



## Introduction

As a central component of daily life, transportation represents a critical component of an area's social and man-made infrastructure. The *Kanawha-Putnam 2045 Regional Transportation Plan* (RTP) defines the community's strategy for creating a regional transportation system that accommodates the existing mobility needs of residents and looks to the future to anticipate where new needs may arise. In response to federal mandates and the desires of residents, the RTP addresses all modes of transport including automobile, bicycle, pedestrian, transit, and freight movements.

The *Kanawha-Putnam 2045 Regional Transportation Plan* is shaped by several elements, including federal legislation and the direction of state and local agencies. The RTP is governed by the Fixing America's Surface Transportation Act (FAST Act). The goals of the FAST Act include strengthening America's highways, establishing a performance-based program, creating jobs and supporting economic growth, supporting the United States Department of Transportation's aggressive safety agenda, streamlining Federal Highway Administration transportation programs, accelerating project delivery, and promoting innovation. Additionally, the FAST Act is the first federal legislation that provides a dedicated source of federal funding for freight projects. This legislation extends through fiscal year 2020.

## Plan Structure

A typical LRTP consists of two parts: a description of the vision for the region and a detailed list of policies, operational strategies, and projects to achieve the vision. The *Kanawha-Putnam 2045 Regional Transportation Plan* integrates these two parts through the presentation of a series of elements dedicated to specific modes of travel. Each element was not created in isolation, however. Instead, analysis and recommendations for the elements have been created in tandem to produce a series of actions that lead to an integrated intermodal transportation system that efficiently moves people and goods within and beyond the Kanawha Valley. The sections below correspond to the chapters contained in the Plan and provide a brief description of each.

### Plan Development

The *Kanawha-Putnam 2045 Regional Transportation Plan* is the result of an ongoing partnership between local, state, and federal representatives, as well as a dedicated Steering Committee, the public, and key stakeholders. The planning process was designed to foster an open dialogue about existing and anticipated concerns for congestion, safety, access, and connectivity for all modes of transportation.

The Plan Development chapter details the planning process of the *Kanawha-Putnam 2045 Regional Transportation Plan*, starting with an introduction to the relationship between the plan and federal regulations. This chapter also contains a summary of public outreach and previous planning efforts. Finally this chapter outlines the plan vision through a series of goals and guiding statements.

### Guiding Statements

The first step in creating a long range transportation plan is to establish guiding statements that will provide direction for the entirety of the planning process and will serve as a tool for prioritizing recommendations—an important step as the Kanawha-Putnam area faces a shortage of transportation dollars to fund identified needs. Guiding statements for the *Kanawha-Putnam 2045 Regional Transportation Plan* were developed through collaboration with the Steering Committee and reflect the community's vision for the future of the transportation system. The statements combine guidance given through FAST Act federal legislation with localized objectives to provide the framework for a regional growth strategy.



#### **CULTURE AND ENVIRONMENT**

Preserve and sustain the natural and built environments



#### **ECONOMIC VITALITY**

Promote economic development through targeted transportation investments



#### **LAND USE AND TRANSPORTATION INTEGRATION**

Improve the integration of land use and transportation



### **MOBILITY AND ACCESSIBILITY**

Promote an efficient, interconnected, and accessible transportation network



### **SAFETY AND SECURITY**

Improve the travel safety and security in the Greater Kanawha Valley



### **SYSTEM PRESERVATION AND EFFICIENCY**

Support and strengthen the current transportation network

## **Regional Profile**

The Regional Profile chapter aims to provide a comprehensive understanding of current regional characteristics and trends. Population, employment, development, commuting, and socioeconomic trends are all reviewed and summarized as they pertain to transportation planning.

## **Travel Demand Model**

A travel demand model provides the ability to forecast future traffic conditions based on socioeconomic data and transportation attributes. These future condition analyses play an integral role in project selection and prioritization. As in past plan updates, RIC utilized the regional travel demand model to support such analyses and to provide important linkages between land use and transportation. This chapter provides an overview of the travel demand model and the key demographic data used to estimate future highway travel and congestion.

