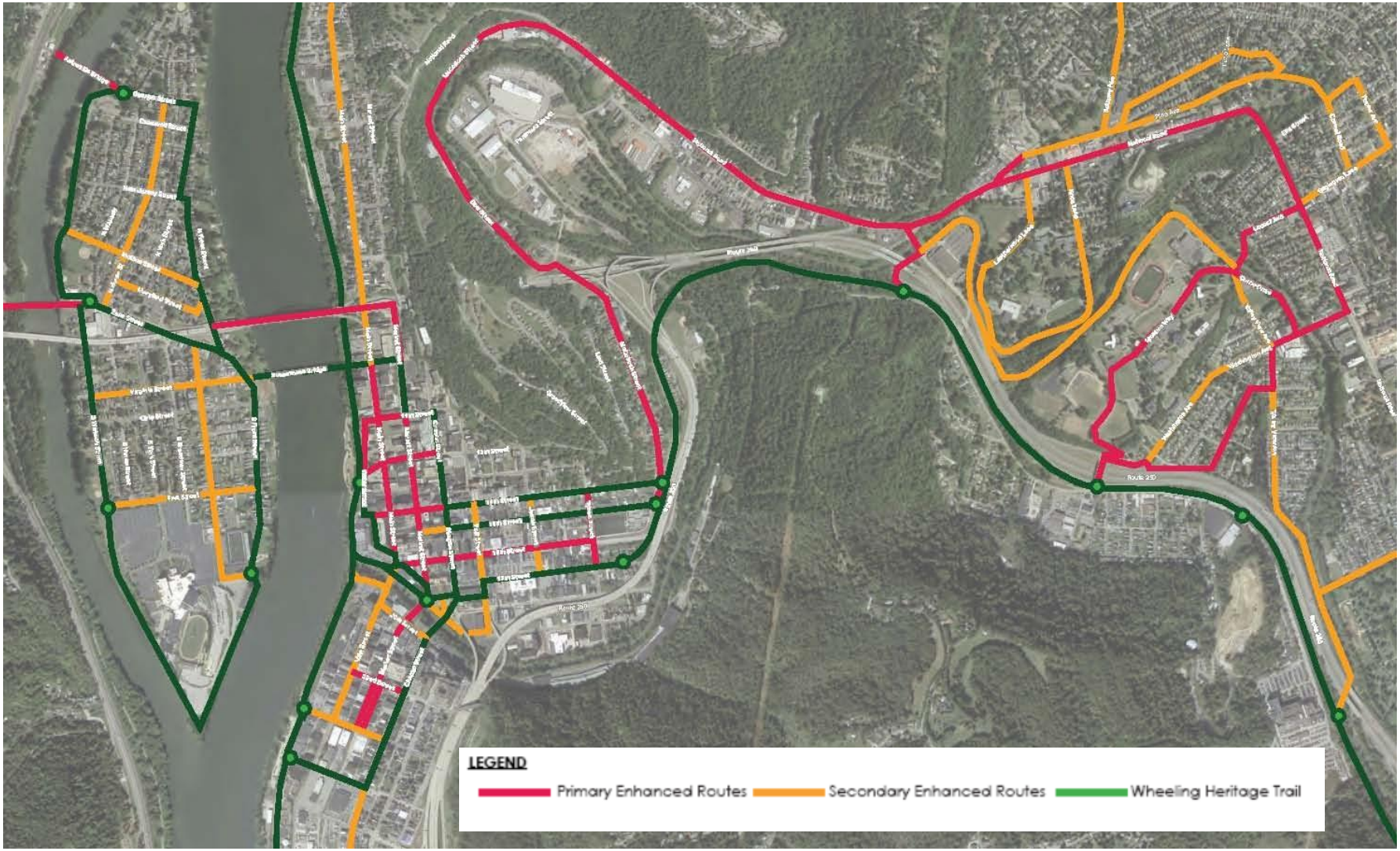
To cross the back channel, the best option seems to be reconstructing the abandoned Aetnaville Bridge for biking and pedestrian use. This bridge is very important to the locals, as many have used it to walk to the Ohio side of the river to get groceries or go to work. Residents also feel it is part of Wheeling's history and the bridge adds aesthetic value to the neighborhood. It was set to be demolished and after an inspection, WVDOT shut down pedestrian access to the bridge in January of 2016 due to safety concerns. Ohio Valley Trail Partners and other local advocacy groups are looking into options to keep this vital pedestrian bridge crossing open. Currently, WVDOT has a local proposal for converting this bridge for pedestrian use.

Wheeling Suspension Bridge Closed

Wheeling Island is connected to Downtown Wheeling with a suspension bridge over the Ohio River. This bridge was the longest suspension bridge in the world when it was built and is the only one of a few bridges designated as a National Historic Landmark. After years of weight limitations, the bridge was closed to traffic in 2019. It is open to pedestrian and bike traffic only at this time. The fate of the bridge remains uncertain at this time. The local consensus is to keep this historic bridge open. If all efforts to rehabilitate this bridge for resuming vehicle traffic are exhausted then, it must stay open for pedestrians and bike traffic. According to the City of Wheeling's Mayor "losing the Suspension Bridge is not an option". However, since this is the only non-interstate link between Wheeling Island and the rest of Wheeling, another bridge will be necessary to support the eastward vehicular traffic from the Island.

The Wheeling Accessibility Study recognized the need for an interconnected bikeway network in Wheeling and recognized the limitations and topographic challenges it presents. It identified primary and secondary routes for enhancement. These routes are presented in Figure 18-3. In addition, specific projects were identified and ranked. These projects are included as plan recommendation and are presented on page 18-9.

Figure 18-3
Proposed Route Enhancements



PROJECTS FROM THE WHEELING ACCESSIBILITY STUDY

Greater Wheeling Trail: Downtown

Project Name	Extents	Description	Ranking	Next Steps	Cost Range
Downtown Creekside Trail Phase 1	Ohio River to Rt 250 Overpass	Off road trail connection between long term parking and main campus via newly acquired property south of 18th Street	1	Design; Construction	$30,000-$40,000
Wheeling Heritage On Road Trail Connector	South St from 16th to 18th via Main and Market; 18th Street ROW; Lane 15 from Chapline to Eoff; 17th from Eoff to Heritage Trailhead	Festival Street on South and Lane 15; cycle track 17th Street	1	Design; Construction	$40,000-$60,000 (design)
Chapline Cycle Improvements Ground Testing	10th Street to South Wheeling / Wheeling Heritage Trailhead	Temporary cycle track and/or sharrows from 10th from Suspension Bridge to and through Market Plaza; 11th Street between Market and Chapline; Chapline from 11th to 18th/Lane 15.	1	Tactical Urbanism	$10,000-$20,000 (tactical testing)
Chapline Cycle Improvements Final Construction	10th Street to South Wheeling / Wheeling Heritage Trailhead	Cycle track and/or sharrows from 10th from Suspension Bridge to and through Market Plaza; 11th Street between Market and Chapline; Chapline from 11th to 18th/Lane 15.	2	Design; Construction	$60,000-$80,000 (tactical testing)
Downtown Creekside Trail Phase 2	Ohio River to Rt 250 Overpass	Off road trail connection between Heritage Trail (river at the mouth of Wheeling Creek) and West Virginia Northern Community College facilities	3	Design; Construction	<$5 million for full implementation
15th Street Trailhead	15th Street to Heritage Trail	Sharrows and complete street elements: 15th, McColloch and Baltimore Streets to Heritage Trail	3	Design; Construction	$20,000-$40,000 (design)

Downtown and Centre Wheeling Enhancements

Project Name	Extents	Description	Ranking	Next Steps	Cost Range
Main and Market Enhancements and Connections	Main from I-70 ramp to bridge; Market from 10th to 16th; 10th, 12th, and 14th from Main to Market; 16th from Main to Eoff; Chapline and Eoff from 16th to 18th	Complete street with sharrows on Main, Market, and 16th; Cycle track on 10th and Chapline; Shared Street on 12th; Off street multi-use path on Eoff with traffic calming	1	Design revisions: Construction	$30,000-$40,000 (design)
Market Street Festival Street Ground Testing	Market Street and Lane B: 16th Street to 23rd Street, including the Creek bridge crossing	Temporary shared street and improved crossings; parking adjustments, parklets	1	Design; Construction	$100,000-$120,000 (design)
Bike Parking Bike Transit Access	Downtown and Citywide	Provide/legislate inclusion of bike infrastructure on transit and public and private property	1	Plan	$20,000-$30,000
Market Street Festival Street Final Construction	Market Street and Lane B: 16th Street to 23rd Street, including the Creek bridge crossing	Shared street and improved crossings; parking adjustments, accommodate parklets	2	Design; Construction	$100,000-$120,000 (design)
Main Street Bridge	Extents of bridge	Multi-use path with pedestrian barrier both sides	2	Inspection; Design	$30,000-$40,000 (design)
Water Street	Water Street from 11th to 14th	Shared street; extend riverfront promenade; re-brand as Riverfront entertainment district	2	Design	$100,000-$120,000 (design)
Sharrows	Limits of Plan on designated routes	Sharrows	2	Construction	
Chapline Street Bridge	Extents of bridge	Multi-use path with barrier west side	3	Inspection; Design	$30,000-$40,000 (design)
Public Restrooms	TBD	Provide public restroom facilities downtown and strategically along trails	3	Feasibility Study	

Neighborhood Connections

Project Name	Extents	Description	Ranking	Next Steps	Cost Range
National Road Complete Street	Bow St east to City Limits	Complete Street for after freeway construction. **Future safety concern.**	1	Planning and Preliminary Design	$100,000-$120,000
Washington Ave Calming	From National Road to I-70 Overpass	Creek bridge design; Traffic calming and improved mid-block crossings; off Washington Sharrows. **Immediate safety concern.**	1	Design	$60,000-$80,000 (design)
16th and Wood Street Intersection Improvements	Intersection	Study improved crossing; include bus stops. **Immediate safety concern.**	1	Design	$30,000-$40,000
McColloch Bow Complete Street	McColloch Street/Bow Street Complete Street 15th to National Road	Sharrows and sidewalk/crossing improvements	1	Design	$30,000-$40,000 (design)
Wheeling University Trails	Currie to Washington Ave via Ignatian Way through campus	Off road trail and/or on road infrastructure	2	Feasibility Study	$60,000-$80,000 (design)
Kroger to Woodsdale Trail	Kroger to Currie along creek	Off road trail and/or on road infrastructure	3	Feasibility Study	$60,000-$80,000 (design)
Pine to Park Connector	Pine to Park Street	Off road connection	3	Feasibility Study	$30,000-$40,000
Linsley School Loop	Knox to Leatherwood	Sharrows and off road trail along existing social trail route around Linsley; connection to transit on National Road	3	Design; Construction	$60,000-$80,000 (design)
Bethany Pike	National Road to RESA 6	Complete Street	3	Design	$60,000-$80,000 (design)
Greggsville	Bethany Pike to Ogleby Cultural Assets	Hiking and transit access	3	Feasibility	$60,000-$80,000 (design)
Hiking Trails	Citywide	Off road recreational walking and/or biking trails	3	Feasibility Study	$100,000-$120,000 (design)

Wheeling Island

Project Name	Extents	Description	Ranking	Next Steps	Cost Range
Aetnaville Bridge	Limits of Bridge	New Pedestrian Bridge over existing piers	1	New Bike/Ped	$3,000,000
Zane Street (North)	Zane Street Bridge to I-70	Complete Street; provide OVRTA stops; enhanced paths. **Immediate safety concern**	1	Design	$60,000-$80,000
Sharrows	Limits of Plan on designated routes	Limits of Plan on designated routes	1	Construction	
Zane Street (South)	I--70 underpass at Zane Street	Off road trail and route connection to Suspension Bridge	2	Design; Construction	$20,000-$40,000 (design)
Wheeling Island Park Trail	Georgia Street to Bridge Street Park	Off road trail connection; build on existing infrastructure	2	Design; Construction	$20,000-$40,000 (design)
Zane Street Bridge	Limits of Bridge	Barrier protected shared paths on both side of the bridge, lighting, beautification	3	Design; Construction	$60,000-$80,000 (design)
South Island Connectors	Around casino and sports venue	Off road trail along river front and connecting Fink and S Wabash	3	Feasibility Study	$60,000-$80,000

Greater Wheeling Trail: Connections

Project Name	Extents	Description	Ranking	Next Steps	Cost Range
Washington Avenue Overpass	Westbound on-ramp to Wheeling Hospital Road	Improve traffic and non-motorized flow and safety through two intersections; Create protected multi-use path connecting from Frissell to Heritage Trail including bridge. **Immediate safety concern.**	1	Design	$80,000-$100,000
Kroger Trail Connection	Heritage trail to Kroger	Off road trail, enhanced signalized crossing. **Immediate safety concern.**	1	Design; Construction	$60,000-$80,000 (design)
Mt DeChantal Bridge$60,000-$80,000 (design)	National Road to Kroger and I-70 Ramp	Multi-use path with barrier one side; traffic calming	3	Design and traffic analysis	$60,000-$80,000 (design)
Wheeling Hospital Crossings	Portions of Wheeling Hospital Road	Mid-block crossings at Howard Long Wellness Center and Hospital; traffic calming	3	Design; Construction	$30,000-$40,000 (design)
Wheeling Hospital Connections	Off road connections along Wheeling Creek; new pedestrian bridge	Connect hospital to Woodsdale via off-rad trail from Valley View to Hospital; foot bridge from Rush Ave	3	Feasibility Study	$60,000-$80,000
20th Street Cycle Track	Heritage Trail to Chapline	New trail connection through parking and along Main Street to 20th; cycle track along 20th to Chapline; parking adjustments	3	Construction	$60,000-$80,000 (design)

Pike Island Trailhead Bikers
Source: Ohio River Trail Council

Bikeway Trail

The multi-use trails in the region are popular and accessed through trail heads. Since these dedicated trails follow abandoned railroads, they lack adequate connectivity with the residential areas. Creating a network of interconnected trails and bike routes in the region is the next step. This must be accomplished by making selected routes bike/ped safe without compromising the safety of vehicular traffic.

Walkways

The dedicated multi-use trails in the region see heavy pedestrian traffic during spring, summer and fall. The use is primarily for physical fitness. Most users drive to a trailhead to access trails. These trails have promoted healthy lifestyles and continue to provide a cost-free fitness alternative for people of all ages and economic status. The support for bike/ped facilities have also grown with the increased use and popularity.

St. Clairsville Trail
Source: WTOV TV9

Since existing multi-use trails are in abandoned railroad rights-of-ways, they are not readily accessible from residential neighborhoods. This lack of connectivity results in trail users driving to trailheads rather than walking or riding bicycles. The next challenge is to connect dedicated trails and other key destinations in communities with safe bike and pedestrian paths. Potential routes that would provide connectivity are identified in Downtown Wheeling and surrounding neighborhoods. Generally, these routes have sidewalks for pedestrian use. The gaps in continuity of sidewalks needs to be identified and addressed, along with ascertaining that sidewalks are in good condition and obstacle free. The next step would be to reassess these routes for enhancements to achieve pedestrian friendly routes that may include wider sidewalks with street furniture and pedestrian friendly landscape features. Where possible, separation from vehicular traffic should be preferred to provide more dedicated facilities within the urban core.

Public Transit Service

Public transit is included in the active transportation service because it involves walking or biking to and from the bus stop. The region is served by fixed route transit service in the north-south corridor along State Routes 2 in West Virginia and 7 in Ohio. In the east-west direction, it follows National Road. The transit routes serve high density population corridors and all environmental justice target areas that include economically disadvantaged populations are within walking distance of a fixed route. In addition, a door-to-door demand responsive service is also provided.

Unlike increasing use and popularity of multi-use trails, the transit ridership has been declining for a few years. However, the popularity is still high as evidenced by 2020 levy approval rates of over 70%. Due to declining ridership and revenues, including federal funding, the transit authorities are experiencing operating losses that are growing. These losses would need to be addressed at either the national level with increase in federal funds for small transit operators or by local sources such as levy rates and farebox revenues. Increase in levy rates and fares is not a popular choice and should only be considered as a last resort. However, transit authorities can reassess the service in light of new technologies to see if an increase in system efficiency may reduce costs. Given the local sentiment, as reflected in the regional survey, an expansion rather than reduction is expected. Innovative financing options along with service and route reassessment may be necessary to revamp the transit utility in the region. Key communities, along with key destinations, still do not receive transit service due to lack of participation. The Cities of Moundsville and St. Clairsville do not receive transit service, as they have not approved a transit levy, a precursor for transit service. An extension of service to Moundsville and St. Clairsville will not only provide this mode choice to the residents of these communities, it will also go a long way in alleviating financial foes of the transit authorities. The Ohio Valley Mall and Plaza route ends only a short distance from the St. Clairsville Corporation Line and a McMechen run can easily be extended to Glen Dale and Moundsville.

Transit authorities should also aggressively pursue public-private partnership to provide service to areas and destinations not currently served or are lacking adequate service. These arrangements, among other things, may include private providers feeding the fixed route system with per ride predetermined cost arrangements. A comprehensive assessment of service, revenues and available innovative options is necessary for the long term success of the transit system in the region.

Regional Strategies

Belomar will continue to support local efforts for maintenance and expansion of existing trails. Emphasis will be on a systemwide approach of interconnected trails. As additional trails are built, the local communities will incur additional maintenance costs. Some of the known sources of funds for trails is the Transportation Alternatives Program (TAP). In addition, clean Ohio funds have been made available in Ohio. However, other funding mechanisms will be necessary to maintain and expand existing trails. The biggest funding gap may come if the TAP funds are no longer available. Belomar will assist local communities with the grant process on an as needed basis. If needed, Belomar will work to provide a forum for multi-state trail connections.

Shared roadways that connect trails and increase accessibility of key destinations will be supported.

Belomar will support studies that include inventory of existing sidewalks, identify gaps and provide solutions to improve and/or widen sidewalks.

CHAPTER 19

AIR QUALITY AND TRANSPORTATION CONFORMITY

The Wheeling Metropolitan Area, consisting of Belmont County in Ohio, and Ohio and Marshall Counties in West Virginia, was designated as non-attainment of 1997 National Ambient Air Quality Standards (NAAQS) for Ozone and $PM_{2.5}$ (fine particulate matter). The area was in violation of the 8-hour standard of 0.08 ppm for Ozone. For $PM_{2.5}$, the non-attainment was for the annual standard only. The $PM_{2.5}$ annual standard is exceeded if the three year average of annual mean concentration of $PM_{2.5}$ is greater than 15 micrograms per cubic meter.

These designations required Transportation Conformity under the Clean Air Act. The purpose is to ensure that the federally supported highway and transit projects/activities are consistent with (conform to) the state air quality implementation plan (SIP). Bel-O-Mar has made conformity determinations for the Long Range Plans (LRP) and the Transportation Improvement Programs (TIP) prepared after the year 2004.

Effective June, 2007, all three counties in the Belomar region were re-designated as attainment for Ozone. However, transportation conformity determination was still required and made for the LRP and TIP. In April, 2012, EPA designated non-attainment areas based on the 2008 revised standard of 0.075 ppm. Belomar areas were unclassified. In April, 2015, the 1997 Ozone NAAQs were revoked. As per EPA guidance, no further conformity determinations were needed for the 1997 Ozone NAAQS. It is also noted, based on the current area ambient monitoring, the area is in attainment of 2015 ozone standard of 0.070 ppm.

On February 16, 2018, the United States Court of Appeals for Washington, D.C. issued a ruling for the previously identified areas in attainment of 1997 Ozone NAAQs designating them as “orphan areas” for the purpose of conformity and requiring Ozone Conformity. Subsequent to the court ruling, an emission-based conformity determination of the expiring Transportation Plan for 2040 was done and it was approved on September 6, 2018.

For the $PM_{2.5}$, the area was re-designated to attainment of the 1997 annual NAAQS in September, 2013. As a part of the attainment ruling, EPA also determined that for the purpose of transportation conformity, emissions from on road mobile sources are insignificant. This finding relieved both states of the obligation to comply with nonattainment-related planning requirements for $PM_{2.5}$ pursuant to Part D of the Clean Air Act. As a result, emissions analysis is not required for $PM_{2.5}$ transportation conformity. However, the conformity process, including interagency consultation and other conformity requirements are still to be satisfied. In addition, a project level hot-spot analysis is also potentially required.

The interagency consultation process initially started with a meeting on August 31, 2004 followed by another on August 31, 2005. Since then, consultations have been via conference

calls and emails. In December, 2019, ODOT initiated an interagency consultation for advancing qualitative conformity determination for the FY2021 – FY2024 TIP. Pursuant to this process, a qualitative conformity determination was done for the TIP. In the absence of a quantitative regional emissions analysis, the qualitative regional conformity included other requirements of the rule (40 CFR§93.109) such as interagency consultation, fiscal constraint, latest planning assumptions and public involvement.

On February 23, 2021, Belomar initiated the interagency consultation process for the conformity of the "Transportation Plan for 2045". The process was initiated via email. The purpose was to seek consensus for a qualitative conformity determination of the new plan much like the process previously agreed upon and followed for the FY2021 – FY2024 TIP. The documentation of the interagency emails is included in Appendix G. The plan conformity determination will be based on qualitative analysis as per interagency consultancy process.

The early public involvement for the development of the Long Range Transportation Plan was through public notices that were published twice in the local newspapers and all stakeholders and public in general were invited to provide input and could take an online survey to indicate their needs and priorities. In addition, they were asked to identify any transportation issues in their community in an open-ended question. The results of this survey are shown in the "Public Participation" chapter. A list of stakeholders was prepared and input was solicited. The list of stakeholders is included as Appendix H. Public notices are shown on page 22-7. Public notices were also posted on the agency website and Facebook page. Comments could be provided on the website, via email or regular mail. Due to COVID-19 lockdowns and CDC guidelines, face-to-face meetings were discouraged, but on request, a virtual meeting option was available. Open houses will be held for presenting the draft plan for review and comment. The format of the open houses is undetermined at this time, due to COVID-19 restrictions. It is likely that a short video will be available on the website during the public comment period and will be shared in virtual meetings. Opportunities for setting up virtual or in-person appointments will be provided. All in-person appointments, if requested, will be in accordance with CDC guidelines. Announcements of plan availability for comments will be made well in advance. All comments will be responded to and included as an appendix. An approved citizen participation plan is followed for the public participation.

For the Transportation Plan for 2045, Belomar initiated the interagency consultation process and followed the agreed upon process. All capacity adding plan projects have been part of a previous emissions analysis and were conforming projects. As noted above, early participation opportunities were provided for the public participation. Comments received were addressed and are included with the response in Appendix I.

The hot spot analysis requirement is met for Ohio projects through the Ohio $PM_{2.5}$ hot spot analysis addressed through the NEPA process. For West Virginia projects, no project will involve significant increase in diesel trucks and diesel buses and no project will even approach AADT (Annual Average Daily Traffic) of 125,000. Therefore, the Transportation Plan for 2045 has met the requirements of a $PM_{2.5}$ qualitative conformity analysis.

The 2045 long range plan is developed using the most recent assumptions and trends. It is developed according to the regulatory plan development process and according to the approved Participation Plan. This plan includes fiscally constrained projects that are expected to be completed within the life of this plan. The fiscally constrained capacity adding projects have been included in the previous quantitative emissions analysis and are conforming projects. The interagency consultation process is followed. Therefore, it is concluded that the Transportation Plan for 2045 meets the requirement of transportation conformity and is a conforming plan.

CHAPTER 20

ACCOMPLISHMENTS FROM PREVIOUS PLAN

The current "Transportation Plan for 2040" was adopted on June 30, 2016 and Air Quality concurrence was received from FHWA on September 3, 2016. The accomplishment of the plan recommendation from the expiring plan are presented below:

Belmont County

There were three recommended projects in the 2040 plan:

1) Upgrade I-70 to six lanes from SR9 interchange to Mall Road interchange.
2) Operational improvements on SR9 at I-70 ramp intersections.
3) Upgrade I-470 and SR7 interchange to a free flow interchange.

A fourth project with obligated funds was carried into the plan, as it was scheduled to open to traffic in the life of the 2040 plan. This project is complete and opened to traffic in 2018.

1) Upgrade I-70 to six lanes from SR9 to Mall Road Interchange

This is an important project to maintain Level of Service "C" or better in future years. The segment is also ranked 394th among 652 interstate segments identified for truck delays in the state. Its Truck Reliability Index (TRI) is also above 1. This is a fiscally constrained project.

This project is carried through in the new "Transportation Plan for 2045".

2) Operational Improvements on SR9 at the I-70 ramp Intersections

This is also a carried forward project to the new plan and is a fiscally constrained project in the 2045 plan. This project will improve traffic flow at this location. This is a traffic flow and safety improvement project. It will also be affected by the I-70 six lane upgrade project.

