The Cities of Ranson and Charles Town

Transportation Development Fee Study

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City of Ranson

City of Charles Town

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SECTION 1: INTRODUCTION

This report summarizes the technical methodologies and assumptions used to estimate a transportation development fee for Ranson and Charles Town, West Virginia. The region has experienced development pressures in recent years and significant growth is expected over the next 20 years according to *Direction 2035*, the current Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO) Long-Range Transportation Plan (LRTP). With limited state funding available for local transportation improvements, a transportation-specific development fee has been identified as one possible method to assist in funding key transportation infrastructure improvements that would support regional access and reduce congestion. The transportation development fees would be implemented as municipal fees as enabled by West Virginia Code §8-13-13, which provides that every municipality has the plenary power and authority to impose an ordinance fee to support municipal services including the maintenance and improvement of streets within its jurisdiction.

The fee structure was developed through a cooperative effort involving the West Virginia Department of Highways (WVDOH), HEPMPO, county and city staff with the assistance of a consultant. The following key principles were used to guide the development of the fee structure:

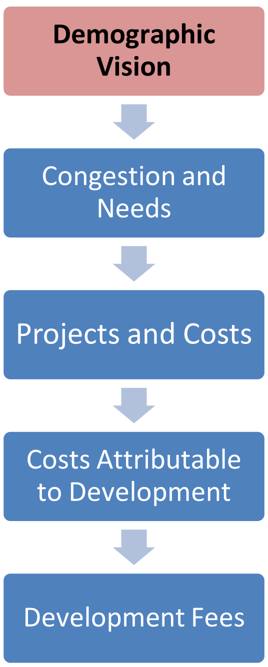
- Legally and technically defensible
- Financially constrained
- Related to "real" project needs
- Fair and consistent
- Simple to administer

The primary steps to estimate the transportation development fee structure included estimating a "build-out" growth scenario, analyzing roadway congestion needs, identifying potential transportation projects to address those needs, allocating project costs to new development, and estimating the fee structure for different land use types. Each of these steps and the resulting fee structure is described within this technical report. Appendices have been included providing additional information and technical details for reference. Appendix D provides a two page overview of the fee structure that can serve as a primary distribution resource.

To ensure the analysis was reasonable and defensible, this study included data collection efforts to obtain traffic counts, interactions with city staff to identify developments that have been previously proposed or discussed, use of the regional travel demand model to estimate traffic congestion, and use of national trip generation references to assist in the development of the fee structure. The project identification process was based on a thorough review of congestion, mobility and safety needs within the urban growth area. The fee structure has included adjustments to ensure that new development is fairly assessed their portion of project costs. The analyses have included methodologies to account for existing congestion levels and the current and future congestion burden due to regional through travel.

Future updates to this report may be warranted as updated projects lists, costs and development growth become available. It is the hope of both cities that this report and the projects included are not only used for fee development but also used as a long term plan for identifying key needs and evaluating alternative options to improve the transportation infrastructure in the region.

SECTION 2: DEVELOPING A DEMOGRAPHIC BUILD-OUT SCENARIO



The transportation development fee calculations are based on a forecast demographic "Build-out" scenario for Ranson and Charles Town. The forecasts account for growth within and outside the urban growth boundary. The demographic forecasts are used in the fee calculation process as follows:

- Affects the analysis of transportation congestion and needs
- Used to determine trip growth and cost per trip end values

The demographic data is translated into vehicle trips and traffic volumes using the HEPMPO regional travel model. This model was also used to support the development of the regional LRTP covering the three counties within the MPO (Jefferson, Berkeley and Washington counties).