## **Highway Element**

The centerpiece of the *Kanawha-Putnam 2045 Regional Transportation Plan* is the blueprint for improving the vehicular transportation network. The Highway Element assesses existing and projected transportation conditions and forwards a set of recommendations to alleviate congestion. These recommendations are then prioritized based on perceived impacts and benefits.

## **Bicycle and Pedestrian Element**

The Bicycle and Pedestrian Element builds upon the previous planning efforts of Charleston, South Charleston, and Teays Valley. Within the context of these plans, the element evaluates recommendations relative to metrics such as regional connectivity and providing service to disadvantaged populations.

## **Transit Element**

The Transit Element looks at existing fixed route transit provided by the Kanawha Valley Regional Transportation Authority, rail transit provided by Amtrak, and air transit provided through the Yeager Airport. This element also

summarizes current transit initiatives such as transit asset management planning and the push for daily service along Amtrak’s Cardinal route.

### Freight Element

The Freight Element mainly documents trends and issues regarding the interaction between existing infrastructure needs of truck, rail, port, and air users. When possible, the element yields to the recommendations of other plans as they relate to programs, policy measures, and service improvements.

### Safety and Security

This chapter evaluates safety and security by analyzing vehicular, pedestrian, and rail crash trends to identify existing safety issues. These high crash locations were coupled with stakeholder feedback to yield safety and security improvements across the region.

### Financial Element

The *Kanawha-Putnam 2045 Regional Transportation Plan* serves as the region’s long-range transportation strategy. In accordance with state and federal requirements, this plan is also required to be financially constrained. The intent of this process is to demonstrate how the recommended projects can realistically be funded during the life of the plan. To do this, it is essential to pair a reasonable expectation of future funding levels with a series of estimated project costs, and to have a consistent set of assumptions that address needs for all modes of travel. The financially constrained plan allows RIC, member jurisdictions, and supporting agencies to focus on near-term opportunities and to identify strategies that translate into plan implementation. Chapter 9 summarizes the financial constraint methodology and results. This chapter draws from the recommendations and prioritization in each of the modal recommendations chapters.

Where bicycle and pedestrian facilities have been recommended on a proposed roadway improvement project, that cost is included in with the overall project. These projects are assumed to occur as components of the roadway improvement, and as such were not prioritized separately. Independent bicycle and pedestrian improvements have been prioritized. Revenues have also been estimated for bicycle and pedestrian projects. These projects have not been individually financially constrained, to allow for flexibility in their advancement and implementation. Transit costs and revenues are maintained by KVRTA and are not prioritized within the RTP.

The tables and figures on the following pages identify the financially constrained roadway projects for the *Kanawha-Putnam 2045 Regional Transportation Plan*. Financially constrained projects include those projects that already have funding allocated through the 2017-2022 State Transportation Improvement Program, as well as those projects where funding is estimated to be available through the 2045 horizon year of the RTP. Projects are moved forward for funding based on the results of the project prioritization effort as well as their estimated year of expenditure cost. Anticipated projects to be funded during the RTP are organized into a series of interim years – 2017-2022 (Committed Projects), 2023-2025, 2026-2035, and 2036-2045. Projects that cannot be funded given the projected available revenues are part of the unconstrained vision of the RTP.