3) Upgrade I-470 and SR7 Interchange to a Free Flow Interchange

Another important project recommended in the previous plan and is included in this plan is the upgrade to a free flow interchange at I-470 and SR7.

This project is important, as there is no free flow interchange with SR7 in the region. Movement of traffic between SR7 and I-70 is through the local streets in Bridgeport. The anticipated growth in traffic due to the cracker plant will put pressure on the I-470 and SR7 interchange. Therefore, a free flow interchange is needed for a smooth transfer of traffic

between these two important facilities. However, due to high cost, it is not included in the fiscally constrained projects.

Ohio County

Only one project in Ohio County could be programmed to meet the fiscal constraints. The project: Upgrade I-70 to six lanes from the Elm Grove/Triadelphia interchange to Cabela Drive, is carried forward to the new 2045 plan. This is a very important project for improving level of service to acceptable LOS "C". It is also critical, along with a recommended new interchange on I-70, for sustaining existing commercial enterprises in "The Highlands" and meeting the demand for new businesses. The interchange project could not meet fiscal constraint, due to the limitation of available plan funds.

The I-70 segment is the 3rd worst out of 116 interstate segments in the state for freight bottlenecks. Its TRI is 2.

Marshall County

Three projects from Marshall County were included in the 2040 plan. These are:

1) WV2, from the intersection of 6th Street to US250, widen five lanes for a two-way left turn lane (TWLTC).
2) Radii improvements at the intersection of US250 and 1st Street/Jefferson Avenue.
3) Upgrade Rude Bridge (CR5) from one lane to two lanes.

1) WV2, from the intersection of 6th Street to US250, widen five lanes for a two-way left turn lane (TWLTC)

The two-way left turn on this stretch of WV2 through Moundsville has been added and it is open to traffic now. This was an important operational and safety upgrade and has improved traffic flow in this corridor.

2) Radii improvements at the intersection of US250 and 1st Street/Jefferson Avenue

The US250 traffic, including the traffic bound for Grandview Park, a regional attraction, passes through the intersection. There is a need to improve traffic flow through this intersection. This project is moved to the new 2045 plan and is a fiscally constrained project.

3) Upgrade Rude Bridge (CR5) from one lane to two lanes

This project was necessary to provide one lane in each direction for traffic movement. This project is done and the bridge is open to traffic.

Transit

OVRTA and EORTA have made progress in capital acquisitions identified in the 2040 plan. Both authorities have acquired buses and vans programmed in the previous plan. OVRTA has also acquired a SUV. No fix asset capital investments were programmed in the previous plan. The transit levies for the authorities were renewed for three years. The levy approval rate for both authorities was over 70%.

Both authorities also suffered ridership and revenue loss due to COVID-19 lock downs and work from home orders. The assistance received through the CARES-ACT and Rescue-Plan were used for operating expenses and meeting CDC guidelines. The additional funds were essential for the continued operation of both authorities.

CHAPTER 21

PUBLIC PARTICIPATION

Opportunities for public to participate were provided throughout the plan's development process. The early participation started in January, 2019 with a survey of elected and appointed officials in the region to seek input on anticipated growth and identification of transportation issues in each jurisdiction. A copy of the survey is included in Appendix A. This was an online interactive survey using geographic information software ArcMap's online application. Respondents could zoom in on google earth images of their communities and mark on the image where growth was expected and where jobs or housing losses had occurred. The link for the survey was sent to all stakeholders via email. A follow-up email was sent in March. The survey closed in April.

An early participation announcement was again published in August, 2020 to seek comments, views and suggestions for the long range plan. A copy of the public notice is included on page 22-10. The public notice included information about the availability of an online survey. The public was invited to take the Transportation Needs and Priority Survey accessible through the Universal Resource Locator (URL) in the public notice, through Belomar's website or Facebook page. The survey information is presented below.

Long Range Plan Needs and Priority Survey

In August 2020, Belomar Regional Council began gathering public input for the update to the Long Range Transportation Plan. A survey was created and published on Belomar's website. Public notices were placed in local newspapers on both sides of the Ohio River. A copy of the public notice is included on page 22-10. Public notices included the link for accessing the survey on the SurveyMonkey site and also the link to access it from Belomar's website. In addition, the survey was available on the Facebook page. A flyer was prepared to pass the word around. Flyers that advertised the survey and provided a link to the survey were distributed at the following libraries: Barnesville Hutton Memorial Library, St. Clairsville Public Library, Bellaire Public Library, Belmont County District Library (located in Martins Ferry) and Moundsville-Marshall County Public Library. Due to COVID-19, the Ohio County Library was still closed at the time of the flyer distribution and therefore, did not receive a flyer. An advertisement for the survey with a link was also posted to the Belomar Facebook page. Broader distribution of the flyer was limited by COVID-19 restrictions.

The survey, which was created using SurveyMonkey, consisted of fourteen questions. The first eight questions asked the respondent to rank items in order of high priority to low priority. The last five questions, which were open-ended questions, asked the respondents to provide answers to the following: zip code, cross streets where they reside, number of persons in household, number of cars per household, access to public transit and the final question allowed

respondents to voice their comments/concerns on the current transportation needs of their community and the Ohio Valley. After one month, the survey was closed and the data was downloaded and analyzed. A total of 93 persons responded. Not all respondents completed all questions.

Of the respondents who provided their zip code, 70% were from the Wheeling area, 5% were from the Moundsville area, 5% were from the St. Clairsville area, 3% were from the Bellaire area and the remaining responses came from smaller communities in the region. In addition, two responses were received from residents who live outside Belomar's jurisdiction.

Of the respondents who provided the number of people in their household, 21% came from 1-person households, 39% came from a 2-person household, 19% came from a 3-person household, 13% came from a 4-person household and 8% came from a 5-person household. Of the respondents who provided the number of cars in their household, 16% did not own a car, 26% have one car in their household, 50% have two cars in their household, 13% have three cars in their household and almost 10% have four or more cars in their household.

The results of the survey are shown in Figure 21-1 and 22-2.

For Question #1, "Please rank the following in order of importance to you (highways, transit, bike/pedestrian infrastructure, freight movement, economic development, air quality, and new technologies):

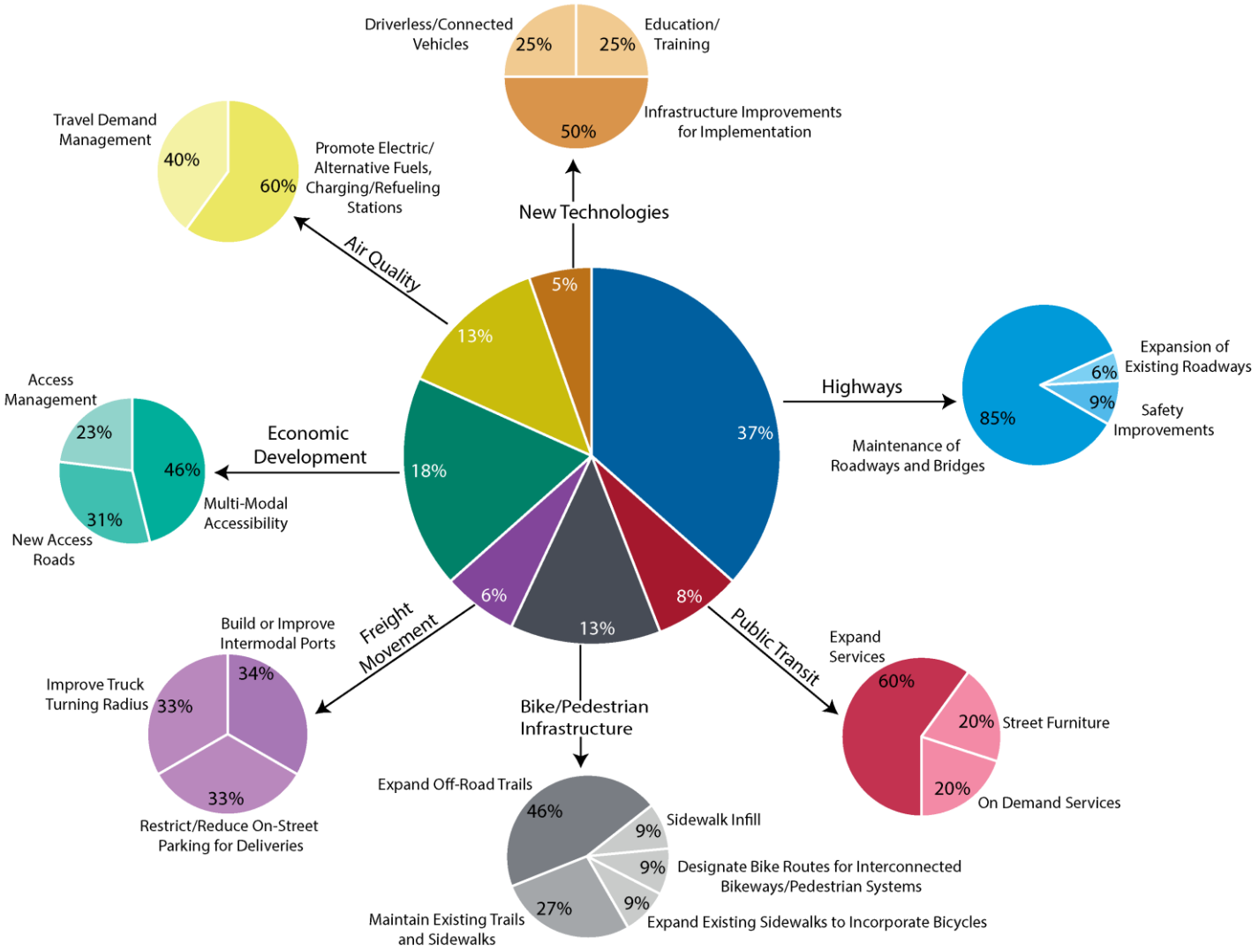
- 37% of the respondents ranked Highways as their top priority. Of those that ranked Highways as their top priority, 85% ranked "Maintenance of Roadways and Bridges" as their top priority. 6% ranked "Safety" as their top priority and 8% ranked "Expansion of existing roadways: (e.g. widening lanes, adding lanes, turn lanes, etc.)" None of the respondents ranked "New Construction".

- 8% of the respondents ranked Transit as their top priority for Question 1. Of those respondents that ranked Transit as their top priority, 60% ranked "Expand Services" as their top priority for transit, 20% ranked "On Demand Service for seniors and people with disabilities" as their top priority and 20% ranked "Street Furniture (bus stops, benches, etc.) as their top priority. None of the respondents ranked "maintain current service", "rideshare/commuter programs", "transit apps" or "transit publicity" as their top priority.

- 13% ranked Bike/Pedestrian Infrastructure as their top priority. Of those that ranked Bike/Pedestrian Infrastructure as their top priority, 45% ranked "Expand off-road trails," 27% ranked "maintain existing trails and sidewalks" as their top priority, 9% ranked "expand existing sidewalks to incorporate bike lanes," 9% ranked "sidewalk infill" as their top priority, and 9% ranked "designate bike routes for interconnected bikeways/pedestrian systems" as their top priority. None of the respondents ranked "retain on-street parking" as their top priority.

Figure 21-1

Transportation Needs and Priority Survey Results



- 6% of the respondents ranked Freight Movements as their top priority. Of those respondents that ranked Freight Movement as their top priority, 33% ranked "Improve truck turning radius where needed" as top priority, 33% ranked "build or improve intermodal ports (for loading and unloading freight from the Ohio River)", and 33% ranked "restrict/reduce on-street parking for deliveries" as their top priority. None of the respondents ranked "add additional lanes, as needed on interstates, expressways and highways" or "provide truck parking areas" as their top priority.

- 13% of the respondents ranked Air Quality as their top priority. Of those respondents that ranked Air Quality as their top priority, 60% ranked "promote electric/alternative fuels, charging/refueling stations" as their top priority and 40% ranked "travel demand management (transit, rideshare, auto occupancy, staggered work schedules)" as their top priority.

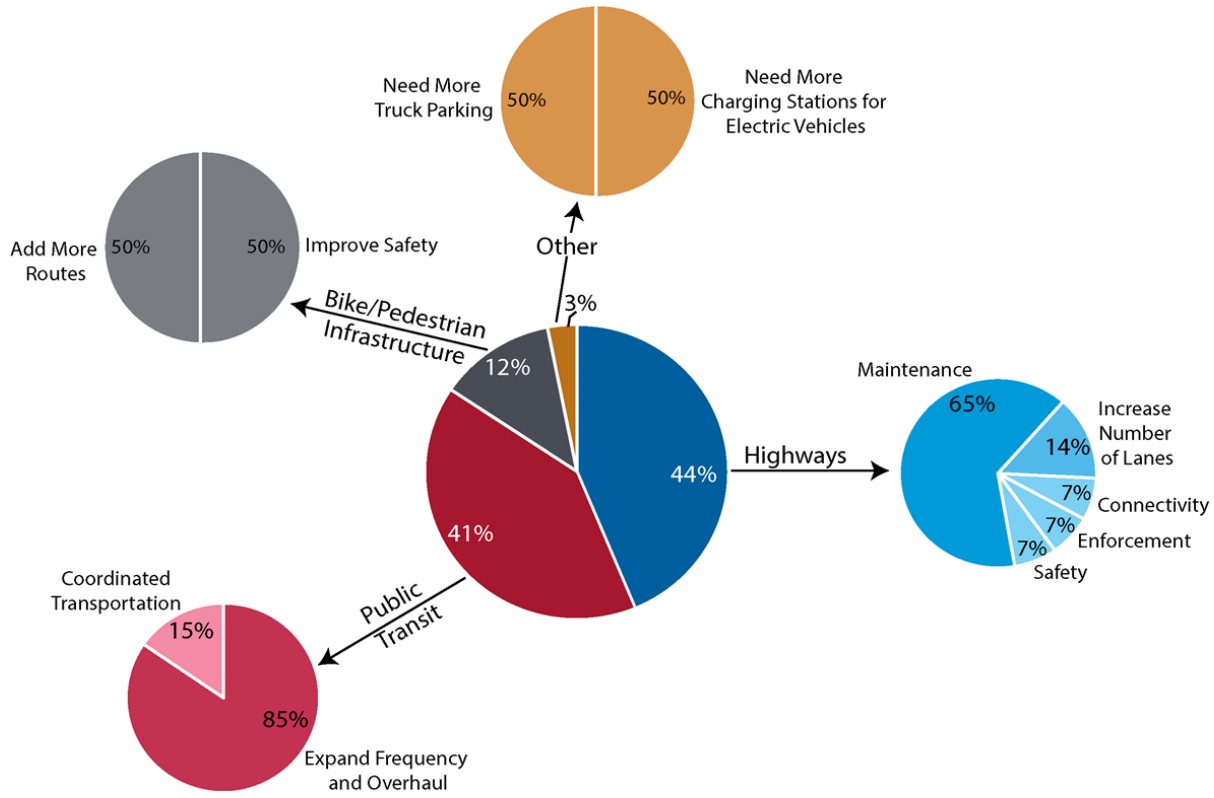
- 18% of the respondents ranked Economic Development as their top priority. Of those respondents that ranked Economic Development as their top priority, 46% ranked multi-modal accessibility (auto, bike, pedestrian, transit areas) as their top priority, 31% ranked "new access roads" as their top priority, and 23% ranked "access management" (streamline entry and exits; service roads) as their top priority. None of the respondents ranked "additional truck parking areas" as their first priority.

- 5% of the respondents ranked New Technology as their top priority. Of those respondents that ranked New Technology as their top priority, 50% ranked "infrastructure improvements for implementation", 25% ranked "driverless/connected vehicles" as their top priority, and 25% ranked "education/training" as their top priority.

32 respondents chose to provide comments. Comments were regarding highways, transit, bike/ped facilities, truck parking and new technologies. Most (44%) comments were regarding "highways" followed by "public transit" (41%). "Bike/Ped" comments (12%) were a distant third with less than 3% commenting on lack of "truck parking" and the need for "electric charging stations." The comments for highways and transit were in line with respondents picking these as their top priority. Like those respondents, the commenter also placed the greatest importance (65%) on maintenance and transit service expansion (85%). Bike/ped comments were evenly split between adding more routes and safety improvements. Two commenters cited the need for truck parking and electric charging stations.

The survey results reflect local needs and priorities based on local interaction and experiences with the transportation systems in the region. Complaints about roadway deterioration are abound and selection of roadway maintenance as top priority by the largest of margins is in line with the local experiences. Bike/Ped facilities and transit service, as part of active transportation, are the next most important for 21% of respondents. This is followed by economic development (18%) and air quality (13%). Interestingly, freight movement and new technologies are at the bottom. Freight movement affects all aspects of our daily life. Food,

Figure 21-2
Results for Open-Ended Comments Question
(32 Respondents)



clothes and home products are all hauled in by a truck. It is also very critical for sustaining local economy by taking locally produced products to other markets. Truck parking overflow is experienced almost on a daily basis at local rest areas where trucks are seen parked on ramps and pull over emergency lanes on I-70. Trucks also affect the roadway capacity and increasing truck volume on I-70 is very visible.

Freight planning is required by federal planning regulations and specific performance measures are identified to ensure safe and reliable flow of freight on the nation's highways. States and MPOs are required to adopt targets for these performance measures and report progress towards achieving the targets.

While some features of new technologies like autonomous vehicles, delivery drones and connected vehicles are already on our roads, full scale deployment will need infrastructure improvements and policy changes that may include new road rules and revenue systems for sustaining our roadways. Although freight and new technologies received lower ranking, their role in the overall transportation system is important.

After the draft document was prepared, comments were solicited from the funding agencies. The West Virginia Division of Federal Highway Administration (FHWA) coordinated comments from all funding agencies. Comments were also solicited from the stakeholders. Comments were received from the FHWA and were addressed. Emails announcing plan availability were sent to all known email addresses. Over 150 email addresses were on the email lists. The draft document was then made available for public comments. A 10-minute video summarizing the plan was prepared for public input. The video and plan document were posted on Belomar's website and Facebook page. Large size public notices were published in local newspapers announcing the availability of the draft plan for public review and comments. A copy of these notices is presented on page 21-11 and 21-12. Public notices included the website information and information about the local libraries where the plan document was placed for review. In addition to the website and Facebook, the LRP document was placed in all local libraries and was also available at Belomar's office. The public notice was also displayed at library bulletin boards where such option existed.

The Public Participation Plan was followed for the public outreach. The public comment period started on July 3rd and ended on July 19th. A virtual meeting was held on July 14th from 5:30 p.m. to 7:00 p.m. The meeting announcement was made through public notices, website postings and social media using Facebook. Anyone could join the virtual meeting by clicking the link on the website or pasting it in the browser. The link was available online and could be requested by calling in. The 10-minute summary video was played every half hour and the public had the option to interact with the staff. All staff participated in the virtual meeting. The recording of the virtual meeting was made. The visuals of the online announcements, posted document, video and the comment form are shown in Figures 21-3, 21-4, and 21-5.

A comment form was available on the website. It was visible, along with the link for the plan document and summary video. Comments could be provided through social media, on the website, emailed or mailed through USPS. Special assistance was also available upon request.

During the public comment period, significant hits and views were observed for the plan document and video links. Generally, "hit" is scored when a document is downloaded and "view" is scored when a webpage is opened.

The draft plan was presented to the stakeholders on April 22nd and comments were solicited. The draft plan and the plan video were also available on the webpage. However, public outreach efforts stated on July 2nd after comments were received from funding agencies, were addressed and a second draft was posted on the webpage. No other comments were received. The web statistics were reviewed after the public comment period ended on July 19th. Table 21-2 shows the web statistics. During the month of June, prior to the initiation of public outreach efforts, there were 157 hits for the plan document. Generally, the document was downloaded 40 times and viewed online or partially downloaded 117 times.

Table 21-1
June and July 2021 Comparative View of
2045 Long Range Transportation Plan Document/Video Hits

		June		July (as of July 19, 2021)	
Filename/URL	**File Type**	**Hits**	**206 Hits***	**Hits**	**206 Hits***
draft-2045-long-range-transportation-plan.pdf	PDF	40	117	94	561
lrp2045.mp4	MP4 Video	14	54	23	550

*206 hits are Partial Content (Code: 206) hits within the 2xx class - Successful. These are successful hits. The partial content success code is issued when the server fulfills a partial GET request. This happens when the client is downloading a multi-part document or part of a large file.

During the same month, the plan video was downloaded or played 68 times. Significant web activity occurred after outreach efforts were initiated. During the time period of less than three weeks in July, the recorded hits rose to 605. This is almost a threefold increase. The hits on the video rose by over sevenfold from 68 in June to 573 during less than three weeks in July.

This is a very significant response to the outreach efforts. It is in line with the significant response received for the online public input survey done for identifying transportation needs and priorities. The magnitude of this success suggests that public preference is for online access and 24/7 convenience of access. While no one availed the virtual meeting option available on July 14th from 5:30 to 7:00 p.m., the public interest is reflected through the number of hits. The local success of public participation is measured through the responses to the online survey and actual hits on the website and not by the volume of written comments or number of attendees at a meeting. Many opportunities for the public participation were provided throughout the plan development process. Public input could be provided in many different ways, including the online option. Online option was also the safe option during the COVID-19 limitations. It was overwhelmingly popular and used to access and interact with the plan document and related material. Throughout the planning process, only one written comment was received. It was a positive comment in support of local efforts for the "Active Transportation" planning and is included in Appendix I.

Figure 21-3
Webpage View

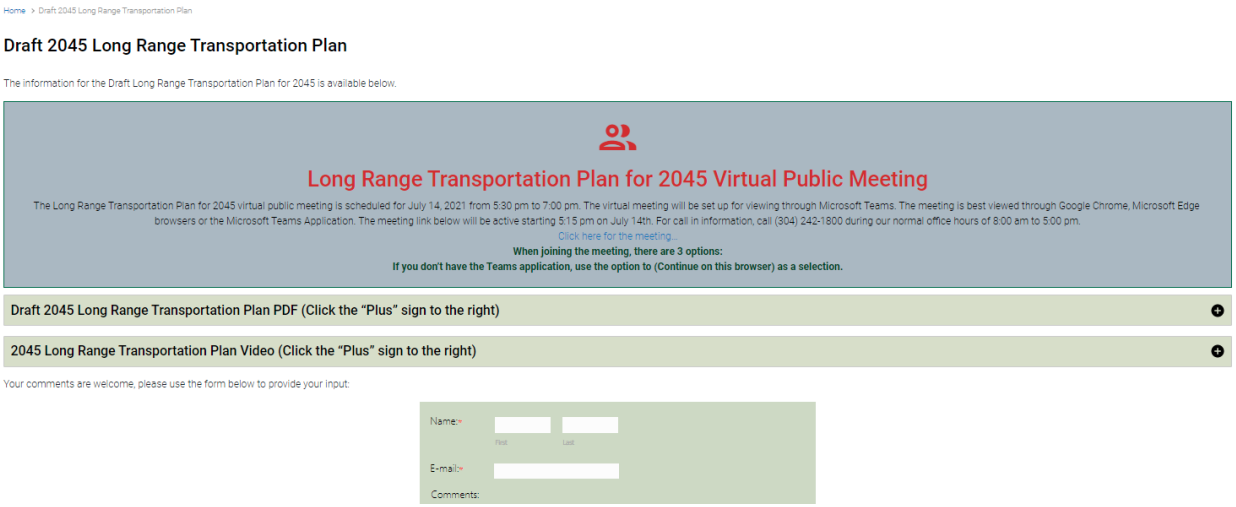


Figure 21-4
Facebook Announcement

Figure 21-5
Virtual Meeting Main Page

Times Leader
August 29 and 31, 2020

PUBLIC NOTICE

Notice is hereby given that the Bel-O-Mar Regional Council is in the process of updating the Long Range Transportation Plan (LRTP). This plan is required by the Fixing America's Surface Transportation (FAST) Act and is updated every five years.

YOUR INPUT IS VERY IMPORTANT

Please take a brief anonymous survey at https://www.surveymonkey.com/r/9YQVKPD to tell us your needs and preferences. The survey link is also available on our website at https://www.belomar.org/lrp-survey and our Facebook page. The survey will be available until September 30, 2020.

Also, visit our website to review our current plan and provide your comments online for the update. Written comments can be emailed to belomar@belomar.org or mailed to:

LRTP-Comments
Bel-O-Mar Regional Council
P.O. Box 2086
Wheeling, WV 26003

Wheeling Intelligencer/
News Register
August 29 and 31, 2020

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Also, visit our website to review our current plan and provide your comments online for the update. Written comments can be emailed to belomar@belomar.org or mailed to:

LRTP-Comments
Bel-O-Mar Regional Council
P.O. Box 2086
Wheeling, WV 26003

Wheeling Intelligencer/News Register
July 2, 2021 and July 8, 2021

this season.
Pirates: Begin a four-

and struck out six in six innings. J.C. Mejia (1-4)

lead at 1.99.
Before the game, the

land. The victory was the
Astros' sixth straight.