## Committed Roadway STIP Projects, 2017-2022

ID	FACILITY		PROJECT COST
EC-1 EC-9	Interstate 64 Widening + Nitro Bridge	Interstate 64 will be widened from 4 to 6 lanes between just east of the I-64/US 35 Interchange (Exit 40) at Crooked Creek to east of the Nitro Interchange (Exit 45) in Putnam County. This project also includes a new second truss bridge over the Kanawha River. Once completed, this project will add capacity and ease travel at one of the region's greatest existing bottlenecks	\$72,054,800
EC-2	Hurricane (WV 34) Signal	While alternatives are still being explored, the intersection of Hurricane Creek Road and Teays Valley Road (WV 34) is slotted for intersection improvements. Current discussions include the addition of a right turn lane from Hurricane Creek Road to Teays Valley Road, as well as a westbound receiving lane on Teays Valley Road.	\$960,000
EC-5A EC-5B EC-8	Jefferson Road (WV 601)	Jefferson Road is currently a 2-3 lane facility and is anticipated to be widened to 4-5 lanes. The project widening includes the addition of a bicycle and pedestrian path, as well as a bridge over Davis Creek, Kanawha Turnpike, and CSX railroad. Right-of-way acquisition is anticipated to begin in early 2018. This project will not only improve existing and future roadway congestion, but also enhance safety and mobility.	\$55,766,560
PC-1	New US 35	New US 35 is a new 14.6 mile 4-lane divided facility spanning from Buffalo Bridge to the Mason County line and has an anticipated completion in 2019. Completion of the roadway will provide greater mobility for national, state, and local freight, as well as open the door for new economic development.	\$73,136,250
	Dunbar DMS	The Dunbar Dynamic Message Sign will be installed on Interstate 64 to keep motorists informed about incidents and expected travel times.	\$720,000

**2023-2025 Financially Constrained Projects**

ID	FACILITY	PROJECT DESCRIPTION	2017 PROJECT COSTS	YOE ANTICIPATED COSTS
KC-4	US 119 (Corridor G)	Widening of US 119 northbound from Lucado Rd to MacCorkle Ave	\$6,272,000	\$8,422,000
PC-U1	Interstate 64	Widening of I-64 to 6-lanes	\$37,525,000	\$50,383,000
PC-5	Teays Valley Rd (WV 34)	Development of right-stacking turn in front of West Teays Elementary School and extending it along school property to allow for max. vehicle egress	\$337,000	\$453,000
PC-6C	Teays Valley Rd (CR 33) & Scott Ln	Addition of a traffic signal and left-turn lanes in both directions on CR 33	\$269,000	\$361,000
PC-4B	Midland Trl (WV 34)	Construction of right-turn stacking lanes in front of Hurricane Middle and High Schools	\$247,000	\$332,000

## 2026-2035 Financially Constrained Projects

ID	FACILITY	PROJECT DESCRIPTION	2017 PROJECT COSTS	YOE ANTICIPATED COSTS
PC-6A	Teays Valley Rd (CR 33)	Widening of Teays Valley Rd	\$2,839,000	\$4,908,000
CL-8	Goff Mountain Rd/Big Tyler Rd (WV 622)	Widening of WV 622 from 3 lanes to 5 lanes	\$51,733,000	\$89,426,000
KC-2	Goff Mountain Rd/Big Tyler Rd (WV 622) & Cross Lanes Drive/Washington St W (WV 62)	Improvement of intersection of WV 622 and WV 62 and addressing congestion issues	\$5,562,000	\$9,615,000
SH-A	MacCorkle Ave (US 60)	Operational improvements for both motorized and non-motorized users	\$3,773,000	\$6,522,000
KC-6	US 119 (Corridor G) Comprehensive Cost	Widening and access management improvements on US 119 from the Jefferson Rd interchange to Emerald Rd	\$29,467,000	\$50,937,000
KC-5	US 119 (Corridor G) Comprehensive Cost	US 119 widening	\$41,065,000	\$70,985,000
PC-2	Winfield Rd (WV 817)	Addition of center-turn lane and drainage on WV 817 from the Winfield Bridge to Winfield High School	\$6,745,000	\$11,659,000
KC-8D	Dupont Ave (US 60)	Improvements along US 60	\$5,680,000	\$9,818,000
PC-4A	Teays Valley Rd (WV 34)	Right-in/right-out connector road between Hurricane Creek Rd and Washington Ave in Hurricane via Davis Ct	\$459,000	\$793,000
SH-C	Ford St, Vince St, Greenway Ave	Conversion of N Ford and N Vine into one-way pairs as well as converting S Vine and S Greenway to one-way pairs, connecting to Pennsylvania Ave	\$4,063,000	\$7,023,000
TV-4	Mt. Vernon Rd	Upgrading and Widening of Mt Vernon Rd	\$5,556,000	\$9,604,000

### 2036-2045 Financially Constrained Projects

ID	FACILITY	PROJECT DESCRIPTION	2017 PROJECT COSTS	YOE ANTICIPATED COSTS
PC-3	Interstate 64	Widening of I-64 from 4 to 6 lanes between Cow Creek Rd and WV 34	\$35,029,000	\$92,250,000
TV-5	Sleepy Hollow Rd	Widening and access management improvements on Sleepy Hollow Rd	\$6,148,000	\$16,191,000
KC-8A	Dupont Ave (US 60)	Improvement of mobility and safety along corridor	\$37,041,000	\$97,549,000
TV-4	Mt. Vernon Rd	Upgrading and Widening of Mt Vernon Rd	\$5,556,000	\$14,632,000
TV-1	WV 34-Teays Valley Interchange	Addition of dedicated right-turn lane onto I-64 on ramp southbound on Teays Valley Rd Interchange	\$329,000	\$866,000
SH-B	MacCorkle Ave (US 60) & Dunbar Toll Bridge	Widening of exit ramp to allow two-way traffic; repair and improve sidewalks and continue bicycle lane; move utilities underground	\$4,123,000	\$10,858,000
KC-3	Washington St, W (WV 62)	Addition of left-turn lane from Washington St W onto Woodrum Ln in West Charleston	\$710,000	\$1,870,000
PC-9	Great Teays Blvd/Hillsdale Cir & Teays Valley Rd	Offset intersection; possibly construct a roundabout	\$700,000	\$1,843,000
KC-8C	Dupont Ave (US 60)	Addition of a center-turn lane from Sycamore Rd to Britt Hollow	\$6,816,000	\$17,950,000
KC-7	Lens Creek Rd (WV 94)	Widening of corridor by creating truck passing lanes in various sections	\$5,562,000	\$14,648,000
KC-9	Greenbrier St (WV 114)	Widening of Greenbrier St	\$2,801,000	\$7,377,000
CL3 & CL7	Intersection of WV 622 & Brick Lane + Access Management	Improvements to WV 622 and the unsignaled intersection at Brick Ln	\$2,023,000	\$5,328,000
PC-8A	Charleston Rd (WV 62)	Widening on WV 62 and WV 25	\$1,893,000	\$4,985,000