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Notice is hereby given that the Belomar Regional Council has prepared a draft Long Range Transportation Plan for 2045. It covers Belmont County in Ohio and Ohio and Marshall Counties in West Virginia. The plan has been prepared pursuant to requirements of the federal Surface Transportation Acts MAP-21 and FAST Act. It addresses local transportation issues and is updated every five years.

Transportation Plan for 2045 will be available for review and comments from July 3rd through July 19th at our website https://www.belomar.org/2045-long-range-transportation-plan. A video presentation of the plan is also available at https://www.belomar.org/video/lrp2045.mp4.

Written comments can be provided at the website, Facebook page http://www.facebook.com/belomarmpo, email belomar@belomar.org or mailed to the address shown below. The plan will also be available for review at the following locations: Belomar Regional Council, Ohio County Public Library, Moundsville-Marshall County Public Library, St. Clairsville Public Library, Bellaire Public Library, Bridgeport Public Library, Martins Ferry Public Library and Barnesville Hutton Memorial Library.

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Plan document and a video presentation is provided for public review and comments. Due to COVID-19 limitations, a virtual public meeting is planned on July 14th from 5:30 p.m. to 7 p.m. Specific meeting information, including the Microsoft Teams meeting link, call in phone number and additional information, will be available at www.belomar.org and on Belomar's Facebook page.

Please call us at 304-242-1800 or send an email to belomar@belomar.org if you have questions, need any special assistance or to request the link for the virtual public meeting. Submit written comments to belomar@belomar.org or to

Transportation Plan Comments
Belomar Regional Council
105 Bridge Street Plaza
Wheeling, WV 26003

Comments must be received by July 19th.

Belomar complies with applicable Federal Civil Rights laws and does not discriminate on the basis of race, color, sex, disability, national origin or age in its plans, programs and activities.

Times Leader
July 2, 2021 and July 8, 2021

Georgia. Critics have condemned the changes as being too restrictive.

field spot in the closest race. Trout matched Manny Ramirez,

to 47%.

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Transportation Plan Comments
Belomar Regional Council
105 Bridge Street Plaza
Wheeling, WV 26003

Comments must be received by July 19th.

Belomar complies with applicable Federal Civil Rights laws and does not discriminate on the basis of race, color, sex, disability, national origin or age in its plans, programs and activities.

CHAPTER 22

TRANSPORTATION PERFORMANCE MANAGEMENT

Transportation Performance Management (TPM) is a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals. Seven national goals were identified in the Moving Ahead for Progress in the 21st Century (MAP-21). In order to support these goals in the Section 1203 of MAP-21 as amended by the FAST Act, several performance measure rules were established by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). These rules established performance measures. The states and MPOs are required to develop targets for each performance measure identified by the FHWA and FTA. MPOs have the option of supporting the statewide targets or developing their own. Depending upon the performance measure, targets are set for 1, 2 or 4 years.

States are required to prepare a Mid-Period Performance Progress Report and have an opportunity to adjust the four year targets. Performance measure targets must be included in the Transportation Improvement Program (TIPs) and Long Range Transportation Plans (LRTPs). Starting with May 20, 2019, all LRTPs and TIPs adopted after this date must meet the Performance Based Planning and Programming (PBPP) requirements.

Throughout the document, the discussion on performance targets and progress towards achieving targets is included. This discussion facilitated the strategy formulation in the relevant chapters. This chapter provides a comprehensive view of all requirements of the TPM. It includes all performance measures and MPO targets.

Performance Measures and Targets

The performance measures were established through the federal rulemaking process by FHWA and FTA. These were split into several Performance Measure rules, PM1: Safety Performance Management, PM2: Pavement and Bridge Performance Management; and PM3: System Performance Management. In addition, FTA issued performance rules for the Transit Asset Management and Transit Safety Performance Management. Each rule has several measures for which the state and MPO must establish targets.

PM1

In accordance with the Safety Performance management final rule, State DOT's and MPO's are required to establish and report on targets for five performance measures set in [23 CFR 490.207(a)(1) through (a)(5)]. The measures that must be established and reported on are:

1. Number of Fatalities
2. Rate of Fatalities per 100 million Vehicle Miles Traveled (VMT)
3. Number of Serious Injuries
4. Rate of Serious Injuries per 100 million VMT
5. Number of Non-motorized Fatalities and Non-motorized Serious Injuries

PM2

In accordance with the Pavement and Bridge Performance Management final rule, State DOT's and MPO's are required to establish and report on targets for six performance measures set in [23 CFR 490.307(a)(1) through (a)(4)] and [23 CFR 490.407(c)(1) and (c)(2)]. These measures are:

1. Percentage of Interstate pavements in Good condition
2. Percentage of Interstate pavements in Poor condition
3. Percentage of non-Interstate NHS pavements in Good condition
4. Percentage of non-Interstate NHS pavements in Poor condition
5. Percentage of NHS bridges in Good condition
6. Percentage of NHS bridges in Poor condition

Definitions of Good and Poor can be found in 23 CFR Part 490 Subparts C and D.

PM3

In accordance with the System Performance/Freight/CMAQ Performance Measures final rule, State DOT's and MPO's are required to establish and report on targets for system performance, freight, and CMAQ performance set in [23 CFR 490.507(a)(1) and (a)(2)], [23 CFR 490.607], [23 CFR 490.707 (a) and (b)], and [23 CFR 490.807]

1. Percent of the person-miles traveled on the Interstate that are reliable (referred to as the Interstate Travel Time Reliability measure).

2. Percent of the person-miles traveled on the non-Interstate NHS that are reliable (referred to as the Non-Interstate Travel Time Reliability measure).

3. The performance measure to assess freight movement on the Interstate System is the: Truck Travel Time Reliability (TTTR) Index (referred to as the Freight Reliability measure).

4. Annual Hours of Peak Hour Excessive Delay Per Capita (referred to as the PHED measure).

5. Percent of Non-Single Occupancy Vehicle Travel.

6. The performance measure for the purpose of carrying out the CMAQ Program and for State DOTs to use to assess on-road mobile source emissions is "Total Emissions Reduction," which is the 2-year and 4-year cumulative reported emission reductions, for all projects funded by CMAQ funds, of each criteria pollutant and applicable precursors (PM2.5, PM10, CO, VOC, and NOx) under the CMAQ program for which the area is designated nonattainment or maintenance.

While each state must set its own targets, Metropolitan Planning Organizations (MPO's) have the option to either support statewide targets and agree to plan and program projects so that they contribute toward the relevant State DOT target or set their own targets for each measure. Both Ohio and West Virginia have established statewide targets. Belomar Regional Council and Interstate Planning Commission has chosen to support Ohio's statewide targets for Belmont County and West Virginia's statewide targets for Ohio and Marshall Counties. Belomar will plan and program projects so they contribute towards the accomplishment of ODOT and WVDOT's targets for each of the performance measures.

SAFETY (PM1)

The Federal Rule 23 CFR 490 requires states and Metropolitan Planning Organizations (MPOs) to establish targets for five safety performance measures applicable to all public roads. The five performance measures are number of fatalities, number of serious injuries, fatality rate, serious injury rate and number of non-motorized fatalities and serious injuries. While states must develop targets, MPOs have an option to adopt the state's target or set their own targets. MPOs can establish targets by either agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT target for that performance measure or committing to a quantifiable target for the metropolitan planning area. State DOT's are required to set annual targets by August 31st, with MPO's establishing targets within 180 days by February 27th. The safety targets were first adopted in CY2018, based on averages from 5-year crash data. Starting in March 2020 and annually thereafter the FHWA will notify State Dot's whether they met or made significant progress toward meeting safety performance targets.

Both Ohio and West Virginia have established annual statewide targets. Belomar Regional Council and Interstate Planning Commission has adopted Ohio's statewide safety targets for Belmont County and West Virginia's statewide targets for Ohio and Marshall counties.

Belomar will plan and program projects so they contribute towards the accomplishment of ODOT and WVDOT's safety targets for the performance measures. The CY2021 targets and baseline is shown in Table 22-1.

Table 22-1
CY2021 Roadway Safety Target

Performance Measure	West Virginia		Ohio	
	Baseline (2015-2019)	Target	Baseline (2015 – 2019)	Target
Number of Fatalities	279.0	263.7	1,128.8	1,084
Number of Serious Injuries	1,077.8	1,002.4	8,434.2	8,101
Rate of Fatalities per 100 Million Vehicle Miles of Travel	1.459	1.46	0.97	0.93
Rate of Serious Injuries per 100 Million Vehicle Miles of Travel	5.619	5.02	7.25	6.97
Frequency of Non-Motorized Fatalities and Serious Injuries	96.8	86.2	844.8	811

The targets are based on the 5-year rolling average. CY2021 targets have a baseline of CY2015 to CY2019. ODOT targets are based on achieving 2% annual reduction across all five categories. WVDOT targets are based on a reduction of 50% in fatalities and fatalities rate by the year 2030 and 66% reduction in the other 3 categories by the year 2030.

Belomar maintains the most recent five year crash data in two separate databases. The data for Belmont County is obtained from the Ohio Department of Public Safety (ODPs) and Ohio and Marshall County data is obtained from WVDOT. The current crash data includes records for CY2015 to CY2019. This data is used to study crash trends and to identify high hazard locations.

The crash data is also used to discern how the local crash experience matched with the statewide experience and statewide targets. FHWA annually makes a determination if a state has achieved its targets or made significant progress towards achieving the targets. The first FHWA determination was made in the year 2020 using the five year crash data from 2015 – 2019. Table 22-2 and Table 22-3 show the target achievement. The actual data and targets in Table 22-2 are provided by WVDOT. Targets for Ohio and Marshall Counties are also provided by WVDOT for comparison and to view regional programs in achieving local and statewide targets. For the Ohio side, statewide targets are provided by ODOT and Belmont County targets are computed by Belomar based on annualized reduction of 2% in all five categories.

Table 22-2
Safety Performance Target Achievement
Ohio and Marshall Counties, West Virginia

Measure	2019				2020		2021	
	West Virginia		Ohio & Marshall		West Virginia	Ohio & Marshall	West Virginia	Ohio & Marshall
	Target	Actual	Target	Actual	Target	Target	Target	Target
Fatalities	274.2	279.0	6.2	7.4	271.4	7.1	263.7	6.7
Fatality Rate	1.470	1.459	0.844	0.994	1.465	0.880	1.465	0.991
Serious Injuries	1,123.5	1,077.8	41.2	39.8	1,040.1	38.4	1062.4	36.9
Serious Injury Rate	5.629	5.619	5.246	5.317	5.326	4.729	5.023	4.452
Non-Motorized Fatalities and Injuries	91.6	96.8	5.5	5.2	91.5	5.0	86.2	4.7

Note: Ohio and Marshall County Targets are estimated by WVDOT from crash data for the region.

Table 22-3
Safety Performance Target Achievement
Belmont County, Ohio

Measure	2019				2020		2021	
	Ohio		Belmont		Ohio	Belmont*	Ohio	Belmont*
	Target	Actual	Target*	Actual	Target	Target	Target	Target
Fatalities	1,062	1,128.8	7.9	8	1,055	7.7	1,084	7.6
Fatality Rate	0.91	0.97	0.90	0.73	0.91	0.89	0.93	0.87
Serious Injuries	8834	8,434.2	50.1	43.4	8,348	49.1	8,101	48.1
Serious Injury Rate	7.60	7.25	5.0	4.26	7.21	4.9	6.97	4.8
Non-Motorized Fatalities and Injuries	836	844.8	5.9	3.6	824	5.8	811	5.72

*Target based on 2% annual reduction in 5 year rolling averages derived from Belmont County crash data and VMT information available from ODOT.

The safety target achievement tables show that in West Virginia, three of the five targets are met. Based on the targets and progress from the baseline data, FHWA determined that WVDOT met or made significant progress toward achieving 2018 targets. For the Ohio side, two of the five targets are met and the FHWA determined that ODOT has not met or made significant progress towards achieving its safety performance targets.

In comparison to the State, Ohio and Marshall Counties did not meet targets in three categories: fatalities, fatality rate and serious injury rate. Belmont County missed only one target for fatalities.

ODOT has launched several new statewide initiatives this year believing these will have significant effect on reducing crashes in Ohio. These initiatives are:

- Additional $50 Million Annually for ODOT's Highway Safety Program
  > This includes the Governor's Intersection Safety Program targeting the top urban, rural and suburban intersections in our state.
  > Ohio now has the third largest Highway Safety Program in the country.

- Statewide Implementation of Centerline Rumble Stripes
  > ODOT is targeting more than 4,000 miles of high-speed, two-lane roads.
  > There are approximately 120 left of center deaths each year.

- ODPS Young Driver and Driver Training Initiatives
  > The department is launching new programs to reduce crashes among young adult, age 15 - 25.
  > Young adults are involved in 28% of all traffic deaths and 35% of all serious injuries across Ohio each year.

- New $10 Million Pedestrian Safety Improvement Program, which will provide 8 cities with funding to implement proven safety counter measures such as medians, signals, marked crossings and related infrastructure.

Locally, I-70 and I-470 have been designated as safety corridors with zero tolerance. Safety and warning signs are placed strategically on these routes. A sample of these signs is presented below:

West Virginia has several safety programs in place, including safe communities. In selected communities a designated regional safe communities coordinator develops counter measures that are required to lower crashes and crash severity. Several public awareness programs are also available and these include Child Passenger Safety, Motorcycle Safety, Occupant Protection and DUI Enforcement Program.

Targets for the Bridge and Pavement Performance Measures (PM2)

The Federal Rule 23 CFR 490 requires that the states and Metropolitan Planning Organizations establish targets for the bridge and pavement performance measures on the interstates and other National Highway System (NHS) routes; travel time reliability on the NHS system and freight reliability measures on the interstate system; and total Congestion Mitigation and Air Quality (CMAQ) emission reduction performance measures for the designated maintenance area.

States are required to prepare statewide targets, while MPOs can develop targets for the MPO area or elect to support statewide targets. The states have jurisdiction over the interstates and other NHS routes. Thus, Belomar has elected to support statewide targets and will plan and program projects in support of statewide targets. Each state has established targets based on the HPMS data and bridge condition data. Both states have established Pavement Management System (PMS) and report pavement condition data as required by the FHWA.

Two-year and four-year targets are required for four performance measures for pavement conditions and two performance measures for bridge conditions. The pavement condition performance measures are percent of pavements in good condition and poor condition. For the interstates system, only four-year targets are needed. For the other non-interstate routes on the NHS systems, both two year and four-year targets are needed. Bridge targets are for the interstate bridges and are for a two year and four-year period. Bridge performance measures are the percentage of bridge deck area in good condition and poor condition.

Starting by October 1, 2018 (and every four years thereafter) states report targets for the relevant performance period with MPO establishing targets within 180 days of the state's target reporting date. On June 16, 2019 and annually thereafter the FHWA computes measures for the Interstate System for the annual determination of the minimum Interstate System condition level and biennial determination of significant progress towards achieving targets (For the first performance period only, FHWA will not make a significant progress determination in 2020 for the two-year targets for the Interstate pavement condition measure). On August 16, 2020 (and every two years thereafter) the FHWA computes biennial measures for determination of significant progress towards achieving targets. By October 1st, 2020 (and every four years thereafter) States will produce the first Mid Period Performance Update, where they will report the two-year performance/condition and their progress toward targets. In this update States may also update the four-year targets, while also setting two-year targets for the non-Interstate

NHS. MPO's must either support or establish their own quantifiable targets within 180 days of the State target establishment. By October 1, 2022 (and every four years thereafter), State DOT's report their four-year (end of performance period) progress to FHWA in their Full Performance Period Progress Report.

ODOT and WVDOT used the HPMS data for setting pavement targets and the National Bridge Inventory (NBI) data for setting bridge targets. The ODOT and WVDOT pavement and bridge targets are as in Tables 22-4 and 22-6.

Table 22-4
ODOT Pavement Condition and Bridge Target

National Highway System Pavement Condition		
Pavements	**2 Yr. Target**	**4 Yr. Target**
Percentage of Interstate Pavements in Good Condition	N/A	50%
Percentage of Interstate Pavements in Poor Condition	N/A	1%
Percentage of Non-Interstate NHS Pavements in Good Condition	35%	35%
Percentage of Non-Interstate NHS Pavements in Poor Condition	3%	3%
Interstate System Bridge Condition		
Bridge	**2 Yr. Target**	**4 Yr. Target**
Percentage of NHS Bridges by deck area in Good Condition	50%	50%
Percentage of NHS Bridges by deck area in Poor Condition	5%	5%

ODOT prepared a Mid-Performance Revised Progress Report Update in June 2020. The report concluded that for the interstate pavement in good condition, the annual data was trending upward and for the poor condition, the trend line was even with little or no change. This interstate pavement performance target is not adjusted. 2019 statistic and target achievements are shown in Table 22-5.

Table 22-5
PM2 2019 Statistics

Performance Measure	2019 Statistics	4-Year Target	Target Met
Interstate Pavement			
% Good	69.4%	>7.50%	YES
% Poor	0.2%	<1%	YES
Non-Interstate Pavement			
% Good	46.9%	>35%	YES
% Poor	1.4%	<3%	YES
NHS Bridge Condition			
% Good	59.2%	>50%	YES
% Poor	1.6%	<5%	YES

Table 22-6
WVDOT Pavement Condition and Bridge Targets

Performance Measure & Target Setting Rationale	Recommended State Targets 2-yr	4-yr	Target Frequency
National Performance Management Measures for Assessing Pavement Condition 23 CFR 490 (Subpart A & C)			
1. Interstate Pavement Condition (2,414 applicable lane miles) **Non-Interstate NHS Pavement Condition** (6,609 applicable lane miles)			
Percent of pavements on the Interstate system in GOOD condition		75.0%	4-year (2018-2021) performance
Rationale: 4-year average is 78.5%, with 2017 condition at 73.4% GOOD. The trendline and confidence in the maintenance and preservation program, plus the opportunity created through Roads to Prosperity, support a % GOOD target consistent with trend condition.			
Percent of pavements on the Interstate system in POOR condition		4.0%	
Rationale: 4-year average is 0.9%, with 2017 condition at 0.1% POOR. FHWA set a minimum standard of 5% - if this is exceeded in any year, State must obligate NHPP funds to improve pavement. The % POOR target assumes some reprioritization of resources to bridge projects while still maintaining a high-performing condition of Interstate pavements.			
Percent of pavements on the non-Interstate NHS in GOOD condition	40.0%	45.0%	2-year (2018-2019) and 4-year (2018-2021) performance
Rationale: 4-year average is 47.3%, with 2017 condition at 40.9% GOOD. The trendline and confidence in the maintenance and preservation program, plus the opportunity created through Roads to Prosperity, support a 2-year % GOOD target consistent with current condition and a 4-year % GOOD target showing an achievable improvement in performance.			
Percent of pavements on the non-Interstate NHS in POOR condition	5%	5%	
Rationale: 4-year average is 1.3%, with 2017 condition at 1.2% POOR. The % POOR target assumes some reprioritization of resources to bridge projects while still maintaining a high-performing condition of non-Interstate NHS pavements (note, there is no minimum standard for this measure).			
National Performance Management Measures for Assessing Bridge Condition 23 CFR 490 (Subpart A & D)			
2. NHS Bridge Condition (1,146 bridges, 152 culverts)			
Percent of NHS bridge deck area classified as in GOOD condition	14.0%	16.0%	2-year (2018-2019) and 4-year (2018-2021) performance
Rationale: 5-year average (including 2018 National Bridge Inventory submission) is 23%, with 2017 condition at 13.9% GOOD. Targets reflect benefits of programmed investments to arrest the trend in 2-years and increase performance back to 20% GOOD in 4 years based on the benefits of Roads to Prosperity projects and an overall higher commitment to bridge maintenance and preservation (as noted in pavement measures).			
Percent of NHS bridge deck area classified as in POOR condition	10.0%	10.0%	
Rationale: 5-year average (including 2018 National Bridge Inventory submission) is 9%, with 2017 condition at 11.9% POOR. FHWA set a minimum standard of 10% - if this is exceeded over a 3-year period, the State must obligate NHPP funds to improve bridges. 10% POOR and better is attainable through ongoing and planned projects plus new planning tools within the TAMP, including a bridge management system.			

For the non-interstate pavement condition, the statistics are similar to interstates for good condition. These are trending upward and have little to no annual change for the poor condition.

For the NHS bridge condition in Ohio, the targets are also being met. The percent good condition data is trending upward, while the poor condition it is trending downwards. In West Virginia, bridge targets are not currently met and significant progress determination is not made by FHWA at this time.

In Belmont County, several projects are programmed to maintain and improve upon existing pavement and bridge infrastructure. The FY2021 - FY2024 TIP includes $56,089,000 in bridge projects in Belmont county; $12,311,000 for pavement preservation projects on Interstates and $12,695,000 for NHS routes (non-interstates). Belomar will continue to plan and program projects in support of ODOT's infrastructure targets and will update targets and progress after the States Mid-Performance progress report is produced.

These targets are reassessed in the year 2020 and the first mid period performance update report for WVDOT is prepared by the Cambridge Systematics. As per this report, the state will likely meet the pavement condition performance targets for the interstate routes. No mid performance period target adjustment is needed for the interstate system targets of 75% of pavement in good condition and 4% of pavement in poor condition. The 2021 interstate pavement targets are not adjusted.

It is also determined that for the non-interstate NHS pavement targets, if the trend continues, the target will likely be met. No adjustment is made to non-interstate pavement targets for 2021.

NHS bridge performance for good condition with existing and committed projects, are estimated for 12% by 2021. Thus the 2021 target is adjusted to 11% good by 2021. For the poor condition, target data shows no significant improvement in 2019. This target is adjusted to be 13% poor in 2021.

Locally in Ohio County, 25 bridges are being replaced as one project at a cost of $220,600,000. The improvement, due to this project on I-70, will have significant impact on the bridges in good condition, locally and statewide, due to the large deck area of these interstate bridges. In Marshall County, Route 2 upgrade to four-lane project, at a cost of $156,000,000, will also have significant impact of the percent pavement in good condition.

In Ohio and Marshall Counties, several projects are programmed to maintain and improve upon existing pavement and bridge infrastructure. The draft FY2021 - FY2024 TIP includes $12,095,000 for bridge projects in Ohio and Marshall Counties, $12,000,000 for pavement preservation projects on Interstates and $167,700,000 for NHS routes (non-interstates). Belomar will continue to plan and program projects in support of WVDOT's infrastructure targets.

Travel Time Reliability Targets (PM3)

The performance measure to assess the performance of the NHS routes is travel time on interstates and other non-interstates on the NHS. States are required to establish 2-year and 4-year targets within a performance period of four years. Level of Travel Time Reliability (LOTTR) is defined as the ratio of the longer travel times (80th percentile) to a normal travel time (50th

percentile). The measures are the percent of person-miles traveled on the relevant portion of the NHS that are reliable. FHWA's National Performance Management Research Data Set (NPMRDS) is used for the travel time data.

Separate targets are also set for the Truck Travel Time Reliability (TTTR). This is the ratio of 95th percentile travel time to 50th percentile travel time.

Truck Travel Time Reliability (TTTR) is the ratio generated by dividing the 95th percentile travel time by the normal time (50th percentile) for each Interstate segment. The TTTR Index is established by multiplying each segment's largest reliability ratio of five reporting periods by its length then dividing the sum of all length-weighted segments by the total length of Interstate.

By October 1, 2018 (and every four years thereafter) states Reported targets for the performance period with MPO establishing targets withing 180 days of the state's target reporting date. On August 16, 2020 (and every two years thereafter) the FHWA computes biennial measures for determination of significant progress towards achieving targets for Non-Interstate NHS pavement measure. For the first performance period only the FHWA will not make a significant progress determination in 2020 for the 2-year targets for the non-Interstate NHS Travel Time Reliability measure. By October 1st, 2020 (and every four years thereafter) States will produce the first Mid Period Performance Update, where they will report the 2-year performance/condition and their progress toward targets. In this update States may also update the four-year targets, while also setting two-year targets) for the non-Interstate NHS. MPO's must either support or establish their own quantifiable targets within 180 days of the State target establishment. By October 1, 2022 (and every four years thereafter), State DOT's report their 4-year (end of performance period) progress to FHWA in their Full Performance Period Progress Report. Belomar Regional Council supports statewide targets. The statewide targets and related narrative from ODOT and WVDOT are presented In Tables 22-7 and 22-8.