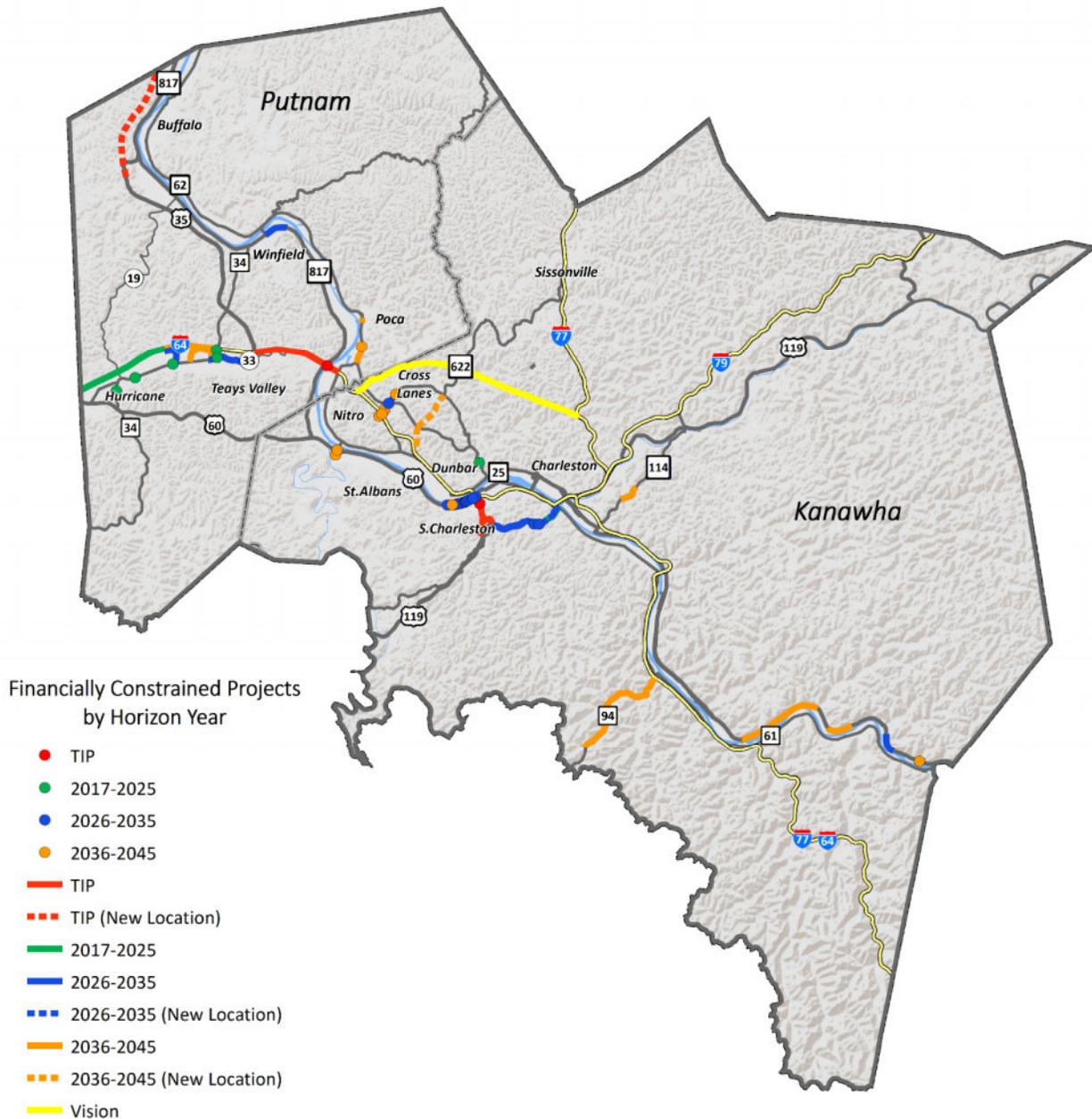
## 2036-2045 Financially Constrained Projects Continued

ID	FACILITY	PROJECT DESCRIPTION	2017 PROJECT COSTS	YOE ANTICIPATED COSTS
SA	St. Albans RR Crossing Study Cumulative Cost	Addition of turn lanes and improvement of accessibility in the St. Albans area on 3 <sup>rd</sup> St	\$11,342,000	\$29,870,000
PC-10	Charleston Rd (WV 62) & Dairy Rd	Evaluation of signal and turning movement operations	\$10,000	\$26,000
CL-2	Goff Mountain Road Rd (WV 622) & I-64 Ramp Intersection	Addition of a short raised median north of I-64 ramp intersection	\$42,000	\$111,000
CL-6	Old Goff Mountain Rd/Gatewater Rd	Conversion of roads to a one-way loop	\$1,418,000	\$3,734,000
PC-8B	Main St (WV 62)	Selective widening on WV 62 from the Town of Poca	\$1,893,000	\$4,985,000
KC-8B	Dupont Ave (US 60)	Improvement of traffic flow, enhancement of turning movements, and increased safety along US 60 from Kelly's Creek Rd to the town of Montgomery	\$4,544,000	\$11,967,000
CL-4	Big Tyler Rd (WV 622) & Kroger Driveway	Construction of an exclusive right- turn lane at Kroger entrance	\$94,000	\$248,000
PC-6D	Friendship Ln	Realignment of Friendship Ln to create an intersection	\$167,000	\$440,000
CL-1	Goff Mountain Rd (WV 622) & New Goff Mountain Rd	Lengthen right-turn lane on New Goff Mountain Rd	\$417,000	\$1,098,000
KC-U1	Institute Connector	Construction of a 2-lane highway facility from I-64 to WV 62	\$27,180,000	\$71,579,000