Table 22-7
ODOT Travel Time Reliability Targets

Level of Travel Time Reliability		
Travel Time Reliability	**2 Yr. Target**	**4 Yr. Target**
Percent of person-miles traveled on the Interstate that are reliable	85%	85%
Percent of person-miles traveled on the Non-Interstate NHS that are reliable	N/A	80%
Level of Truck Travel Time Reliability		
Truck Travel Time Reliability	**2 Yr. Target**	**4 Yr. Target**
Interstate Truck Travel Time Reliability Index	<1.50	<1.50

Table 22-8
WVDOT Travel Time Reliability Targets

Performance Measure & Target Setting Rationale	Recommended State Targets 2-yr	4-yr	Target Frequency (WVDOT)
National Performance Management Measures to Assess Performance of the National Highway System 23 CFR 490 (Subpart A & E)			
3. System Performance			
Percent of person miles traveled on the Interstate system that are reliable (Level of Travel Time Reliability, LOTTR)	98.0%	96.0%	2-year (2018-2019) and 4-year (2018-2021) performance
Rationale: 5-year average is over 99.5%, with 2017 at 99.8%. Roads to Prosperity and STIP projects over the next 2- and 4-years are anticipated to reduce the share of reliable travel as a result of work zones while only marginally benefiting reliability. Given the extent of construction planned and other factors, including vehicle miles traveled and incidents, a **98% 2-year target and 96% 4-year target** are conservative, but still indicative of high-performance.			
Percent of person miles traveled on the non-Interstate NHS that are reliable (Level of Travel Time Reliability, LOTTR)	87.0%		
Rationale: 2017 performance is 91.9%. Trend data is low-confidence given data vendor changes and recent expansion of data coverage. Roads to Prosperity and STIP projects over the next 2- and 4-years are anticipated to reduce the share of reliable travel as a result of work zones. Given the extent of construction planned and other external factors, including development, access control, and events/incidents, a **4-year target of 86%** is conservative, but still indicative of high-performance.			
National Performance Management Measures to Assess Freight Movement on the Interstate System 23 CFR 490 (Subpart A & F)			
4. Freight Movement			
Travel time reliability of trucks on the Interstate System (Truck Travel Time Reliability = average ratio of 95th percentile travel time to 50th percentile travel time)	1.25	1.30	2-year (2018-2019) and 4-year (2018-2021) performance
Rationale: 4-year average is 1.23, with 2017 at 1.21. Roads to Prosperity and STIP projects over the next 2- and 4-years are anticipated to reduce the share of reliable travel as a result of work zones. Given the extent of construction planned and other external factors, including truck volume growth, shifting logistic patterns, and economic development, a **2-year target of 1.25 and 4-year target of 1.30** is conservative, but still indicative of high-performance.			

The data to assess travel time reliability and establish targets is sourced from FHWA's National Performance Management Research Data Set (NPMRDS). ODOT is participating in FHWA's Performance Management Analytical Tool pooled fund study where a contractor assists states in calculating NPMRDS travel time reliability metrics. Belomar will support projects that will improve TTR and TTTR.

The mid period assessment of TTR targets shows significant progress for both the interstate TTR and non-interstate NHS and the performance trend is generally stable. Thus, the 2021 TTR targets of 96% interstate and 87% non-interstate NHS are not adjusted.

The Truck Travel Time Reliability (TTTR) data for 2019 shows no significant improvement over the 2017 baseline. The delays are attributed to delays in the work zones. Locally, this is attributed to delays due to the I-70 bridges project. The TTTR target for 2021 is adjusted from 1.30 to 1.40.

The 2019 NPMRDS data for the Belomar region shows the interstate TTR was 94.8%, and non-interstate TTR was 98% in 2019. This shows relatively less delays locally and progress towards meeting statewide targets. For the TTTR, the Travel Time Index (TTI) for 2019 was 1.65. This shows further actions are needed to improve the truck travel time. It is expected after the I-70 bridges project in Ohio County is completed, significant improvement will happen in truck travel times. I-70 bridge project involving rehabilitation of 25 bridges is the most expansive undertaking in the state of West Virginia and affects the interstate truck travel times across the river in Belmont County.

The dataset used for the LOTTR and TTTR is a relatively new dataset. Belomar will support WVDOT projects that will reduce congestion and improve travel time.

CMAQ Emission Reduction Targets (PM3)

Emission reduction targets are required for the USEPA designated non-attainment and maintenance areas. The current status of the three counties in the MPO area is maintenance for Ozone and PM2.5. ODOT and WVDOT have established statewide targets for emissions reductions. These targets and associated narrative are presented below.

Total CMAQ Emission Reduction Performance Measures

Federal rule 23 CFR 490.807 establishes Total CMAQ Emission Reduction performance measures for the USEPA designated air quality nonattainment and maintenance areas. There are three mobile source pollutants Ohio is required to set performance targets for: Volatile Organic Compounds (VOCs), Nitrous Oxide (NOx), and Particulate Matter at 2.5 Micrometers in Diameter (PM2.5). For all three measures, ODOT is required to set both two-year and four-year targets within a four-year performance period. The measures and targets are presented in Tables 22-9 and 22-10.

Table 22-9
ODOT Emission Reduction Targets

Total CMAQ Emission Reduction		
Total CMAQ Emission Reduction	**2 Yr. Target**	**4 Yr. Target**
Volatile Organic Compounds Total Emission Reduction	69 kg/day	69 kg/day
Nitrous Oxide Total Emission Reduction	537 kg/day	537 kg/day
Particulate Matter at 2.5 Micrometers Total Emission Reduction	36 kg/day	36 kg/day

Table 22-10
WVDOT Emissions Reduction Targets

Performance Measure & Target Setting Rationale	Recommended State Targets 2-yr	4-yr	Target Frequency (WVDOT)
National Performance Management Measures for Assessing the Congestion Mitigation and Air Quality Improvement Program 23 CFR 490 (Subpart A, G & H)			
5. Congestion Mitigation and Air Quality (CMAQ) Measures			
Annual hours of peak-hour excessive delay per capita	**Not applicable for West Virginia**		
Percent of non-single occupant vehicle travel			
Note: For the first performance period (2018 – 2021) these measures are only applicable to urbanized areas with population over 1 million and in an air quality non-attainment or maintenance area consistent with current National Ambient Air Quality Standards.			
On-Road Mobile Source Emissions – CMAQ Emissions Reduction	**$PM_{2.5}$: 0.092 kg/day** **PM_{10}: 0.000 kg/day**		2-year (2018-2019) and 4-year (2018-2021) performance
Description: For CMAQ funded projects within air quality non-attainment or maintenance areas, WVDOT, through collaboration with the applicable MPOs, developed 2-year and 4-year target emission reductions associated with project emissions reduction trends in the CMAQ Public Access System for applicable pollutants (PM2.5 for Charleston and Steubenville/Weirton PM2.5 maintenance areas, and PM10 for the Weirton maintenance area). Note, there are no CMAQ funded projects in the Weirton PM10 maintenance area with PM10 reductions, therefore at this time, the emissions target is set equal to 0.000.			

The targets reflect ODOT's estimate of the emission reductions anticipated from future CMAQ projects in the 21 affected Ohio counties. The targets are based on review of the 2013 – 2016 project emissions data recorded in the Federal Highway Administration's CMAQ Public Access Database and were averaged to form a trend analysis.

Statewide, the emissions data is fluctuating from year to year as per ODOT's Mid-Performance Revised Progress Report. The state has elected not to adjust 4-year targets at this time. Belomar has supported ODOT's decision.

The Bel-O-Mar region was unclassified for the 2015 Ozone NAAQS of 0.070 ppm. However, due to the previous classification under the 1997 NAAQS of 0.08 ppm, the area is still required to make a qualitative conformity determination. The 2019 EPA air quality monitor data registered 0.06 ppm.

For the PM 2.5, the USEPA has made a finding of no significant contribution from the mobile sources and conformity determination is not needed. The 2019 EPA monitor data shows a mean of 9.2 micrograms (0.0000000092 kg/cu. meter).

The 2019 EPA monitor data indicates that local area meeting and exceeding the national standards and statewide targets.

Belomar will continue to use suballocated CMAQ funds provided by ODOT for CMAQ eligible projects in Belmont County. A rail to trail conversion project using MPO suballocated CMAQ funds ($1,123,000) is programmed in the FY2021 – FY2024 TIP.

Since no suballocated funds are available from WVDOT, Belomar will continue to support WVDOT sponsored CMAQ projects in Ohio and Marshall Counties. No CMAQ funded project is included in the FY2021 – FY2024 TIP at this time. TIP can be revised as needed, at any time, by board action and WVDOT may request scheduling CMAQ projects at a later date.

A recent emissions analysis prepared for the long range plan in 2018 shows that the Volatile Organic Compound (VOC) and Nitrogen Oxide (NOx) estimated emissions for the years 2020, 2030 and 2040 are far less than the budgets approved by the USEPA. No budgets were established for the PM2.5 and the USEPA has previously issued a finding of no significant impact from mobile source emissions.

The baseline emissions and 2019 and 2021 reduction targets were based on a limited set of qualified emission reduction projects. Locally, there was no CMAQ project programmed. The 2019 data obtained from the CMAQ Public Access System for 2018 - 2019 exceeds the baseline and the 2019 and 2021 targets. The 2021 targets of 0.092 kg/day for PM 2.5 and 0.00 kg/day for PM10 are not adjusted.

Performance management is a continuous process. The next reporting and target setting cycle begins in 2022.

Transit Asset Management

Transit authorities were required to prepare a Transit Asset Management (TAM) plan by October 1, 2018. These plans include state of good repair (SGR) targets. SGR is defined as the condition in which capital asset is able to operate at a full level of performance. Initial TAM plan SGR targets were for the calendar year 2019. These are updated annually and the CY2021 targets are included here.

For the OVRTA and the EORTA, the two authorities need to address three of the four distinct asset categories under the TAM Final Rule given that their relatively small size classifies them as Tier II service providers. One of the categories is Rolling Stock (i.e., revenue vehicles), while another encompasses Equipment that includes assets that are over $50,000 in acquisition value in addition to nonrevenue support and maintenance vehicles. The third asset category is Facilities that include administrative, maintenance and parking related structures that have supporting assets over $10,000 in acquisition value used to operate various aspects of the system.

Being a Tier II service provider allows OVRTA and EORTA to be part of a Group Tier II TAM Plan or each authority can do its own TAM Plan. OVRTA is participating in a Group Tier II TAM Plan developed by the West Virginia Division of Public Transit, as many public transit vehicles, equipment and facilities are controlled by the State. These assets were purchased/built through the use of federal funds awarded to the State over the years and the acquisitions largely used State matching funds. The ODOT Office of Transit chose a different path by asking Tier II transit providers such as EORTA to develop its own TAM Plan. EORTA developed its own plan. However, it mimics, where applicable, the processes and procedures for determining the SGR for revenue vehicles used in the WV Group Tier II TAM Plan that includes OVRTA.

The first two categories of Rolling Stock and Equipment use the performance measure of the percentage of assets that meet or exceed their useful life benchmark ranking in the WV Tier II Group TAM Plan. This can be defined as, but not limited to, years of service and/or accumulated mileage replacement criteria that exceed the current FTA eligibility replacement criteria and/or, where applicable, the useful service life of equipment from the Belomar Long Range Transportation Plan for 2040. The Facility classification uses the performance measure of percentage of asset with a condition rating below 3.0 on the FTA TERM scale. To that end, guidance has been provided by the FTA that allows for a visual assessment of the condition of this asset category and its major components. EORTA does not have any Facility assets.

The Useful Life and Condition Ranking definitions developed for the WV Tier II Group TAM Plan, as well as the TAM Categories and Classification are prepared below and on the next page. More specifically, all vehicle and equipment useful life values with a combined average condition ranking value of 2 (poor) or 1 (bad) and a facility with a condition ranking of less than a 3.0 TERM value should be a candidate for replacement funding. With regards to the additional useful service life values in the Transportation Plan for 2040, the applicable years of service criterion for certain equipment assets is as follows:

Service Truck	15 years
Supervisor's Vehicle	12 years
Bus Shelters	15 years
Bus Washer	12 years

Using this information will assist in systematically and strategically addressing the needs for the OVRTA and the EORTA towards improving service by prioritizing investments to meet the SGR goals. It should be noted that rolling stock and equipment with a ranking value higher than 2 or a facility with a TERM value of 3 and above can be replaced/repaired if funding is available and if all other assets meet the criteria for a SGR. Investments of this nature seek to maintain the assets of the two Authorities in a SGR at 100%. Further, if an asset meets or exceeds its SGR benchmark, it does not automatically become a funding priority but will be evaluated on a case-by-case basis for replacement/repair. Some items even when they meet or exceed the noted benchmarks may still be able to operate at its full level of performance.

TAM Categories and Class

Category	Class	Definitions
Rolling Stock		
	12 Year/500K Miles	Large, heavy duty transit buses (approximately 35' - 40', and articulated buses)
	10 Year/350K Miles	Medium-size, heavy-duty transit buses (approximately 30')
	7 Year/250K Miles	Medium-size, medium duty transit buses (approximately 30')
	5 Year/150K Miles	Medium-size, light-duty transit buses (approximately 25 – 35')
	4 Year/100K Miles	Other light-duty buses such as small buses and regular and specialized vans
Facility		
	Admin, Maintenance, Storage	
	Transfer Center	
Equipment		
	Support Vehicles	Shop or support vehicles (Purchase price = $50,000 +)
	Maintenance	Maintenance system such as lift system, bus wash priced at $50,000+

Useful Life Definitions

Rank	% of Life Scale	Definition
5	0-1	Vehicle age ranges from new to full useful life
4	1.01 - 1.25	Vehicle exceeds useful life by up to 25%
3	1.26-1.50	Vehicle exceeds useful life by up to 50%
2	1.51 - 1.75	Vehicle exceeds useful life by up to 75%
1	1.75 +	Vehicle exceeds useful life by greater than 75%

Useful Mileage Definition

Rank	% of Mile Scale	Definition
5	0-1	Vehicle mileage ranges from new to full useful life mileage equivalent
4	1.01 - 1.25	Vehicle exceeds useful life mileage equivalent by up to 25%
3	1.26-1.50	Vehicle exceeds useful life mileage equivalent by up to 50%
2	1.51 - 1.75	Vehicle exceeds useful life mileage equivalent by up to 75%
1	1.75 +	Vehicle exceeds useful life mileage equivalent by greater than 75%

Turning to OVRTA and EORTA, the vehicle roster indicates only one Rolling Stock vehicle or Equipment nonrevenue vehicle having a useful life ranking value of 2 (poor) or 1 (bad) using the WV Tier II Group TAM Plan useful life/mileage definitions. This vehicle was a paratransit van and was replaced in FY2020. In addition, OVRTA had replaced six (6) buses in FY2019. The roof of the OVRTA office/garage was also replaced in FY2019. The FY2021 – FY2024 TIP includes a 30' replacement bus, an under 30' replacement bus and a replacement van.

Moving on to Equipment, all of the assets with an acquisition value of over $50,000 for both the OVRTA and the EORTA are currently in a SGR despite some items being at the end of their expected useful life based on FTA guidelines.

Regarding Facilities, this category applies only to the OVRTA with its office/garage facility and the Robert C. Byrd Intermodal Transportation Center. Both of these structures and their major components have been evaluated as having an FTA TERM value at or above 3.0 and are therefore considered in an SGR at this time.

Transit Asset Management Performance Targets

The TAM targets for EORTA and OVRTA are presented here.

EORTA targets for FY2020 – FY2022 (Ohio) are as follows:

Rolling Stock

The performance measure for rolling stock to be improved on is the percentage of vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB). Belomar seeks to achieve/maintain the target of 0% of these assets meeting or exceeding the ULBs for all vehicles in this category. To this end, funding for one EORTA paratransit van that meets the TAM replacement eligibility rating will be pursued, and because of likely additional funding availability a medium, medium-duty bus will be replaced as it already meets one of the standard FTA eligibility replacement criteria versus meeting or exceeding its asset class TAM ULB.

- Medium, Heavy-Duty buses - 0% of this 1 bus will be replaced as the vehicle does not have a combined condition rating of 2.0 or less on the Useful Life/Mileage scale.
- Medium, Medium-Duty buses - 20% of these five vehicles (1 of 5) will be replaced even though this vehicle does not have a combined condition rating of 2.0 or less on the Useful Life/Mileage scale.
- Light-Duty buses/vans - 0% of these 4 buses will be replaced as none of the vehicles have a combined condition rating of 2.0 or less on the Useful Life/Mileage scale.
- Light-Duty buses/vans - 50% of 2 vans (1 of 2) will be replaced as the van has a combined condition rating of 2.0 or less on the Useful Life/Mileage scale.

Equipment

The performance measure for equipment is the percentage of equipment over $50,000 and nonrevenue vehicles that have met or exceeded their defined Useful Life Benchmark (ULB). Belomar seeks to maintain the target of 0% of these assets meeting or exceeding their ULB. This category includes the following assets:

- Garage service truck – 0% of vehicle will have an age of 15 years or more and a combined condition rating of 2.0 or below on the Useful Life/Mileage scale.
- Supervisor vehicle – 0% of vehicle will have an age of 12 years or more and a combined condition rating of 2.0 or below on the Useful Life/Mileage scale. .
- Bus shelters – 0% of shelters will have an age of 15 years or more.
- Bus washer (84%) – 0% of washer will have an age of 12 years or more.

Facilities

N/A

Proposed Investment Project List

Project Year	Project Name	Asset/Asset Class	Cost	Priority
2021	Bus #40 Replacement	RevenueVehicles	$91,013.00	High
2021	Van #7 Paratransit Van Replacement	RevenueVehicles	$47,081.00	Medium
2022	Explorer Replacement	Equipment	$26,027.00	Medium
2022	Bus Washer (84%)	Equipment	$67,127.00	Medium
2023	Bus #41 Replacement	RevenueVehicles	$94,690.00	High
2023	Bus #42 Replacement	RevenueVehicles	$94,690.00	High
2023	Bus #43 Replacement	RevenueVehicles	$94,690.00	High
2024	GMC Pickup Replacement	Equipment	$41,732.00	Medium
2024	Bus Shelter Replacement (14)	Equipment	$91,360.00	Medium

TIP Projects: The current TIP includes one under 30 ft replacement bus and a replacement van.

OVRTA TAM Targets

FY2021 OVRTA (West Virginia) targets are as follows:

Category	Class	Performance Measure	Dependency	2020 Targets	2020 Actual	2021 Targets
Rolling Stock	12 Year/500K Miles	SGR %	TAM Plan	94%	99%	100%
	10 Year/350K Miles	SGR %	TAM Plan	85%	95%	96%
	7 Year/200K Miles	SGR %	TAM Plan	85%	79%	82%
	5 Year/150K Miles	SGR %	TAM Plan	88%	88%	90%
	4 Year/100K Miles	SGR %	TAM Plan AVIS WVDOT System Reviews	89%	89%	90%
Facility	Admin, Maintenance, Storage	SGR %	WVDOT System Reviews AVIS	100%	100%	100%
	Transfer Center	SGR %		100%	100%	100%
Equipment	Support Vehicles	SGR %	WVDOT System Reviews AVIS	77%	94%	95%
	Maintenance Equip	SGR %		100%	45%	50%

Definition of State of Good Repair (SGR)

WVDOT defines SGR as a system meeting the following criteria: --- All assets are functioning at their ideal capacity within their design life. --- The state's asset management system, AVIS, includes consistent, accurate and relatively current information on the status of each capital asset covered by the TAM. --- Each system has a maintenance program to ensure

maintenance is performed per manufacturer requirements and intervals. ---No rolling stock assets are placed in revenue service with identified safety defects.

The 2020 actual data shows that statewide all rolling stock targets were met or exceeded except the 7 year/200k mile category. All facilities related targets were also met. Statewide, there is need to upgrade the equipment. Locally, however, OVRTA's equipment is 100% in SGR.

Rolling Stock

The performance measure for rolling stock to be improved on is the percentage of vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB). Current Conditions are described below:

- Medium, Heavy-Duty buses - 100% of these two vehicles are within SGR
- Medium, Medium-Duty buses – 100 % of these 11 vehicles are within SGR
- Light-Duty buses/vans - 100% of these 2 vans are within SGR

Equipment

The performance measure for equipment is the percentage of equipment over $50,000 and nonrevenue vehicles that have met or exceeded their defined Useful Life Benchmark (ULB). Current conditions are described below:

- Garage service truck - 100% of vehicle is within SGR
- Supervisor vehicle - 100% of vehicle is within SGR
- Medium, Medium-Duty simulated Trolley - 100% of vehicle is within SGR
- Parallelogram hydraulic vehicle lifts - 0% of lifts will have an age of 20 years or more.
- Bus shelters - 0% of shelters will have an age of 15 years or more.
- Bus washer (16%) - 0% of washer will have an age of 12 years or more.
- Aboveground storage tank (AST) and pumps - 0% of this asset will have an age of 20 years or more.
- Security/surveillance bus camera equipment - 0% of equipment will have an age less than the ULB of the rolling stock asset class in which it is installed.

Facilities

The performance measure for facilities is the percentage of assets with a condition rating below 3.0 on the FTA Transit Economics Requirements Model (TERM) Scale. Current conditions are described below:

- OVRTA Office/Garage - The facility has a TERM scale rating of 3.0 or above.
- Intermodal Transportation Center - The facility has a TERM scale rating of 3.0 or above.

OVRTA has no capital projects programmed in the Draft FY2021 – FY2024 TIP at this time. The TIP may be amended at any time to include any future capital projects based on the availability of funds.

Transit Safety Management

By December 2020, OVRTA and EORTA must maintain safety plans under the FTA Public Transportation Agency Safety Plan (PTASP) final rule requirements. The safety rule 49 CFR Part 673 requires the safety plans to include safety performance targets. These targets are to be assessed annually.

The FTA has set measures for transit safety. The categories of safety performance measures for transit providers include:

- Fatalities: total number of reportable fatalities and rate per total unlinked passenger trips by mode.
- Injuries: total number of reportable injuries and rate per total unlinked passenger trips by mode.
- Safety events: total number of reportable events and rate per total vehicle miles by mode.
- System reliability: mean distance between failures by mode.

OVRTA/EORTA has an option to participate in the statewide PTASP or develop its own PTASP. OVRTA has opted to participate in the WVDOT (Division of Public Transit) prepared plan. EORTA has opted to participate in ODOT Office of Transit Plan. In doing so, OVRTA/EORTA agrees to support statewide efforts and projects to promote transit safety. The transit safety targets for OVRTA and EORTA are included in the statewide plans.

MPO's are not required to set new transit safety targets each year but can choose to revisit the MPO's safety targets based on the schedule for preparation of its system performance report that is part of the Metropolitan Plan (MTP). The first MPO MTP update or amendment to be approved on or after July 20, 2021, must include the adopted transit safety targets for the region.

Belomar supports OVRTA/EORTA safety targets included in the statewide PTASP. These are shown on the next page.

EORTA SAFETY TARGET FOR 2021

For Bus Service:

Safety Performance Category	Target
Fatalities (total number of NTD-reportable fatalities and rate per total vehicle revenue miles by mode)	0 per year 0 per 100k vehicle revenue miles
Injuries (total number of NTD-reportable injuries and rate per total vehicle revenue miles by mode)	0 per year 0 per 100k vehicle revenue miles
Safety events (total number of NTD-reportable events and rate per total vehicle revenue miles by mode)	0 per year 0 per 100k vehicle revenue miles
System reliability (measured as revenue miles operated divided by the number of major mechanical failures)	Distance between failures 5,300.51 miles

For Demand Response Service:

Safety Performance Category	Target
Fatalities (total number of NTD-reportable fatalities and rate per total vehicle revenue miles by mode)	0 per year 0 per 100k vehicle revenue miles
Injuries (total number of NTD-reportable injuries and rate per total vehicle revenue miles by mode)	0 per year 0 per 100k vehicle revenue miles
Safety events (total number of NTD-reportable events and rate per total vehicle revenue miles by mode)	0 per year 0 per 100k vehicle revenue miles
System reliability (measured as revenue miles operated divided by the number of major mechanical failures)	Distance between failures 8,584.90 miles

OVRTA SAFETY TARGET FOR 2021

For Bus Service:

Safety Performance Category	Target
Fatalities (total number of NTD-reportable fatalities and rate per total vehicle revenue miles by mode)	0 per year Less than .05 per 1,000,000 vehicle revenue miles
Injuries (total number of NTD-reportable injuries and rate per total vehicle revenue miles by mode)	Less than 8 injuries per year Less than 10 major/minor injuries per 1,000,000 vehicle revenue miles
Safety events (total number of NTD-reportable events and rate per total vehicle revenue miles by mode)	Less than 8 major/minor reportable events per year Less than 10 major/minor reportable events per 1,000,000 vehicle revenue miles
System reliability (measured as revenue miles operated divided by the number of major mechanical failures)	Distance between Major Failures: Greater than 80,000 miles Distance between Minor Failures: Greater than 3,200 miles

For Demand Response Service:

Safety Performance Category	Target
Fatalities (total number of NTD-reportable fatalities and rate per total vehicle revenue miles by mode)	0 per year Less than .05 per 1,000,000 vehicle revenue miles
Injuries (total number of NTD-reportable injuries and rate per total vehicle revenue miles by mode)	Less than 1 injury per year Less than 10 major/minor injuries per 1,000,000 vehicle revenue miles
Safety events (total number of NTD-reportable events and rate per total vehicle revenue miles by mode)	Less than 1 major/minor reportable event per year Less than 10 major/minor reportable events per 1,000,000 vehicle revenue miles
System reliability (measured as revenue miles operated divided by the number of major mechanical failures)	Distance between Major Failures: Greater than 80,000 miles Distance between Minor Failures: Greater than 3,200 miles

APPENDIX A

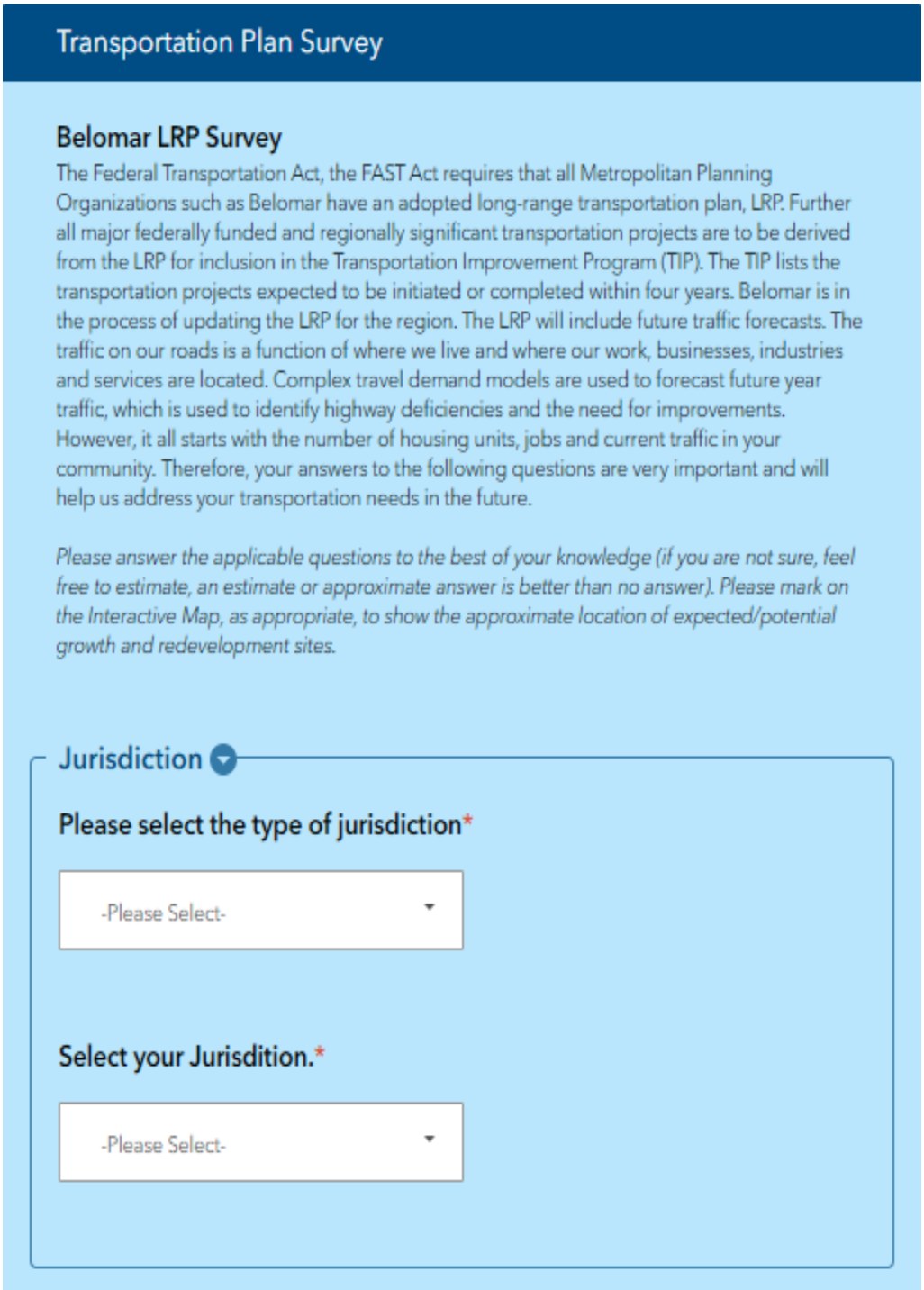
SURVEY QUESTIONNAIRES

- **Local Jurisdiction Survey**
- **Transportation Plan Needs and Priority Survey**

Local Jurisdiction Survey

The purpose of the survey was to seek input on expected growth in or near each community and document any known losses of housing and jobs. Further, to learn about the local transportation issues.

Survey Questionnaire



Transportation Plan Survey

Belomar LRP Survey

The Federal Transportation Act, the FAST Act requires that all Metropolitan Planning Organizations such as Belomar have an adopted long-range transportation plan, LRP. Further all major federally funded and regionally significant transportation projects are to be derived from the LRP for inclusion in the Transportation Improvement Program (TIP). The TIP lists the transportation projects expected to be initiated or completed within four years. Belomar is in the process of updating the LRP for the region. The LRP will include future traffic forecasts. The traffic on our roads is a function of where we live and where our work, businesses, industries and services are located. Complex travel demand models are used to forecast future year traffic, which is used to identify highway deficiencies and the need for improvements. However, it all starts with the number of housing units, jobs and current traffic in your community. Therefore, your answers to the following questions are very important and will help us address your transportation needs in the future.

Please answer the applicable questions to the best of your knowledge (if you are not sure, feel free to estimate, an estimate or approximate answer is better than no answer). Please mark on the Interactive Map, as appropriate, to show the approximate location of expected/potential growth and redevelopment sites.

Jurisdiction

Please select the type of jurisdiction*

-Please Select-

Select your Jurisdition.*

-Please Select-

Does your community have a land use plan?

- ○ Don't Know
- ○ No
- ○ Yes

Does your community have a comprehensive plan?

- ○ Don't Know
- ○ No
- ○ Yes

Does your community have zoning regulations?

- ○ Don't Know
- ○ No
- ○ Yes

How are shale drilling and related industries affecting your community/jurisdiction?

255

Feel free to list/describe your community's/jurisdiction's tranportation needs (e.g. highways, transit, accessibility, bike paths,side walks). Please do not include maintenance issues such as pot holes.

255

Location Entry

1

Interactive Map for Marking Locations of Growth and Decline.

In this section please provide the information for growth and decline of housing and jobs over the last 4-5 years. Using the mouse, drag the map so the pin in the center is over the location you wish to enter. You may also search for a street address directly by using the search bar. Next answer the questions regarding whether the data is about housing or jobs and whether it marks growth or decline. You may add multiple locations by clicking the plus symbol that appears at the bottom of this section.

Set Location

*This map works similar to Google Maps. You may click and drag the map to the desired location or type in a street address in the search bar.

Is the point marking an area of Growth or Decline?

- ○ Decline
- ○ Growth

If you have additional locations to add press the plus symbol at the bottom of the page. If you would like to remove a location you may press the minus symbol (trash can if on a mobile device).

⊖

⊕

Long term projected growth (10 years & beyond):

Where is the long term development/redevelopment potential in and around your community? Please fill in the text box any information concerning the potential growth.

255

Submit

Transportation Plan and Needs and Priority Survey

The purpose of the survey was to seek public input regarding transportation needs and priorities.

Survey Questionnaire

In order to determine your transportation priorities and the efficient use of resources, we are seeking your input for the Long-Range Transportation Plan. This federally mandated plan addresses transportation needs for the next 25 years and is updated every five years. This survey will take around 8 minutes to complete. Please have the survey completed by September 30, 2020. **Your input is very important.**

* 1. Please rank the following in order of importance to you:
(Rank from 1 to 7 with 1 being the highest priority and 7 being the lowest priority)

	1	2	3	4	5	6	7
Highways	○	○	○	○	○	○	○
Transit	○	○	○	○	○	○	○
Bike/Pedestrian Infrastructure	○	○	○	○	○	○	○
Freight Movement	○	○	○	○	○	○	○
Economic Development	○	○	○	○	○	○	○
Air Quality	○	○	○	○	○	○	○
New Technologies	○	○	○	○	○	○	○

Highways

* 2. Please tell us what is most important to you by ranking the following from 1 to 4 (with 1 being the highest priority and 4 being the lowest priority).

	1	2	3	4
Maintenance of roadways and bridges	○	○	○	○
Safety Improvements	○	○	○	○
Expansion of existing roadways (e.g. widening lanes, adding lanes, turn lanes, etc.)	○	○	○	○
New Construction (new roads)	○	○	○	○

Transit

* 3. Please tell us your priorities for enhancing the public transit system by ranking the following from 1 to 7 (with 1 being the highest priority and 7 being the lowest priority).

	1	2	3	4	5	6	7
Maintain current service	○	○	○	○	○	○	○
Expand Services	○	○	○	○	○	○	○
Rideshare/Commuter Programs	○	○	○	○	○	○	○
On Demand Service for seniors and people with disabilities	○	○	○	○	○	○	○
Street Furniture (bus stops, benches, etc.)	○	○	○	○	○	○	○
Transit Apps (ex. arrival times, bus stop locations, etc.)	○	○	○	○	○	○	○
Transit Publicity	○	○	○	○	○	○	○

Bike/Pedestrian Infrastructure

* 4. Please tell us your priority for enhancing Bike/Pedestrian Infrastructure in the Ohio Valley by ranking the below items from 1 to 6 (with 1 being the highest priority and 6 being the lowest priority).

	1	2	3	4	5	6
Maintain existing trails and sidewalks	○	○	○	○	○	○
Expand off-Road trails	○	○	○	○	○	○
Expand existing sidewalks to incorporate bikes	○	○	○	○	○	○
Sidewalk infill (adding sidewalks where there are currently none)	○	○	○	○	○	○
Designate bike Routes for interconnected bikeways/pedestrian systems	○	○	○	○	○	○
Retain on-street parking	○	○	○	○	○	○

Freight Movement

* 5. For efficient movement of freight, please rank the following items from 1 to 5 (with 1 being the highest priority and 5 being the lowest priority).

	1	2	3	4	5
Add additional lanes, as needed on interstates, expressways and highways	○	○	○	○	○
Improve truck turning radius when needed	○	○	○	○	○
Provide truck parking areas	○	○	○	○	○
Build or improve intermodal ports (for loading and unloading freight from the Ohio River)	○	○	○	○	○
Restrict/Reduce on-street parking for deliveries	○	○	○	○	○

Air Quality

6. Please rank the following for Air Quality Improvement (with 1 being the highest priority and 2 being the lowest priority).

	1	2
Promote electric/alternative fuels, charging/refueling stations	○	○
Travel demand management (transit, rideshare, auto occupancy, staggered work schedules)	○	○

Economic Development

* 7. To support economic development in the area please tell us your priorities for the following (with 1 being the highest priority and 4 being the lowest priority).

	1	2	3	4
Multi-modal accessibility (auto, bike, pedestrian, transit areas)	○	○	○	○
New access roads	○	○	○	○
Access management (streamline entry and exits, service roads)	○	○	○	○
Additional truck parking areas	○	○	○	○

New Technologies

* 8. Emerging technologies, such as self driving and interconnected vehicles may improve safety and efficiency. Please rank the following from 1 to 4 (with 1 being the highest priority and 4 being the lowest priority).

	1	2	3	4
Driverless/connected vehicles	○	○	○	○
Drone deliveries	○	○	○	○
Infrastructure improvements for implementation	○	○	○	○
Education/Training	○	○	○	○

Please answer the below questions to help us better understand your transportation needs.

* 9. Please provide your Zipcode

10. Please provide the nearest roadway intersection to your location:

Street Name:

Cross Street Name

* 11. How many people are in your household?

* 12. How many vehicles does your household have?

* 13. Do you have access to public transit?

14. Do you have any comments on the current transportation needs in the Ohio Valley Area or your community specifically?

APPENDIX B

FREIGHT TERMINALS AND OHIO RIVER PORTS

FREIGHT TERMINALS

NAME	COUNTY
ABF Freight System Inc.	Belmont
United Parcel Service (UPS)	Belmont
Zacc Express Inc	Belmont
Casper Trucking	Belmont
Federal Express	Belmont
Gypsum Express Ltd.	Belmont
Con-Way Central Express	Ohio
Gregory S Edwards	Ohio
Ranger - Landstar Services Truck-Stop of America	Ohio
Avanti Express Inc	Ohio
Central Transport	Ohio
Tower Central Inc	Ohio
United Parcel Service (UPS)	Ohio
Yellow Freight System	Ohio
Cabela's Distribution Center	Ohio

OHIO RIVER PORTS/DOCKS

NAME/LOCATION	FACILITY TYPE	COUNTY
MARTIN MARIETTA MATERIALS, MARTINS FERRY WHARF	Dock	Belmont
OHIO RIVER SALVAGE, DRY BULK WHARF	Dock	Belmont
OHIO RIVER SALVAGE, REPAIR WHARF	Fleeting Area	Belmont
OLD LOCK & DAM NO 13	Open Water	Belmont
OXFORD MINING, BELLAIRE TERMINAL WHARF	Dock	Belmont
PIPE CREEK		Belmont
POWHATAN TRANSPORTATION CENTER, LOADING DOCK	Dock	Belmont
Rayle Coal Co., Bellaire Moorings.	Fleeting Area	Belmont
Rayle Coal Co., Bellaire Wharf.	Dock	Belmont
RAYLE COAL CO., BELLAIRIE MOORINGS AND WHARF	Dock	Belmont
WHEELING-PITTSBURGH STEEL CORP., MARTINS FERRY PLANT DOCK	Dock	Belmont
S&S TERMINAL, RAYLAND DOCK	Dock	Jefferson
WALDEN INDUSTRIES, TILTONSVILLE DOCK	Dock	Jefferson
ARROW CONCRETE, WHEELING PLANT DOCK	Dock	Marshall
AUTOMATIC RECYCLING, BENWOOD DOCK	Dock	Marshall
BAYER MATERIAL SCIENCE, NEW MARTINSVILLE PLANT, DOCK	Dock	Marshall
Bayer Material Science, New Martinsville Plant, North Dock.	Dock	Marshall
Bayer Material Science, New Martinsville Plant, South Dock.	Dock	Marshall
BUTTER RUN DILLIES BOTTOM		Marshall
COLUMBIAN CHEMICALS CO., MARSHALL PLANT GRAYSVILLE STAT DOCK	Dock	Marshall
CONSOL ENERGY, BENWOOD MINE LOADING DOCK	Dock	Marshall
CONSOL ENERGY, MCELROY MINE LOADING DOCK	Dock	Marshall
FIRST ENERGY CORP., R. E. BURGER POWER PLANT, UNLOADING DOCK	Dock	Marshall
HANLIN-ALLIED, MOUNDSVILLE DOCK	Dock	Marshall
IMI FABI, BENWOOD WHARF	Dock	Marshall
KINDER MORGAN BULK TERMINALS, MOUNDSVILLE DOCK	Dock	Marshall
MARIETTA COAL CO., WASH PLANT WHARF	Dock	Marshall
OHIO POWER CO., KAMMER POWER PLANT, COAL UNLOADING DOCK	Dock	Marshall
Ohio Power Co., Mitchell Power Plant, Coal-Unloading Dock.	Dock	Marshall
OHIO POWER CO., MITCHELL POWER PLANT, DOCKS	Dock	Marshall
Ohio Power Co., Mitchell Power Plant, Fuel Oil Dock.	Dock	Marshall
OHIO RIVER AGGREGATES, MOUNDSVILLE DOCK	Dock	Marshall
OHIO RIVER SAND & GRAVEL CO., DILLES BOTTOM PLANT DOCK	Dock	Marshall
OHIO-WEST VIRGINIA EXCAVATING CO., MCMECHEN DOCK	Dock	Marshall
QUARTO MINING CO., POWHATAN 7 LOADING DOCK	Dock	Marshall
SUMMER STEEL, BENWOOD INDUSTRIAL PARK DOCK	Dock	Marshall
WARREN DISTRIBUTION CENTER, GLENDALE, WV	Dock	Marshall
DOCK SIDE, HANNIBAL TERMINAL DOCK	Fleeting Area	Monroe
HANNIBAL LOCK & DAM	Lock and/or Dam	Monroe
HANNIBAL LOCK AUX CHAMBER	Lock Chamber	Monroe
HANNIBAL LOCK MAIN CHAMBER	Lock Chamber	Monroe
OLD LOCK & DAM NO 14	Open Water	Monroe
ORMET CORP.	Dock	Monroe
Ormet Corp., Alumina Unloading Wharf.	Dock	Monroe
Ormet Corp., Upstream Wharf.	Dock	Monroe

NAME/LOCATION	FACILITY TYPE	COUNTY
PPG INDUSTRIES, NATRIUM PLANT DOCKS	Dock	Monroe
QUARTO MINING CO., POWHATAN 4 LOADING DOCK	Dock	Monroe
10TH ST WHEELING SUSPENSION HWY BRIDGE	Bridge	Ohio
9TH STREET (I-70) HWY BRIDGE	Bridge	Ohio
CRAVAT COAL CO., LOADING DOCK	Dock	Ohio
OLD LOCK & DAM NO 12	Open Water	Ohio
PIKE ISLAND LOCK & DAM	Lock and/or Dam	Ohio
PIKE ISLAND LOCK AUX CHAMBER	Lock Chamber	Ohio
PIKE ISLAND LOCK MAIN CHAMBER	Lock Chamber	Ohio
SAVAGE CONSTRUCTION CO., WHEELING LANDING	Dock	Ohio
TRI-STATE PETROLEUM CORP., WARWOOD TERMINAL DOCK	Dock	Ohio
TUNNEL RIDGE, MINE NO. 1, PIKE ISLAND WHARF	Dock	Ohio
WHEELING-PITTSBURGH STEEL CORP., YORKVILLE PLANT DOCK	Dock	Ohio
MARTIN MARIETTA MATERIALS, NEW MARTINSVILLE YARD DOCK	Dock	Wetzel

APPENDIX C

ODOT AND WVDOT

REVENUE PROJECTION TABLES

BOM						
Long Range Transportation Plan Funding Projections						
Year	Federal	Growth Rate	State	Growth Rate	Local	Growth Rate
SFY22	$21,104,566.70	0%	$9,930,659.53	.5%	$456,785.32	0%
SFY23	$21,104,566.70	0%	$9,980,312.82	.5%	$456,785.32	0%
SFY24	$21,104,566.70	0%	$10,030,214.39	.5%	$456,785.32	0%
SFY25	$21,104,566.70	0%	$10,080,365.46	.5%	$456,785.32	0%
SFY26	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY27	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY28	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY29	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY30	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY31	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY32	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY33	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY34	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY35	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY36	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY37	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY38	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY39	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY40	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY41	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY42	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY43	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY44	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
SFY45	$21,104,566.70	0%	$10,080,365.46	0%	$456,785.32	0%
Total	$506,509,600.80		$241,628,861.40		$10,962,847.68	

BELOMAR LRTP 25-YR IMPROVEMENT FUNDING FORECAST (IN 2016 DOLLARS)
VALUES AS OF 2/2/17 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	BELOMAR LRTP IMPROVEMENT FUNDING @ (2.90%)
2017	$1,170,175	$494,043	$676,131	$547,666	$0	$128,465	$3,721
2018	$1,072,775	$494,043	$578,732	$468,773	$0	$109,959	$3,185
2019	$1,009,250	$494,043	$515,206	$417,317	$0	$97,889	$2,835
2020	$999,060	$494,043	$505,017	$409,063	$0	$95,953	$2,779
2021	$951,951	$494,043	$457,908	$370,905	$0	$87,002	$2,520
2022	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2023	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2024	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2025	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2026	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2027	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2028	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2029	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2030	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2031	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2032	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2033	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2034	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2035	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2036	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2037	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2038	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2039	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2040	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
2041	$1,040,642	$494,043	$546,599	$442,745	$0	$103,854	$3,008
25-YR TOTALS	**$26,016,053**	**$12,351,086**	**$13,664,967**	**$11,068,623**	**$0**	**$2,596,344**	**$75,205**

BELOMAR LRTP 25-YR IMPROVEMENT FUNDING FORECAST (IN NOMINAL DOLLARS)
VALUES AS OF 2/2/17 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	BELOMAR LRTP IMPROVEMENT FUNDING @ (2.90%)
2017	$1,220,480	$515,282	$705,198	$571,210	$0	$133,988	$3,881
2018	$1,166,994	$537,434	$629,560	$509,944	$0	$119,616	$3,465
2019	$1,145,087	$560,538	$584,549	$473,485	$0	$111,064	$3,217
2020	$1,182,256	$584,635	$597,621	$484,073	$0	$113,548	$3,289
2021	$1,174,937	$609,769	$565,168	$457,786	$0	$107,382	$3,110
2022	$1,339,619	$635,982	$703,637	$569,946	$0	$133,691	$3,872
2023	$1,397,209	$663,323	$733,886	$594,447	$0	$139,438	$4,039
2024	$1,457,274	$691,839	$765,435	$620,002	$0	$145,433	$4,213
2025	$1,519,922	$721,581	$798,341	$646,656	$0	$151,685	$4,394
2026	$1,585,262	$752,601	$832,661	$674,456	$0	$158,206	$4,583
2027	$1,653,412	$784,955	$868,457	$703,450	$0	$165,007	$4,780
2028	$1,724,492	$818,700	$905,792	$733,691	$0	$172,100	$4,985
2029	$1,798,627	$853,896	$944,731	$765,232	$0	$179,499	$5,199
2030	$1,875,949	$890,604	$985,345	$798,129	$0	$187,216	$5,423
2031	$1,956,596	$928,891	$1,027,704	$832,441	$0	$195,264	$5,656
2032	$2,040,709	$968,824	$1,071,885	$868,227	$0	$203,658	$5,899
2033	$2,128,438	$1,010,473	$1,117,965	$905,552	$0	$212,413	$6,153
2034	$2,219,939	$1,053,913	$1,166,026	$944,481	$0	$221,545	$6,417
2035	$2,315,373	$1,099,220	$1,216,153	$985,084	$0	$231,069	$6,693
2036	$2,414,910	$1,146,475	$1,268,435	$1,027,432	$0	$241,003	$6,981
2037	$2,518,726	$1,195,762	$1,322,964	$1,071,601	$0	$251,363	$7,281
2038	$2,627,005	$1,247,167	$1,379,838	$1,117,669	$0	$262,169	$7,594
2039	$2,739,939	$1,300,782	$1,439,157	$1,165,717	$0	$273,440	$7,920
2040	$2,857,728	$1,356,702	$1,501,025	$1,215,831	$0	$285,195	$8,261
2041	$2,980,580	$1,415,027	$1,565,554	$1,268,099	$0	$297,455	$8,616
25-YR TOTALS	**$47,041,463**	**$22,344,376**	**$24,697,087**	**$20,004,640**	**$0**	**$4,692,446**	**$135,920**

Note: As per WVDOT guidance, it is assumed there will be 0% growth in available funds from the year 2042 to 2045.

APPENDIX D

ENVIRONMENTAL JUSTICE TARGET AREAS

Environmental Justice and Identification of Target Areas

The purpose of Environmental Justice (EJ) is to prevent minority communities and low income communities from disproportionate adverse environmental effects of projects and programs. The basis for addressing EJ is Presidential Executive Order (EO) 12898. As per FTA Circular 4703.1, EO 12898 calls on each Federal agency to achieve "environmental justice...by identifying and addressing, as appropriate disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations...". This circular also implies that agencies such as Bel-O-Mar can facilitate compliance by incorporating EJ principles into transportation decision-making process and environmental review documents. The overarching objective of EJ is a fair distribution of the benefits or burdens associated with Federal programs, policies and activities.

Department of Transportation implemented EO 12898 in its order on EJ. The DOT order provides that if a DOT program, policy or activity will have a disproportionately high and adverse effect on minority or low income populations, that program policy or activity may only be carried out if further mitigation measures or alternatives that would reduce the disproportionately high and adverse effects are not practicable. In determining whether a mitigation measure of alternative is "practicable," the social, economic (including costs) and environmental effects of avoiding or mitigating the adverse effects will be taken into account.

In order to conduct an EJ analysis, it is important to know geographic location of minority and low income populations. Once minority and low income communities are identified, disproportionate effects of transportation projects and programs can be studied.