### Unconstrained Vision Plan Projects

ID	FACILITY	PROJECT DESCRIPTION	2017 PROJECT COSTS	2046 ANTICIPATED COSTS
KC-U2	Northern Connector	Construction of new 4-lane facility	\$139,870,000	\$474,209,000

### Financially Constrained Projects by Horizon Year



## Plan Performance

This chapter functions as a tool for measuring and evaluating both existing congestion and the performance of the future roadway network. The first section of this chapter summarizes the key performance measures, management strategies, and planning processes used in development of the Congestion Management Process (CMP). The second section of this chapter details the performance of the financially constrained recommendations of the *Kanawha-Putnam 2045 Regional Transportation Plan* and their effectiveness in reducing congestion and vehicle miles traveled.

MAP-21 and the FAST Act place an emphasis on performance-based planning. In order to carry forward the guidance of these pieces of legislation, FHWA is in the process of developing a series of performance measures which will be implemented at the state and metropolitan levels. As these performance measures are identified, they will be incorporated into the RTP and TIP development process.

The RIC CMP has attempted to identify a series of potential performance measures that can help serve as a guide as formal performance measures are introduced. The CMP performance measures were selected to address the existing conditions for the multimodal network the region. The measures are organized into the following major categories:

- Safety Performance Measures
- Roadway Capacity Performance Measures
- Public Transit Performance Measures
- TDM Performance Measures