Bel-O-Mar previously identified EJ target areas with disproportionate minority and low income populations within the urbanized areas using 2000 Census data. In addition, persons with no auto available and elderly (65+) persons were also considered in identifying the target areas. These target areas have been used for analysis for over a decade. In this report, new target areas are identified based on the 2010 Census data and the estimates from the American Community Survey (ACS). The 2010 Census data is based on 100% count, while the ACS estimates are based on a five year sample collected from 2006 to 2010. In identifying new target areas, FTA Circular 4301.1 is followed.

Demographic of the Area

The Metropolitan Planning Organization (MPO) consists of three counties. Belmont County in Ohio and Ohio and Marshall Counties in West Virginia. The MPO area covers 948 square miles and has a population of 147,950. Of the total population, 4% is minority and 16% is low income. The minority population includes American Indian and Alaskan Native, Asian, Black or African American, Hispanic or Latino and Native Hawaiian and other Pacific Islander. The Census Bureau identifies persons below poverty based on the original version of federal poverty

measure. The thresholds are updated annually. For this analysis, ACS estimate of persons below poverty is used.

To identify EJ target areas, it is necessary to seek out communities or subareas with concentration of minority and low income populations. The identification process is data driven. The two readily available data sources are the 2010 census and ACS Survey. Other data sources exist but are not considered due to cost and complex availability concerns. The Census data is available at different geographies. Due to the confidentiality concerns, the data suppression becomes an issue at smaller geographic units such as census block.

Identification of Target Areas

In order to address needs of minority and low income populations, it is necessary to identify areas where these populations are located. Once minority and low income areas are known, effects of projects, programs and policies on these areas can be studied. In identifying target areas, it is important that the disadvantaged and under-represented minority and low income population make up a large proportion of the total population of the candidate areas. If target areas are in close proximity of each other, the effects of projects and program may be readily discernable. However, the size and proximity of a target area is dependent on the availability of data needed for identifying the target area. While a census block is well suited, the data availability is minimal at this scale. The SF1 and ACS data is available for block groups and census tracts. Depending on the regional area size, population density and demographics of a region, appropriate geography can be selected for defining target areas.

The three county area covers 948 square miles and the population density is 156 persons per square miles. The minority population density is only 7 persons/square mile. The low income population density is 24 persons/square mile. Given such sparse densities of target groups, a smaller geographic unit is better suited locally. Census Block Group (BG) is the smallest unit for which relevant data is available. Thus BG data is used for defining EJ target areas in the Bel-O-Mar Region.

The percent of minority population in the three county area was determined. The regional percentage, based on 2010 Census, is 4%. Similarly, based on the ACS data, regional percentage of low income persons is 16%. The percentage of minority in each block group was compared to the regional percentage and all block groups exceeding the regional percentage were flagged. Similarly block groups were flagged for low income. In addition, block groups exceeding the regional percentage by 125% were also flagged. This provided an opportunity to consider two scenarios, first all block groups exceeding regional percentage were mapped and then all block groups exceeding the regional percentage by 125% were mapped. These scenarios are presented in Figure I and II.

Scenario I considers block groups that exceed regional percentage for both variables. From a regionwide total of 149 block groups, 20 are selected. Most of the blocks are in the inner cities of the urban core. However, a couple of block groups are separated by distance and are in

the suburbs. These block groups barely exceed the regional percentage in at least one of the variables. No block group in Marshall County meets the criteria.

Scenario II selects areas that exceed the regional percentage by 125% for both variables. A total of 17 block groups are selected. For the most part, these areas are contiguous with a few exceptions in Belmont County. No block group meets the scenario I or scenario II criteria in Marshall County.

After identifying the candidate areas, street addresses for multi dwelling Section 8 Housing and Urban Development (HUD) buildings were solicited from the housing authorities in the region. Addresses were then geocoded and displayed over the regional map of candidate target areas. Based on this display, and the contiguity of the candidate areas, scenario II is the preferred scenario locally. It brings forth areas where the EJ focus is most needed. Out of 149 block groups in the region, 17 block groups are selected. Block groups also provide a more spatially focused approach than the census tracts. Thus, the target areas shown in Figure II are the EJ target areas in the region and will be analyzed, as needed, to determine beneficial or adverse effects of the projects and programs in the region.

It is possible that isolated pockets of minority and low income populations may exist outside the concentrated populations in target areas. These pockets may have been missed in a regional level process using block group level data. In analyzing projects for environmental justice, care would be taken to address effects, if any, on any identifiable isolated pocket of minority and low income population in the three county area.

Figure I

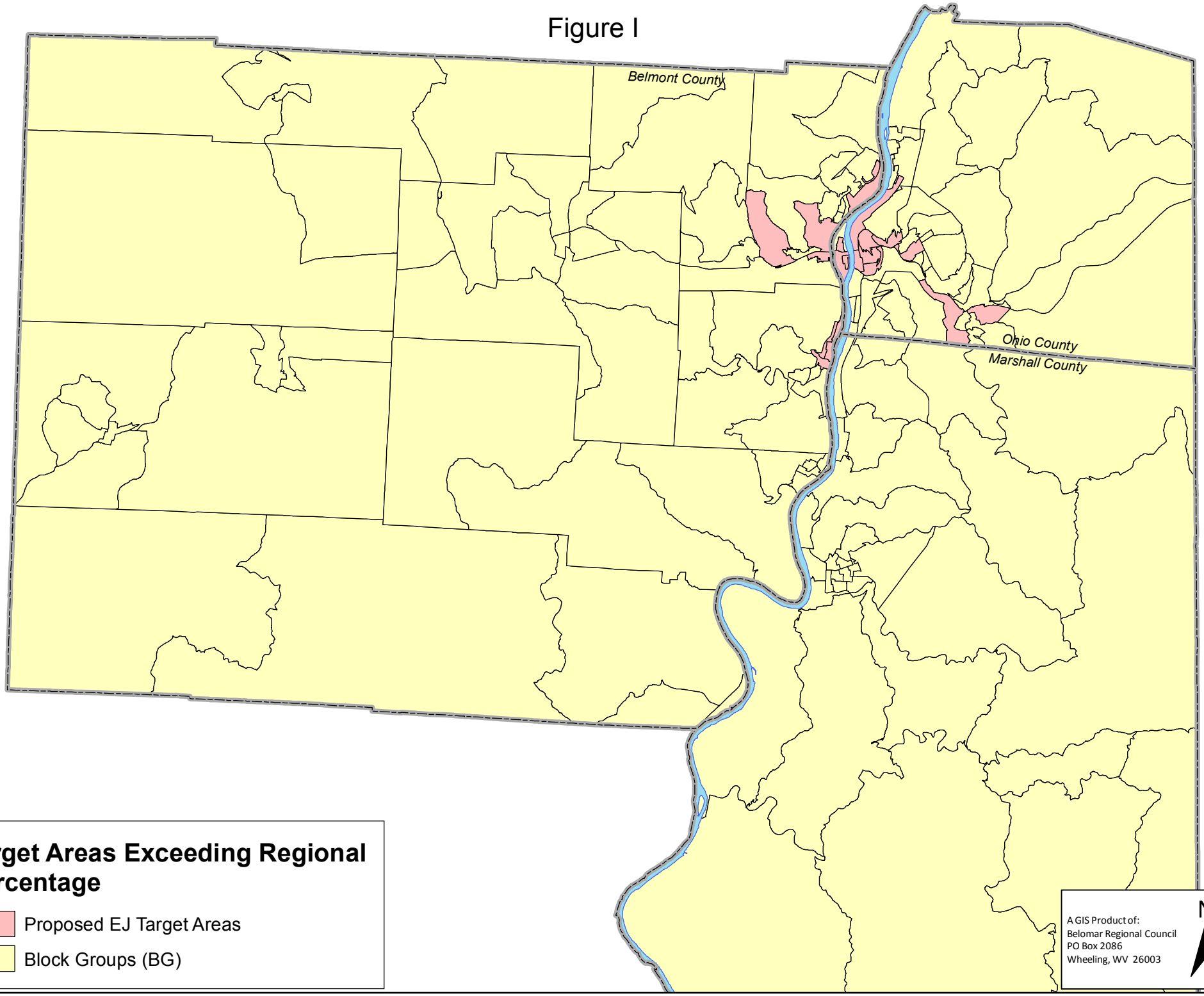
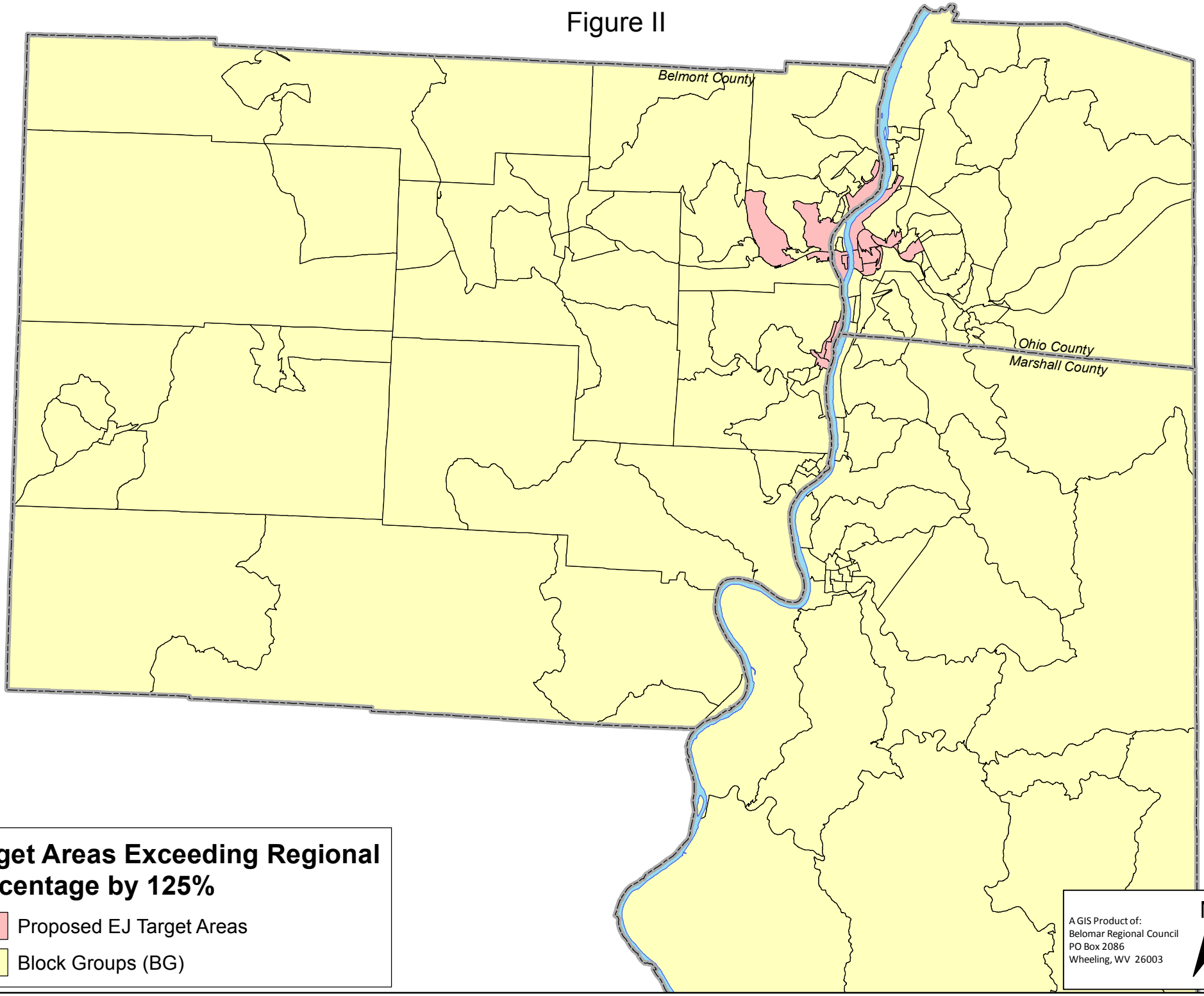

Belmont County
Ohio County
Marshall County
Target Areas Exceeding Regional Percentage
Proposed EJ Target Areas
Block Groups (BG)
A GIS Product of:
Belomar Regional Council
PO Box 2086
Wheeling, WV 26003
N

Figure II


Belmont County
Ohio County
Marshall County
Target Areas Exceeding Regional Percentage by 125%
Proposed EJ Target Areas
Block Groups (BG)
A GIS Product of:
Belomar Regional Council
PO Box 2086
Wheeling, WV 26003
N

APPENDIX E

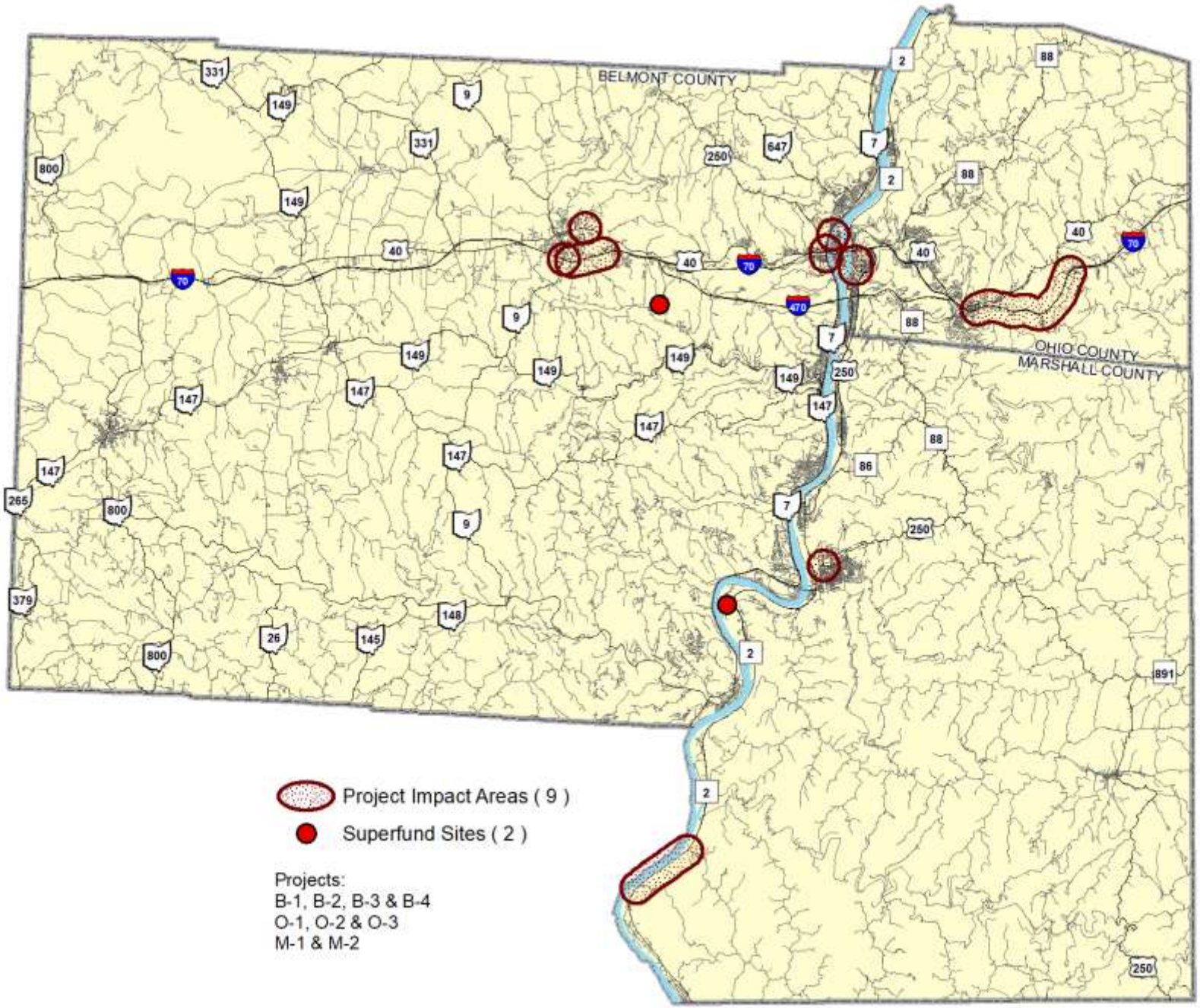
RESOURCE ADVISORY GROUP LIST

RESOURCE ADVISORY GROUP

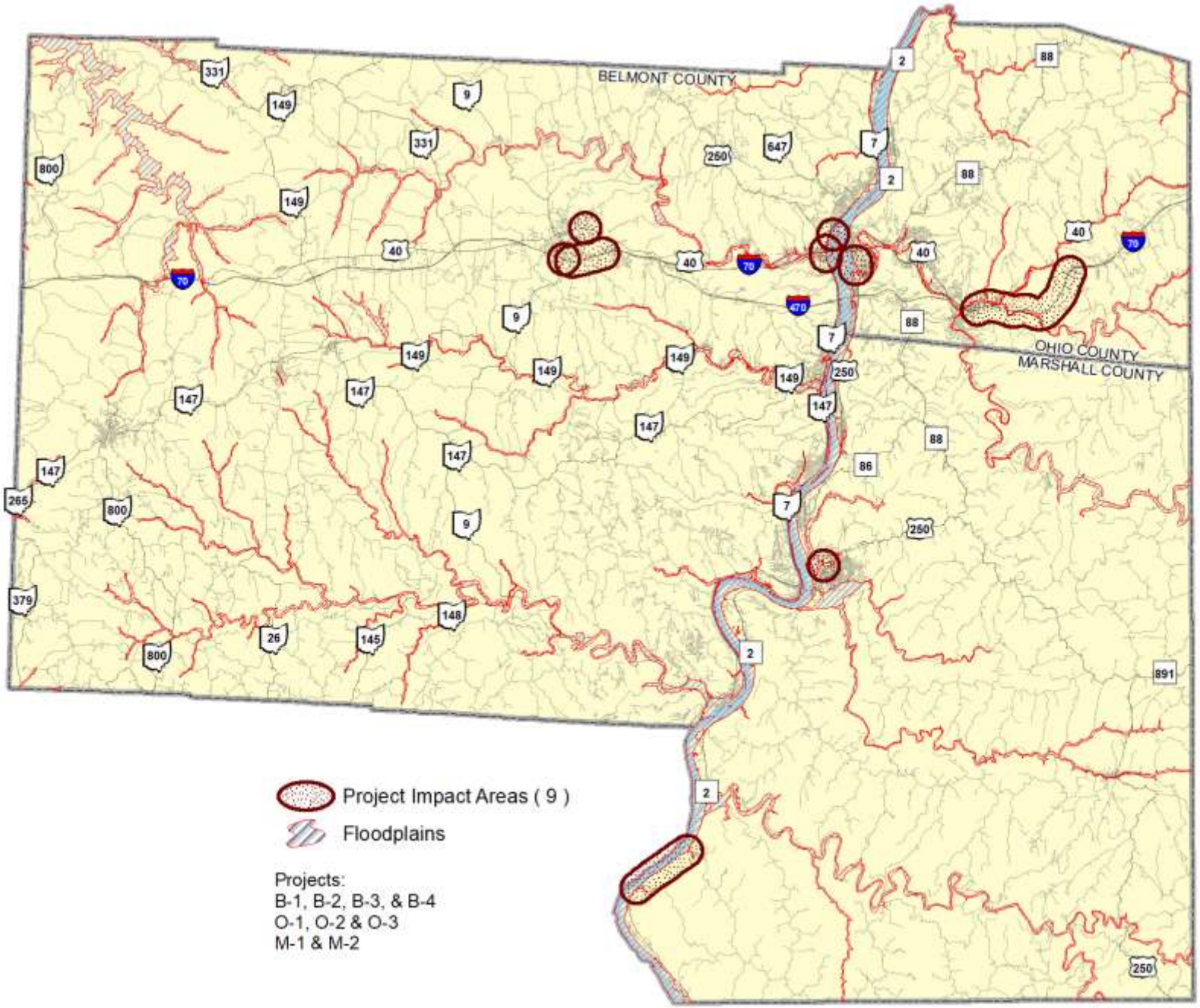
Last Name	First Name	Agency
Lively	Terry	Belmont County
Pierce	Susan	Div. of Culture & History
Lyons	Brent	USDA - WV Division of Forestry
Kessler	John	ODNR
Navarro	John	ODNR - Div. of Wildlife
Hill	Timothy	ODOT Office of Environmental Services
Mertz	Mary	ODNR
Wolfe	Aaron	Ohio EPA Air Pollution Control
Pennington	Aaron	Ohio EPA Division of Surface Water
Huhn	Beth	Ohio USDA Rural Development
Hammond	Gina	Ohio USDA Natural Resources
Pagels	Matthew	Seneca Nation of New York
Hatten	Michael	US Army Corp of Engineers, Huntington, WV
Peukert	John	US Army Corps of Engineers
Cottrell	Donna	US Coast Guard
Nadeau	John	US Coast Guard
Esher	Diana	US EPA
Westlake	Ken	US EPA
Norris	Jennifer	US Fish and Wildlife Service
Fitzsimmons	Katie	USDA Natural Resources Conservation Service
Ruby	Chelsea	West Virginia Division of Tourism
Johansen	Paul	WVDNR, Charleston, WV
Wakeford	Ann	WV Div. of Natural Resources, Elkins, WV
Bridgewater	Brian	WV Div. of Water and Waste Mgmt., Charleston, WV

APPENDIX F

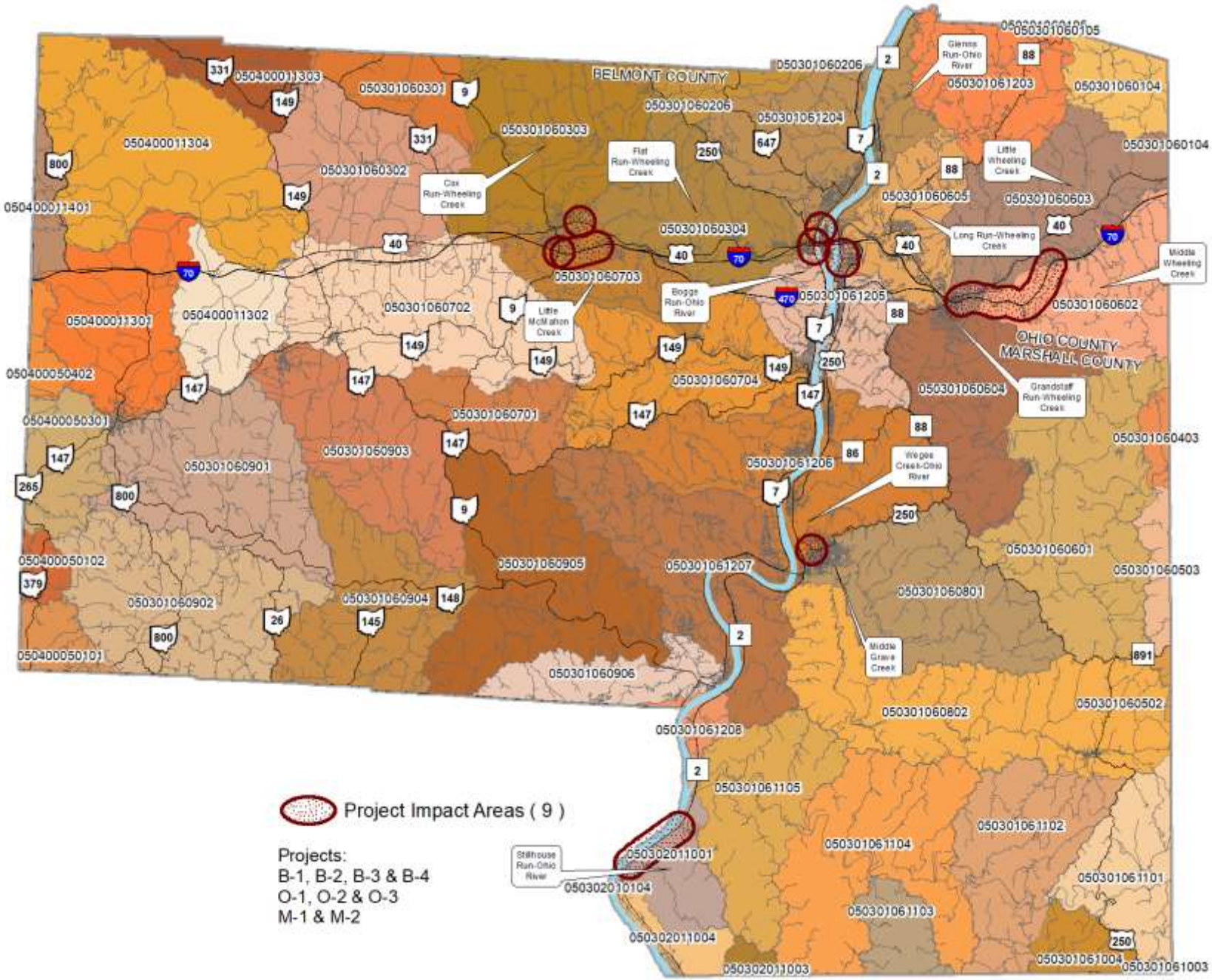
PROJECT OVERLAY MAPS FOR ENVIRONMENTAL IMPACT ASSESSMENT



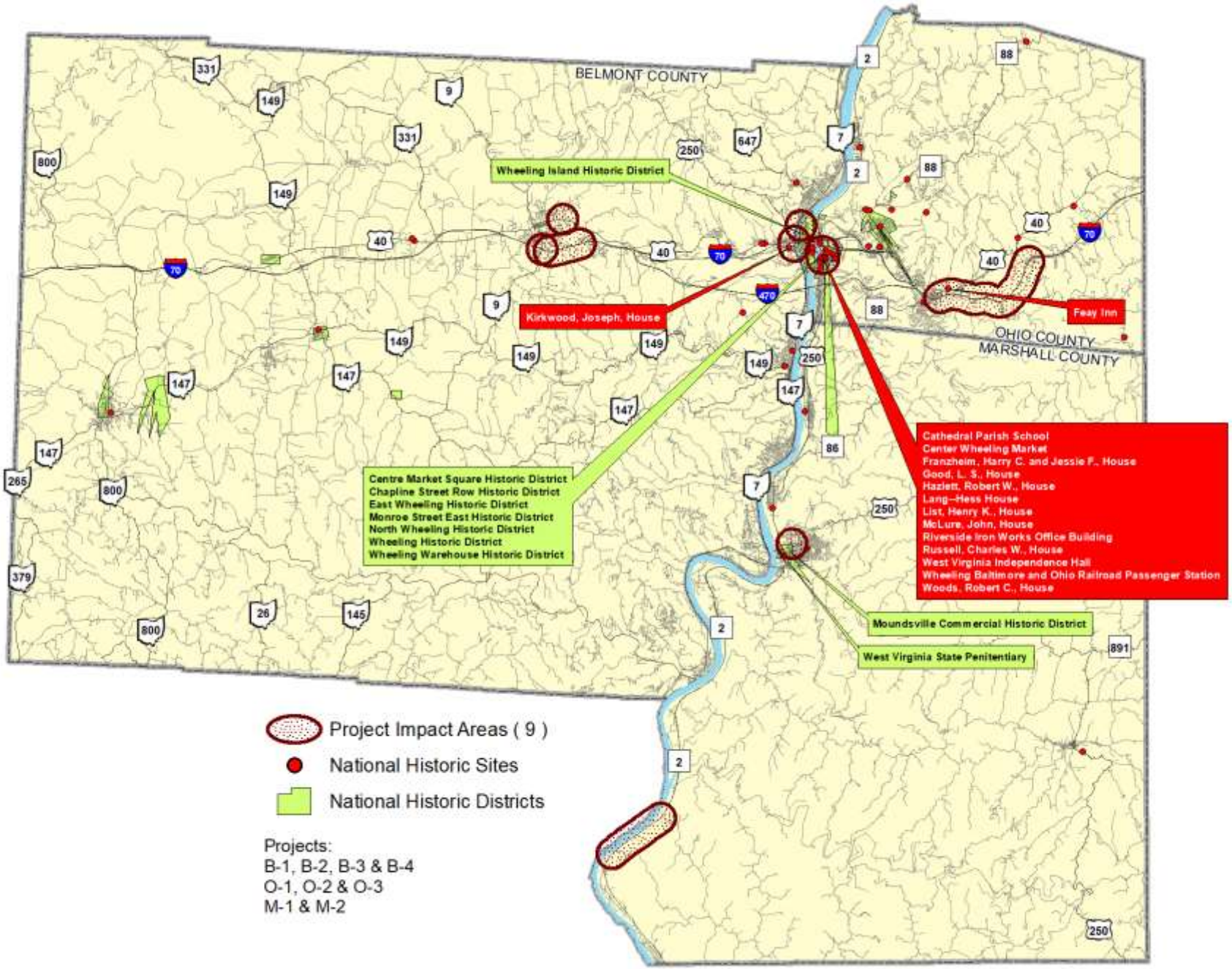
Source: https://www.epa.gov/superfund



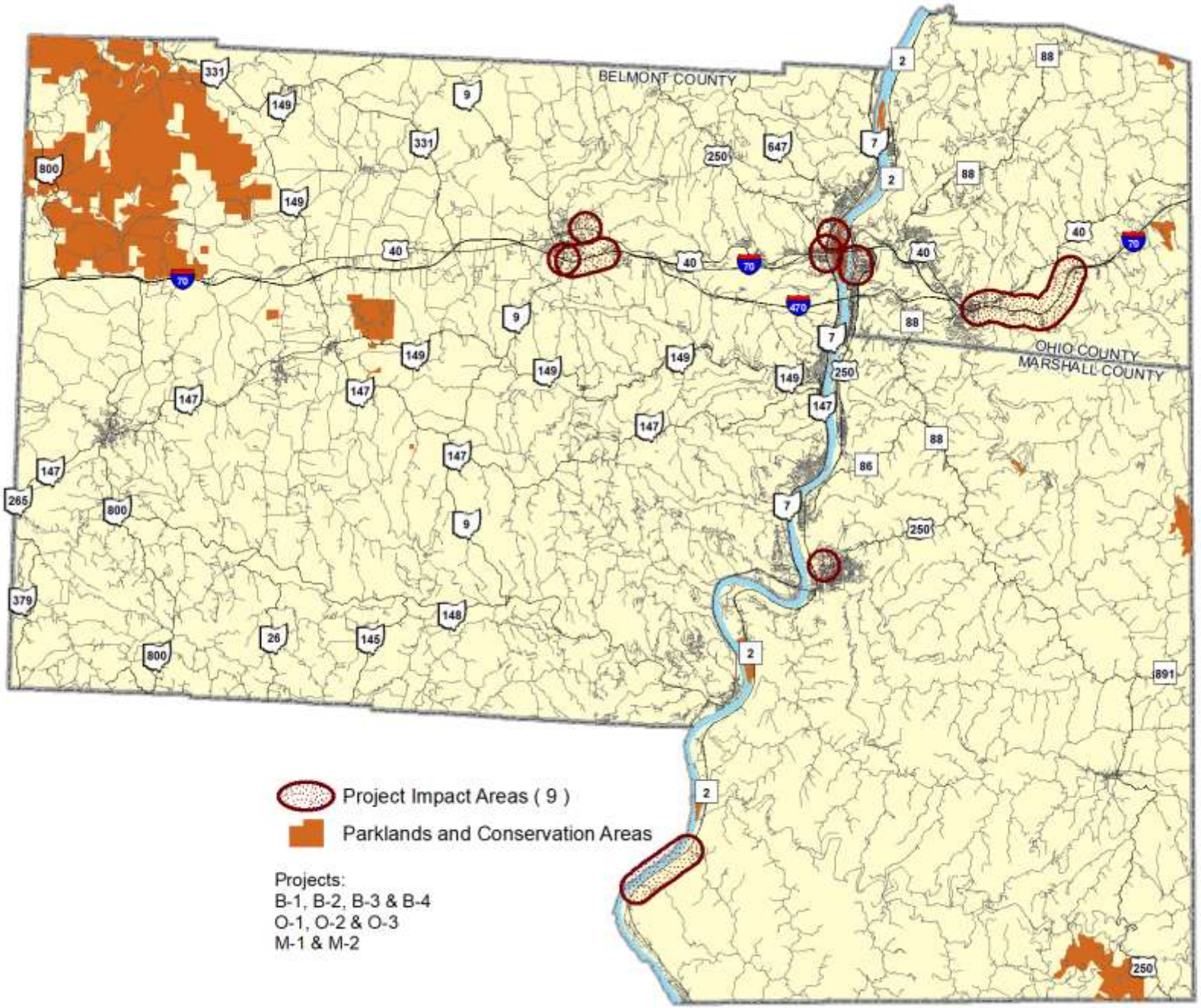
Source: https://www.fema.gov/flood-maps/national-flood-hazard-layer



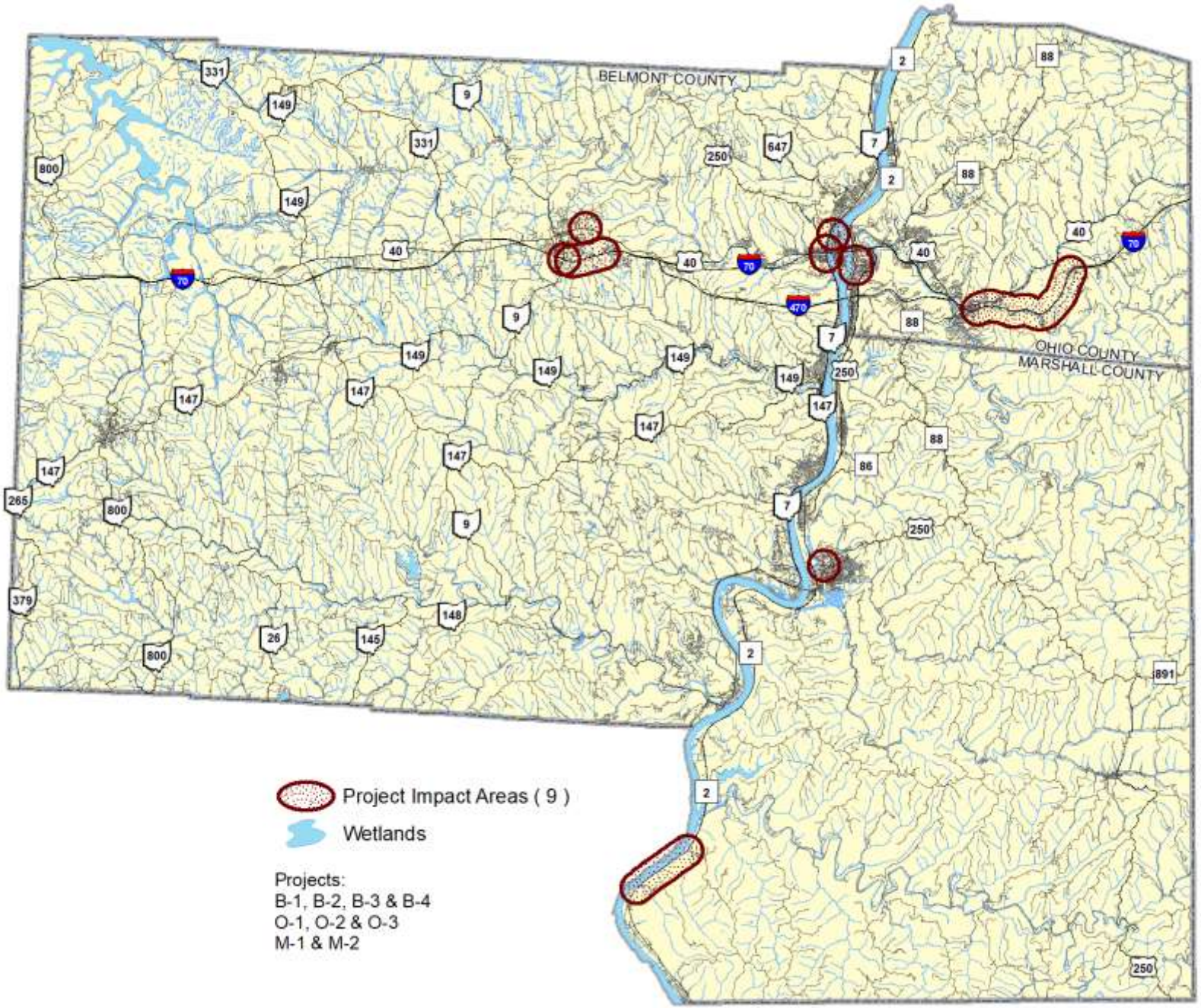
Source: https://gdg.sc.egov.usda.gov/



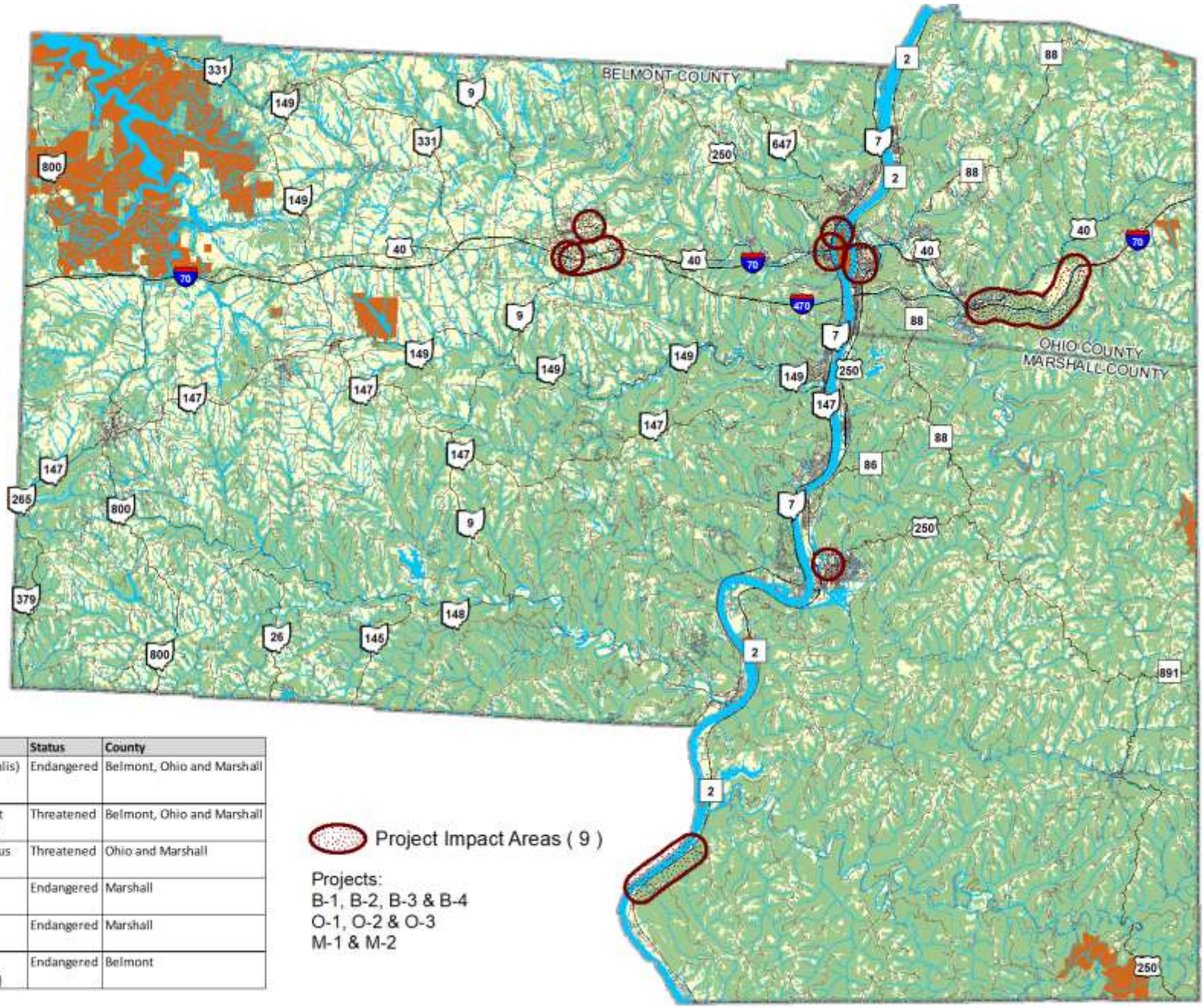
Source: https://www.nps.gov/subjects/nationalregister/data-downloads.htm



Source: https://www.usgs.gov/core-science-systems/science-analytics-and-synthesis/gap/science/pad-us-data-download

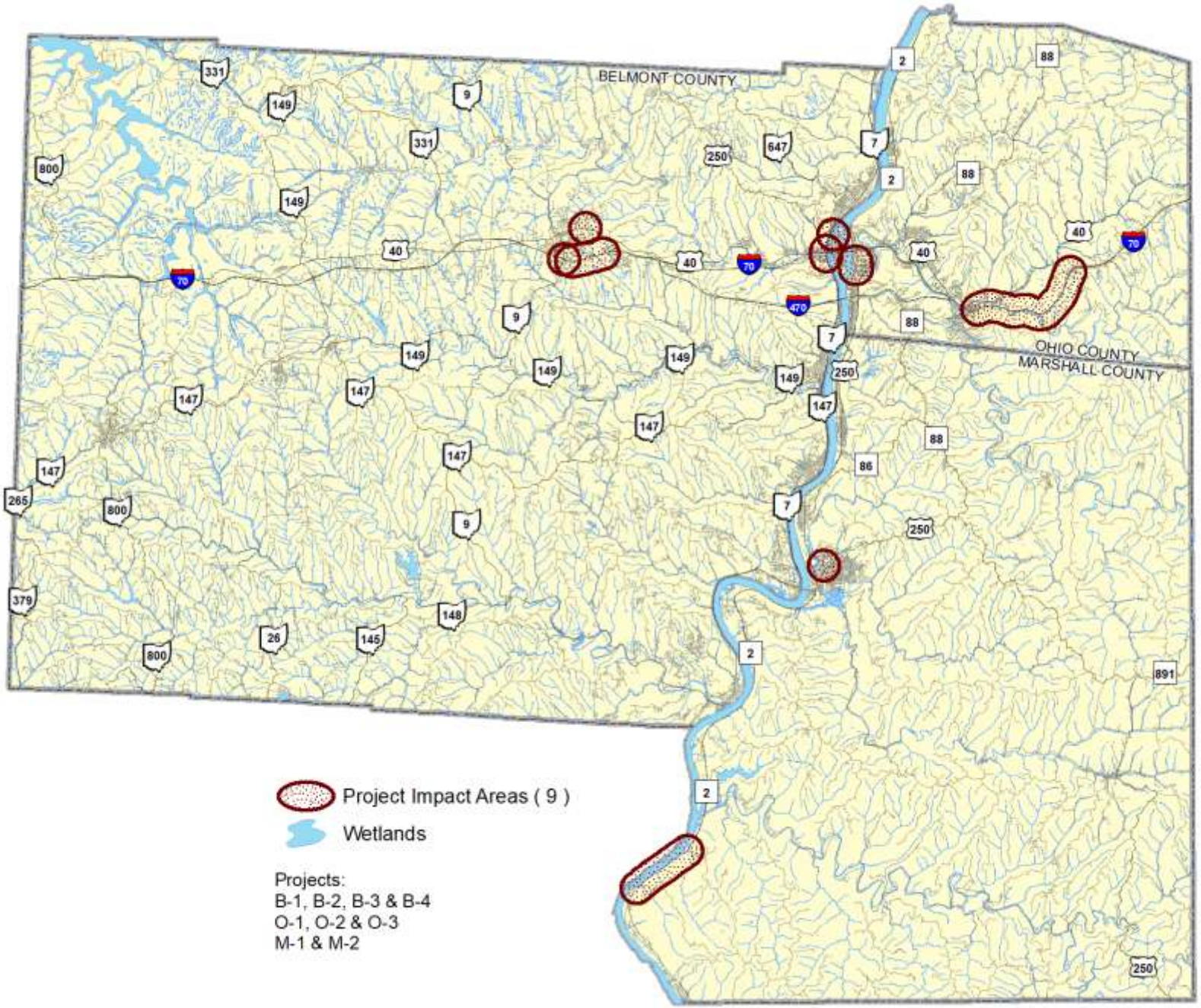


Source: https://www.rivers.gov



Name	Status	County
Indiana bat (Myotis sodalis)	Endangered	Belmont, Ohio and Marshall
Northern Long-Eared Bat (Myotis septentrionalis)	Threatened	Belmont, Ohio and Marshall
Red knot (Calidris canutus rufa)	Threatened	Ohio and Marshall
Fanshell (Cyprogenia stegaria)	Endangered	Marshall
Snuffbox mussel (Epioblasma triquetra)	Endangered	Marshall
Running buffalo clover (Trifolium stoloniferum)	Endangered	Belmont

Source: https://ecos.fws.gov/ecp/



Source: https://www.fws.gov/wetlands/data/mapper.html

APPENDIX G

INTERAGENCY CONSULTATION (IAC) EMAILS

From: Jordan.Whisler@dot.ohio.gov
Sent: Thu 2/25/2021 3:57 PM
To: Ryan Long <ryan.long@dot.gov>; Kane, Mark (FTA) <Mark.Kane@dot.gov>; Southern, Velyjha (FHWA) <velyjha.southern@dot.gov>; Rakesh Sharma <rsharma@belomar.org>; Chris Kinsey <Chris.J.Kinsey@wv.gov>; Andy Johns <Andy.Johns@dot.gov>; maietta.anthony <maietta.anthony@epa.gov>; paul.braun <paul.braun@epa.ohio.gov>; Jason Workman <Jason.Workman@dot.gov>; DAVID.R.FEWELL <DAVID.R.FEWELL@WV.GOV>; Becoat.gregory <Becoat.gregory@epa.gov>; Sam.Granato@dot.ohio.gov; Sedosky, Timothy B <Timothy.B.Sedosky@wv.gov>; Stewart McKenzie <Stewart.Mckenzie@dot.gov>
Cc: Lowe, Abigail (FTA) abigail.lowe@dot.gov
Subject: Interagency consultation for Belomar Regional Council's new LRTP for 2045

ODOT concurs.

Thanks,
Jordan

From: Long, Ryan (FTA) <ryan.long@dot.gov>
Sent: Thu 2/25/2021 12:10 PM
To: Kane, Mark (FTA) <Mark.Kane@dot.gov>; Southern, Velyjha (FHWA) <velyjha.southern@dot.gov>; Rakesh Sharma <rsharma@belomar.org>; Chris Kinsey <Chris.J.Kinsey@wv.gov>; Jordan Whisler <jordan.whisler@dot.ohio.gov>; Andy Johns <Andy.Johns@dot.gov>; maietta.anthony <maietta.anthony@epa.gov>; paul.braun <paul.braun@epa.ohio.gov>; Jason Workman <Jason.Workman@dot.gov>; DAVID.R.FEWELL <DAVID.R.FEWELL@WV.GOV>; Becoat.gregory <Becoat.gregory@epa.gov>; Cc: <Sam.Granato@dot.ohio.gov>; Sedosky, Timothy B <Timothy.B.Sedosky@wv.gov>; Stewart McKenzie <Stewart.Mckenzie@dot.gov>
Cc: Lowe, Abigail (FTA) <abigail.lowe@dot.gov>
Subject: Interagency consultation for Belomar Regional Council's new LRTP for 2045

FTA Region III agrees with the approach as well.
Thanks,

Ryan Long, AICP | Community Planner
U.S. Department of Transportation
Federal Transit Administration, Region III
1835 Market Street, Suite 1910, Philadelphia, PA 19103
P: 215-656-7051 | F: 215-656-7260 | ryan.long@dot.gov

From: paul.braun@epa.ohio.gov
Sent: Thu 2/25/2021 11:06 AM
To: maietta.anthony <maietta.anthony@epa.gov>; Becoat.gregory <Becoat.gregory@epa.gov>; Chandra Inglis-Smith <Chandra.Inglis-Smith@dot.gov>; Rakesh Sharma <rsharma@belomar.org>; Chris Kinsey <Chris.J.Kinsey@wv.gov>; Jordan Whisler <jordan.whisler@dot.ohio.gov>; Andy Johns <Andy.Johns@dot.gov>; Jason Workman <Jason.Workman@dot.gov>; David Fewell <david.r.fewell@wv.gov>; Ryan Long <ryan.long@dot.gov>; Kane, Mark (FTA) Mark.Kane@dot.gov
Cc: Sam.Granato@dot.ohio.gov; Sedosky, Timothy B <Timothy.B.Sedosky@wv.gov>
Subject: Interagency consultation for Belomar Regional Council's new LRTP for 2045

Ohio EPA concurs as well.