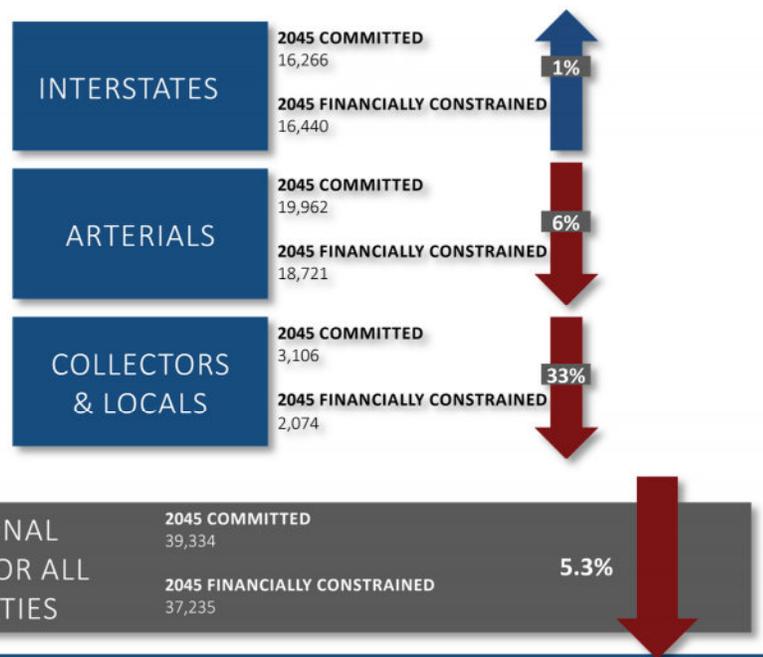
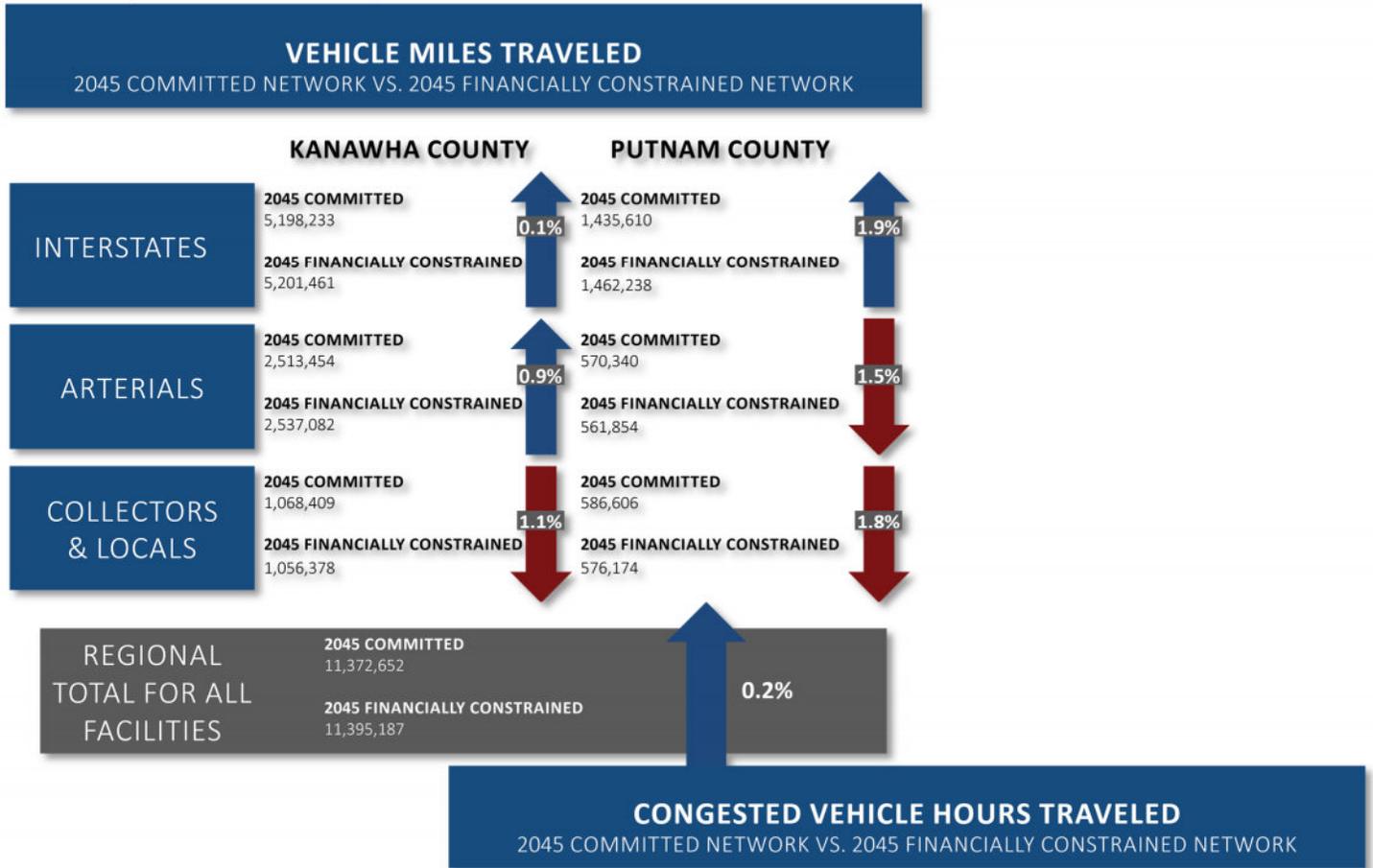
The Existing Congestion Management Performance Measures table on the next page provides insight on the metrics that can be measured to respond to upcoming federal performance measures

The *Kanawha-Putnam 2045 Regional Transportation Plan* also places an emphasis on understanding how the recommended projects will affect the performance of the future transportation network. While the addition of the recommended projects will result in an increase in vehicle miles traveled for some portions of the two-county area, there is anticipated to be a reduction of vehicle hours traveled for non-interstate roadways. These two indicators combine to demonstrate that overall delay is decreasing for the network. The figures on page xiii illustrate these projected trends.