Paul J. Braun, P.E.
Air Quality Evaluation and Planning (AQE&P)
Ohio EPA Division of Air Pollution Control
614-644-3734

From: Kane, Mark (FTA) Mark.Kane@dot.gov
Sent: Thursday, February 25, 2021 9:57 AM 11:01 AM
To: Southern, Velyjha (FHWA) <velyjha.southern@dot.gov>; Rakesh Sharma <rsharma@belomar.org>; Chris Kinsey <Chris.J.Kinsey@wv.gov>; Jordan Whisler <jordan.whisler@dot.ohio.gov>; Andy Johns <Andy.Johns@dot.gov>; maietta.anthony <maietta.anthony@epa.gov>; paul.braun <paul.braun@epa.ohio.gov>; Jason Workman <Jason.Workman@dot.gov>; DAVID.R.FEWELL <DAVID.R.FEWELL@WV.GOV>; Ryan Long <ryan.long@dot.gov>; Becoat.gregory <Becoat.gregory@epa.gov>; Cc: <Sam.Granato@dot.ohio.gov>; Sedosky, Timothy B <Timothy.B.Sedosky@wv.gov>; Stewart McKenzie <Stewart.Mckenzie@dot.gov>
Subject: Interagency consultation for Belomar Regional Council's new LRTP for 2045

FTA Region V concurs.

Thanks.

Mark

Mark Kane
Community Planner
Federal Transit Administration
200 West Adams Street, Suite 320
Chicago, IL 60606
312.353.1552

From: Southern, Velyjha (FHWA)
Sent: Thursday, February 25, 2021 9:57 AM
To: Rakesh Sharma <rsharma@belomar.org>; Chris Kinsey <Chris.J.Kinsey@wv.gov>; Jordan Whisler <jordan.whisler@dot.ohio.gov>; Johns, Andy (FHWA) <Andy.Johns@dot.gov>; maietta.anthony <maietta.anthony@epa.gov>; paul.braun <paul.braun@epa.ohio.gov>; Workman, Jason (FHWA) <Jason.Workman@dot.gov>; DAVID.R.FEWELL <DAVID.R.FEWELL@WV.GOV>; Long, Ryan (FTA) <ryan.long@dot.gov>; Becoat.gregory <Becoat.gregory@epa.gov>; Kane, Mark (FTA) <Mark.Kane@dot.gov>; Cc: <Sam.Granato@dot.ohio.gov>; Sedosky, Timothy B <Timothy.B.Sedosky@wv.gov>
Subject: RE: Interagency consultation for Belomar Regional Council's new LRTP for 2045

Good morning All,

I wanted to inform you all that I am the new OH Division representative and I concur with Chandra's statement. Thanks!

Kind Regards,

Velyjha Southern
Community Planner
Federal Highway Administration | Ohio Division
200 N High St # 328 | Columbus, OH 43215
Phone: 614-280-6841
Email: velyjha.southern@dot.gov

From: Johns, Andy (FHWA)
Sent: Thursday, February 25, 2021 6:55 AM
To: Southern, Velyjha (FHWA) <velyjha.southern@dot.gov>
Subject: FW: Interagency consultation for Belomar Regional Council's new LRTP for 2045

From: Inglis-Smith, Chandra (FHWA)
Sent: Tuesday, February 23, 2021 2:09 PM
To: Rakesh Sharma <rsharma@belomar.org>; Chris Kinsey <Chris.J.Kinsey@wv.gov>; Jordan Whisler <jordan.whisler@dot.ohio.gov>; Johns, Andy (FHWA) <Andy.Johns@dot.gov>; maietta.anthony <maietta.anthony@epa.gov>; paul.braun <paul.braun@epa.ohio.gov>; Workman, Jason (FHWA) <Jason.Workman@dot.gov>; DAVID.R.FEWELL <DAVID.R.FEWELL@WV.GOV>; Long, Ryan (FTA) <ryan.long@dot.gov>; Becoat.gregory <Becoat.gregory@epa.gov>; Kane, Mark (FTA) <Mark.Kane@dot.gov>
Cc: Sam.Granato@dot.ohio.gov; Sedosky, Timothy B <Timothy.B.Sedosky@wv.gov>
Subject: RE: Interagency consultation for Belomar Regional Council's new LRTP for 2045

Rakesh,

I agree that a qualitative Transformation Conformity determination for the LRTP is all that's required.

Thank You,
Chandra

Chandra Inglis-Smith
Planner/EC
Federal Highways – WV Division
154 Court Street
Charleston, W.V. 25301
Office Phone: 304-347-5329
COOP Cell : 202-868-0805
Email: Chandra.Inglis-Smith@dot.gov

From: Rakesh Sharma [mailto:rsharma@belomar.org]
Sent: Tuesday, February 23, 2021 10:36 AM
To: Chris Kinsey <Chris.J.Kinsey@wv.gov>; Jordan Whisler <jordan.whisler@dot.ohio.gov>; Inglis-Smith, Chandra (FHWA) <chandra.inglis-smith@dot.gov>; Johns, Andy (FHWA) <Andy.Johns@dot.gov>; maietta.anthony <maietta.anthony@epa.gov>; paul.braun <paul.braun@epa.ohio.gov>; Workman, Jason (FHWA) <Jason.Workman@dot.gov>; DAVID.R.FEWELL <DAVID.R.FEWELL@WV.GOV>; Long, Ryan (FTA) <ryan.long@dot.gov>; Becoat.gregory <Becoat.gregory@epa.gov>; Kane, Mark (FTA) <Mark.Kane@dot.gov>
Cc: Sam.Granato@dot.ohio.gov; Sedosky, Timothy B <Timothy.B.Sedosky@wv.gov>
Subject: Interagency consultation for Belomar Regional Council's new LRTP for 2045

All,

Belomar Regional Council is initiating the transportation conformity interagency consultation for the new Long Range Transportation Plan for 2045.

We are designated as 1997 Ozone standard "Orphan Area". It includes Belmont County in Ohio and Ohio and Marshall Counties in West Virginia. Pursuant to USEPA November 2018 Transportation Conformity Guidance, we are proposing a Qualitative Conformity Determination.

The qualitative conformity determination will be according to the conformity determination criteria as per 40 CFR 93.109 as follows:

Latest planning assumptions are used for the plan and travel demand model.
If needed, in the future, a quantitative emissions analysis can be performed using MOVES3 software.
There are no TCMs in Ohio or West Virginia SIP.
A public review of the plan and the conformity determination will be conducted as per the adopted Public Participation Plan.

MPO requests the interagency consultation for the 1997 Ozone “orphan” area conformity determination via email. A qualitative conformity determination is proposed. The same process was approved and used for the conformity determination of the FY2021-FY2024 TIP in April 2020.

If needed a conference call can be scheduled.

Thank You,
Rakesh Sharma
Transportation Study Director
Belomar Regional Council
304 242 1800

APPENDIX H

STAKEHOLDER LIST

STAKEHOLDER LIST

Last Name	First Name	Job Title	Organization
Hissom	Jill	Director	Barnesville Area Chamber of Commerce
Haning	Anne	Executive Director	Belco Works
Lively	Terry	Engineer	Belmont County
Meyer	Josh	Commissioner	Belmont County Commission
Dutton	JP	Commissioner	Belmont County Commission
Echemann	Jerry	Commissioner	Belmont County Commission
Lorimor	Crystal	Executive Director	Belmont County Community Improvement Corp.
Merry	Larry	Director	Belmont County Port Authority
Butler	Sherri	Assistant Director	Belmont County Port Authority
Gallagher	Vince	President	Bridgeport Chamber of Commerce
Brewer	Jennifer	HR Manager	Cabela's Distribution Center
Ankrom	Tiffany	Clerk/Treasurer/Recorder	City of Benwood
Yates	Walter	Mayor	City of Benwood
Galentine	Greg	Mayor	City of Cameron
Bryan	Nicole	Clerk	City of Cameron
Blazer	Dave	Mayor	City of Glen Dale
Rickman	Janie	Clerk	City of Glen Dale
Sutek	Andy	Service Director	City of Martins Ferry
Davies	John	Mayor	City of Martins Ferry
Goddard	David	Mayor	City of McMechen
Healy	Rick	City Manager	City of Moundsville
Wood	David	Mayor	City of Moundsville
Murphy	Tom	Planning & Zoning	City of St. Clairsville
Thalman	Kathryn	Mayor	City of St. Clairsville
Greenwood	Jeremy	Director of Public Service	City of St. Clairsville
Elliott	Glenn	Mayor	City of Wheeling
Herron	Robert	City Manager	City of Wheeling
Prager	Nancy	ECD Director	City of Wheeling
Slanina	Conrad	City Engineer	City of Wheeling
Thalman	Chad	Vice Mayor	City of Wheeling
Van Vlerah	Jennifer	DAPC Implement Plan/Enforce	Environmental Protection Administration
Braun	Paul	Environmental Specialist	Environmental Protection Administration - Ohio
Stein	Stanley	Chairman	EORTA
Velyjha	Southern	Community Planner	Federal Highway Administration - Ohio
Leffler	Laurie	Division Administrator	Federal Highway Administration - Ohio
Long	Ryan	Community Planner	Federal Transit Administration - Region 3
McKenzie	Stewart	Community Planner	Federal Transit Administration - Region 5
Kane	Mark	Community Planner	Federal Transit Administration - Region 5
Magrone	Ben	Manager	FedEx Freight
Inglis-Smith	Chandra	Transportation Planning Specialist	Federal Highway Administration - West Virginia
Workman	Jason	Director, Office of Program Develop.	Federal Highway Administration - West Virginia
Reager	Scott	Executive Director	Marshall County Chamber of Commerce
Varner	Scott	Commissioner	Marshall County Commission

Frohnapfel	Betsy	Administrator	Marshall County Commission
Gruzinskas	John	Commissioner	Marshall County Commission
Ferro	Mike	Commissioner	Marshall County Commission
Hart	Thomas	Director	Marshall County EMS
Nickerson	Don	Commissioner	Ohio County Commission
Abraham	Zachary	Commissioner	Ohio County Commission
Wharton	Randy	Commissioner	Ohio County Commission
Russell	Randy	Administrator	Ohio County Commission
Vargo	Lou	Director	Ohio County Homeland Security and EMS
Warner	Scott	District Planning Engineer	Ohio Department of Transportation
Granato	Sam	Modeling and Forecasting	Ohio Department of Transportation
Hostin	Juana	Program Coordinator	Ohio Department of Transportation
Whisler	Jordan	MPO Program Manager	Ohio Department of Transportation
Hill	Timothy	Administrator, Office of Environ. Services	Ohio Department of Transportation
Dyer	Chuck	Administrator, Office of Transit	Ohio Department of Transportation
Townley	Jennifer	Deputy Director, Division of Planning	Ohio Department of Transportation
Sidwell	Rich	Co Coordinator	Ohio Valley Trail Association
Wayt	Doug	President	Ohio Valley Trail Partners
Wierzbicki	Jeanette	Executive Director	OMEGA
Weishar	Lisa	Executive Director	OVRTA/EORTA
Ramage	Jack	Executive Director	Project Best
Jefferson	Joshua	Executive Director	Regional Economic Development Partnership
Piko	Valerie	Small Business Coordinator	Regional Economic Development Partnership
O'Leary	Craig	Program Director	Regional Economic Development Partnership
Ratner	Richard	President	Shadyside Ohio Chamber of Commerce
Anderson	Wendy	Executive Director	St. Clairsville Area Chamber of Commerce
Murphy	Kenneth	Mayor	Town of Triadelphia
Griffith	Mark	Mayor	Town of West Liberty
Fordyce	Samantha	Treasurer	Town of West Liberty
McKinley	David	Congressman	United States Congressman - West Virginia
Bunting	Dale	Mayor	Village of Barnesville
Deal	Roger	Village Administrator	Village of Barnesville
DiFabrizio	Vince	Mayor	Village of Bellaire
Wallace	Mike	Administrator	Village of Bellaire
Burkhead	Richard	Fiscal Officer	Village of Belmont
Woods	Ron	Mayor	Village of Belmont
Davis	Dirk	Village Administrator	Village of Bethesda
Burkhead	Samantha	Mayor	Village of Bethesda
Junkins	John	Mayor	Village of Bethlehem
Teasdale	Norma	Acting Mayor	Village of Bridgeport
Kurner	Rick	Acting Mayor	Village of Brookside
Reinacher	Charles	Mayor	Village of Clearview
Vincenzo	Angelo	Mayor	Village of Flushing
Campise	Mike	Mayor	Village of Holloway
Borkoski	Cheryl	Clerk/Treasurer	Village of Morristown
Stitt	Heather	Mayor	Village of Morristown
Davis	Charles	Mayor	Village of Powhatan Point

Newhart	Bob	Mayor	Village of Shadyside
Tipton	Terry	Board of Public Affairs	Village of Shadyside
Kleeh	Chad	Mayor	Village of Valley Grove
Klick	David	Vice President	Wesbanco Bank, Inc.
Evans	W. Franklin	President	West Liberty University
Fewell	David	Deputy Director	West Virginia DEP - Division of Air Quality
Kemper	Matt	Environmental Resources Analyst	West Virginia DEP - Division of Air Quality
Smith	Larry	Title VI Manager - EEO Division	West Virginia Department of Transportation
Graney	Michael	Executive Director	West Virginia Development Office
Sullivan	Kevin	Highway Systems Analyst	West Virginia Division of Highways
Penn	Elwood	Director, Planning Division	West Virginia Division of Highways
Carr	Brian	Acting, Regional Planning Unit Leader	West Virginia Division of Highways
Kinsey	Chris	Statewide Planning Section Head	West Virginia Division of Highways
Sedosky	Timothy	Local Program Services Section Head	West Virginia Division of Highways
Clark	Tony	District Engineer	West Virginia Division of Highways, Region Six
Storch	Erikka	President	Wheeling Area Chamber of Commerce
Clausell	Darryl	President	Wheeling Branch NAACP #3239
Calinger	Manetta	Center of Educational Technologies	Wheeling University
Bush	James E.	Program Manager, LWCF	WV Community Advancement and Development Office
McGarrity	John	Community Development Specialist (LWCF)	WV Community Advancement and Development Office
Ferrell	Jennifer	Director, Community Advancement	WV Community Advancement and Development Office
Balding	Ben	Infrastructure Unit Manager	WV Community Advancement and Development Office
Robinson	Bill	Executive Director	WV Division of Public Transit

Due to non-availability of email addresses, the following shareholders received materials by USPS mail.

Nelson	R.	Representative	UPS Customer Center, Benwood, WV
Veltri	Joe	Representative	UPS Customer Center, St. Clairsville, OH

APPENDIX I

COMMENTS AND RESPONSES

From: WordPress <wordpress@belomar.org>
Sent: Wednesday, April 21, 2021 10:00
To: James Benner <jbenner@belomar.org>; LuAnn Kennedy <lkennedy@belomar.org>; LuAnn Kennedy <lkennedy@belomar.org>
Subject: 2045 Long Range Transportation Plan Comments

Name:	Doug Wayt
E-mail:	DWAYT@FRONTIER.COM
Comments:	As president of Ohio Valley Trail Partners, I submit that we see trails and linkage of trails create so many positive influences on communities.Trail linkages impact local economies and add even more to the need for trail systems. There are many numerous stories nationwide that verify this and show also how trails serve to impact and improve community health as well. We feel very confident that BelOMar recognizes the need for supporting trails and trail developments also.

APPENDIX J

FEDERAL PLANNING FACTORS

Federal Planning Factors

The federal metropolitan transportation planning rules and regulations require that the planning process be continuous, cooperative, and comprehensive, and provide for consideration and implementation of projects, strategies, and services that will address eight factors. The surface transportation act Moving Ahead for Progress in the 21st Century Act (MAP-21) included eight planning factors and set the course for performance based planning. Fixing America's Surface Transportation Act (FAST Act) enacted in December, 2015 introduced two additional planning factors.

The eight planning factors from MAP-21 are:

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

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

3. Increase the security of the transportation system for motorized and non-motorized users.

4. Increase the accessibility and mobility of people and freight.

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

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

7. Promote efficient system management and operation.

8. Emphasize the preservation of the existing transportation system.

In addition to the MAP-21 eight planning factors, FAST Act places emphasis on reducing or mitigating the storm-water impacts on surface transportation and natural disaster risk reduction.

In preparing the final rule, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) have recognized that many small MPOs, such as Belomar, receive limited federal funding from USDOT sources, have very limited staffs, and limited consultant or technical support resources of their own. To that end, efforts were made to provide as much flexibility in the rule as practicable.

A research team for the FHWA funded research report "Performance-Based Planning for Small Metropolitan Areas" concluded that small MPOs have unique characteristics and needs

that may distinguish how they develop effective approaches to performance based planning. Also "Performance based planning for non-TMA MPOs is not simply a more basic version of the approach practiced by MPOs planning for large TMAs. Effective approaches build on the goals and attributes that are often particular to small metropolitan areas and the MPOs that serve them."

It is stated that the "MPO is responsible for developing a planning process that is appropriate for its communities, given the resources and technical capability of the MPO."

Provided below is a brief description of how each planning factor is addressed for the Belomar area.

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

As in many small metropolitan areas, economic vitality of the Belomar area is considered to be directly linked to the transportation system. Accessibility has long been a major concern in advancing economic development initiatives. To address these concerns, Belomar has solicited input from local governments and economic development agencies regarding opportunities for new development. Growth corridors along I-70 and the Ohio River have been identified. Several projects/studies in these corridors are recommended in this plan. Some of these projects are associated with opening up new opportunities for economic development. Additionally, I-70, which passes through the study area, is a major freight corridor. Two projects which will add capacity to the interstate route are recommended. The area is targeted by the energy companies for retrieving natural gas and liquids from the Marcellus and Utica Shale formations. Recommended projects take into consideration the impacts of this growth and anticipated construction of a multi-billion dollar ethane cracker plant in the region. A recently completed "Access Wheeling" Study, in partnership with the City of Wheeling, Wheeling Heritage Corporation and the Transit Authorities, was initiated to support Grow Ohio Valley efforts in improving local economy with local food production for local consumption. The study's recommendations include multi-modal accessibility of the Wheeling CBD to attract young professionals. Vacant historical buildings are converted to upscale apartments to meet housing needs of this group and to make the CBD more vibrant and competitive.

In 1997 West Virginia Legislature created a RT2/I-68 Authority with a mandate to focus on widening West Virginia Route 2 from Parkersburg to Chester to a four-lane highway, and to extend I-68 from North Central West Virginia westward to the Ohio Valley. The authority continues to make progress to meet this mandate. The 2-lane sections of WV2 in southern Marshall County are programmed and funded for a 4-lane upgrade at this time. The I-68 project cost is approaching over one billion dollars and a lack of funds for transportation projects at the state and national level has been the biggest challenge for the authority.

2) Increase the safety of the transportation system for motorized and non-motorized users.

Belomar maintains a five-year database of crashes. High crash locations in the study area are identified in this plan. Addressing safety issues is anticipated to be a high priority on an

ongoing basis. Belomar will work with ODOT and WVDOT to establish safety performance targets, select high hazard locations and appropriate countermeasures. Belomar will also support safety projects and safety initiatives.

3) Increase the security of the transportation system for motorized and non-motorized users.

Bel-O-Mar has participated in efforts to address homeland security at the State and local levels. Interstate 70, a regional evacuation route runs through the region. Belomar coordinates planning activities with the local emergency management agencies (EMAs). All EMAs and Belomar are cooperatively working to develop a hazard mitigation plan for Ohio and Marshall Counties. Consultants prepared a similar plan for the Belmont County. In the short term, projects relating to the installation of security cameras and dynamic message signs have been advanced in the I-70 corridor. Regarding transit, the local transit authorities have installed cameras on the buses to deter and monitor undesirable activity. Additionally, the authorities have implemented security features relating to access of their garage/office facility. Also, GPS units have been installed on buses for tracking and adherence to schedule. Improving security of bike/pedestrian trails will remain a priority in the future. Transit Safety Targets have also been set and progress towards achieving these targets will be monitored in the future.

4) Increase accessibility and mobility of people and freight.

Belomar had taken a lead role in preparing the initial public transportation-human services coordination plans for the local area. Since the initial efforts, RLS & Associates have updated the coordination plans for West Virginia Region X. For Belmont County, a similar plan was completed by National Church Residences. Through these efforts, mobility improvements for certain user groups are expected. Belomar also advocates ADA accessibility and has used suballocated funds to update sidewalks and curb ramps in several Belmont County communities. Regarding freight, Belomar has, and will continue to, survey local companies as a means to identify any impediments or barriers to the movement of freight. Input received is considered in the development of the plan. Specific strategies are included for freight movement in this plan.

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

During the development of the Plan, Belomar did an outline survey of all study area municipal and county governments, and local economic development agencies. Specific questions were asked relating to employment, residential development, committed and expected short term growth, potential long-term growth, and perceived transportation needs of the community. The communities were also specifically asked if they have a comprehensive plan and if a copy of any such plan was available. Only two communities have a comprehensive plan. These plans and survey results were used in developing the traffic zone data and finally the TDM assignment. Belomar used suballocated CMAQ funds to build the very first Park and Ride facility in the region and recently supported the construction of a second facility on I-470.

In addition to the input provided by the survey, Belomar has utilized its Geographic Information System (GIS) for identifying growth and development patterns. Included in the Plan is an illustration which provides slope coverage for the study area. It is used in the development of TAZ statistics. Staff is also facilitating the development of a digital land use layer.

With respect to protecting and enhancing the environment, this Plan includes project overlays on available environmentally sensitive digital databases. The objective is to identify and mitigate any project impact areas early in the planning process. A resource advisory group also reviews all projects in the long range plan and TIP to detect any potential environmental conflict. Promoting energy conservation is generally addressed by level of service analysis which can identify locations with congestion. Appropriate improvements which would enhance traffic flow are then considered. Belomar has also utilized GPS technology in conducting travel time studies. National travel time databases are used to identify locations where travel time is increasing. Travel Demand Management techniques are also considered, and Park and Ride lots are promoted.

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

Multi-modal issues are minimal in the Belomar area, given the lack of a commercial airport and minimal rail service for hauling coal. While the Ohio River provides for significant freight movement, opportunities for a port or intermodal facility have not been fully explored. Truck traffic volume and freight movement related to extraction of natural gas in the area is of concern and is addressed in this plan.

As part of the previous NHS connector study, it was determined that two primary facilities in Belmont County have excellent access to and from the NHS and interstate system, and no specific improvements are needed. In cooperation with ODOT's intermodal facility upgrade project, a third port facility has been identified. The three port facilities are: Marietta Coal Company, Washington Plant Wharf; Oxford Mining Bellaire Terminal Wharf; and MPR Supply Chain Solutions. The MPR transloading facility is expanding to add rail-water and rail-truck transloading service. Anticipated construction of a cracker plant in the region will increase the demand for transloading service.

The intermodal transportation center in Wheeling serves as a hub for transit, multi-use trails, automobile travel, and intercity bus service.

7) Promote efficient system management and operation.

This factor is primarily addressed through level of service analysis and ITS messaging. In addressing financial constraint, it is acknowledged that State controlled funds must first be used to preserve the existing system. Nearly all of the recommendations of the Plan relate to improvements to the existing system as a means to provide for efficient travel.

8) Emphasize the preservation of the existing transportation system.

As noted above, it is acknowledged that State controlled funds must first be used to preserve the existing system. In establishing the financial control totals for improvements in this Plan, funds needed for system preservation were accounted for first.

In addition, FAST Act enacted in December, 2015 added two more planning factors. These are:

i) Improve the resiliency and reliability of the transportation system and reduce or mitigate storm water impacts of surface transportation.

ii) Enhance travel and tourism.

Improve the resiliency and reliability of the transportation system and reduce or mitigate storm water impacts of surface transportation.

Often, a crash or spill temporarily shuts down the effected roadway section. The first responders clear the scene of the crash and/or clean the spill and the traffic moves again. This process takes few hours and travelling public is greatly inconvenienced. The National Infrastructure Advisory Council (NIAC) defined the infrastructure resilience as the ability to reduce the magnitude or duration of disruptive events that is accomplished by anticipating, absorbing, adapting to, or rapidly recovering from the disruption. Transportation infrastructure interact with other sectors (e.g., communication, water distribution, electrical systems, etc.) It is important to understand these relationships. Team work is necessary to manage the disruptive events. Belomar is working with the Emergency Management Agencies (EMAs) to develop hazard mitigation plans. Belomar will also continue to work with EMAs to develop plans and processes to minimize the time of event related disruption on major transportation facilities.

Drainage is addressed as part of maintenance projects. Belomar supports storm water management and advocates use of planning tools to ensure adequate surface water drainage from planned developments. MPO Surface Transportation Program (STP) funds have been used to address known drainage issue on a principal arterial in Belmont County.

Enhance travel and tourism

Belomar will support plans to identify key attractions and way finding signage. Projects for improving visitor services will also be supported. Previously support has been provided for preserving historical facilities that had transportation connection. Transportation funds have been utilized for the restoration of an old B&O Railroad station, West Virginia Independence Hall and Cockayne Farmstead House. Efforts are underway to enhance the streetscape around the Belmont County courthouse in the City of St. Clairsville. The City of Wheeling is also pursuing a gateway park on Wheeling Island near the historic suspension bridge and a welcome center on the CBD side of the bridge. All of these facilities are tourist attraction.