### Existing Congestion Management Performance Measures

CMP PERFORMANCE MEASURES		
<b>Safety Performance Measures</b>		
Number of Fatalities	32 total fatalities	
Fatality Rate	1.09 per 100 million VMT	
Number of Serious Injuries	185	
Serious Injury Rate	5.81 per 100 million VMT	
Non-Motorized Safety (Pedestrian and Bicycle Fatalities)	17 total fatalities	
Number of School Hot Spot Locations	<ul style="list-style-type: none"> <li>● Winfield High School</li> <li>● Hurricane Middle School</li> <li>● Hurricane High School</li> <li>● West Teays Elementary School</li> <li>● Poca Middle School</li> </ul>	When discussing the CMP process with stakeholders, their primary concern was congestion occurring around schools. This list of hot spots includes the schools within the study area in which the RTP recommends transportation improvements to alleviate congestion.
<b>Roadway Capacity Performance Measures</b>		
Over Capacity Centerline Miles on CMP Network	31.9 miles	This number is out of 1,024 total centerline miles included in the CMP network, meaning only 3% of the entire network is operating over the design capacity.
Over Capacity Centerline Miles on Interstates	18.2 miles	
Over Capacity Centerline Miles on Other Routes	13.7 miles	
Average Interstate Volume-to-Capacity Ratio	0.57	
Average NHS Routes Volume-to-Capacity Ratio	0.20	
Average Other Routes Volume-to-Capacity Ratio	0.49	
<b>Public Transit Performance Measures</b>		
Percent of Congested Roadway Centerline Miles with Transit Service	6.5	Kanawha Valley Regional Transit Authority covers 913 square miles in Kanawha County and provides approximately 200 centerline miles of fixed route service. While annual ridership and passenger trips per revenue hour have slightly decreased since the end of the recession, KVRTA is still functioning as the highest used transit authority in the state. The Tri-State Transit Authority garnered an annual ridership below 1 million and West Virginia University's PRT serves slightly less passengers per year (2,349,023).
Transit Passenger Trips per Revenue Hour (2015 National Transit Profiles)	16.2	
Transit Annual Ridership (2015 National Transit Profiles)	2,705,123	
<b>TDM Performance Measures</b>		
Percent of Population Carpooling – Kanawha	12%	In the State of West Virginia approximately 10.1% of workers over 16 years of age commute to work in a carpool. Nationwide, 9.5% of the working population over 16 commute to work in a carpool.
Percent of Population Carpooling – Putnam	9%	

## Financially Constrained Project Performance



## Air Quality

The Air Quality element outlines the National Ambient Air Quality Standards, as well as the background and history of the region's nonattainment and maintenance status. This chapter also details the interagency consultation that took place during the plan development.

## Appendix

The Kanawha-Putnam 2045 Regional Transportation Plan is being supported by a series of items within the Appendix, including the following items:

- Public Outreach Summary – a compilation of agendas, notes, and materials from the RTP's outreach efforts
- Environmental Considerations – a review of recommended projects with environmental justice and natural environmental features
- Travel Demand Model Documentation – a technical review of the methodology and assumptions used in the completion of the travel demand model
- Congestion Management Process – the full report documenting RIC's Congestion Management Process

## Conclusion

The *Kanawha-Putnam 2045 Regional Transportation Plan* provides a vision for transportation recommendations that considers existing and future needs and priorities for all travel modes. Working with stakeholders and the general public, the creation and review of a financially constrained plan helps to ensure that the prioritized projects can reasonably be funded and implemented during the life of the RTP. The region has many identified transportation needs, not all of which can be funded using the currently projected revenue streams. As projects move forward into funding and implementation, RIC will work with WVDOT and FHWA to determine how best to advance recommended projects. Project priorities will be reassessed through future planning cycles as new data becomes available. This dynamic process will help the Kanawha-Putnam region continue to effectively address its transportation needs both now and into the future.