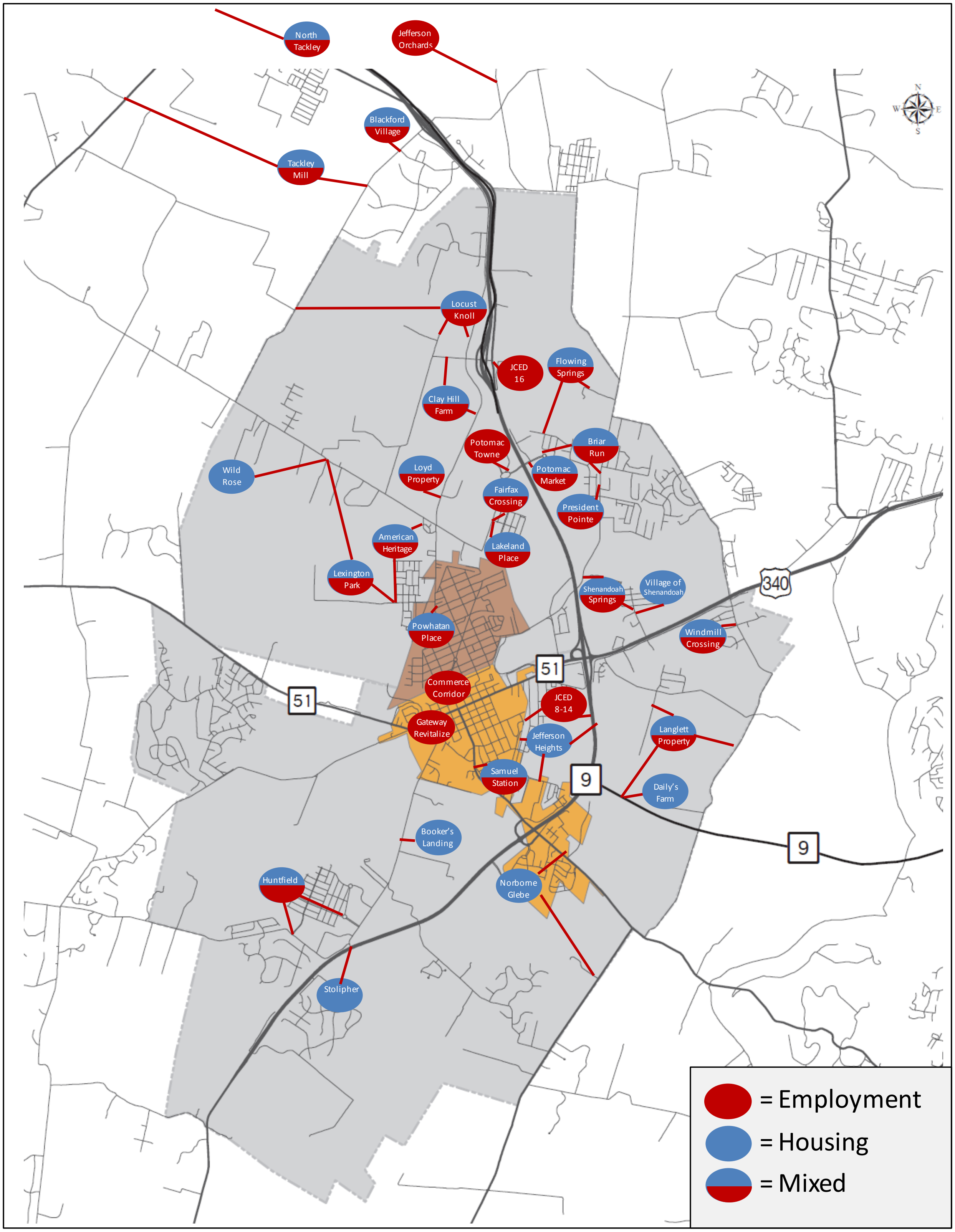
The development of the demographic forecasts required significant input from staff in each city. The term "Build-out" is often correlated with a scenario to develop all available (e.g. "developable") land based on assumed densities, possibly from zoning parameters. For this study, the "Build-out" scenario is assumed to consist of all land development that has been identified or discussed in some form within each city's planning department. The exact timing of these developments is unknown, especially under the current economic times. However, for estimating the transportation development fee, it is assumed that all identified development would be fully completed. This section provides an overview of the key demographic assumptions used for the study.

GROWTH ASSUMPTIONS FOR RANSON AND CHARLES TOWN

The consultant team worked closely with Ranson and Charles Town planning staff to review and identify potential developments in the study area. This included input from the Jefferson County Development Authority (JCDA) on potential commercial developments in the region. Exhibit 2.1 summarizes key development locations that have been identified and included in this fee study. For the "Build-out" scenario, it was assumed that all of these developments would be completed. A 2010 base year analysis was estimated to allow for computations of new growth added to the region. The 2010 base year used the demographic assumptions developed for the HEPMPO LRTP, *Direction 2035*. Some adjustments were made to these assumptions based on recently completed developments.

For each of the identified developments, available information was collected on zoning density categories, potential splits between residential and commercial uses, and the approximate number of dwelling units and commercial square footage. These numbers were in-turn used to estimate the demographic input variables to the regional travel model (households, retail employment, service employment, other employment) using available conversion rates from national and local sources. Exhibit 2.2 summarizes the demographic inputs to the travel model for each identified development. In total, over 22,000 households and 28,000 employees were added as part of the "Build-out" scenario. These assumptions were used to estimate potential transportation needs over the long-term and to estimate a per trip fee cost.

Exhibit 2.1: Identified Future Development in Ranson and Charles Town



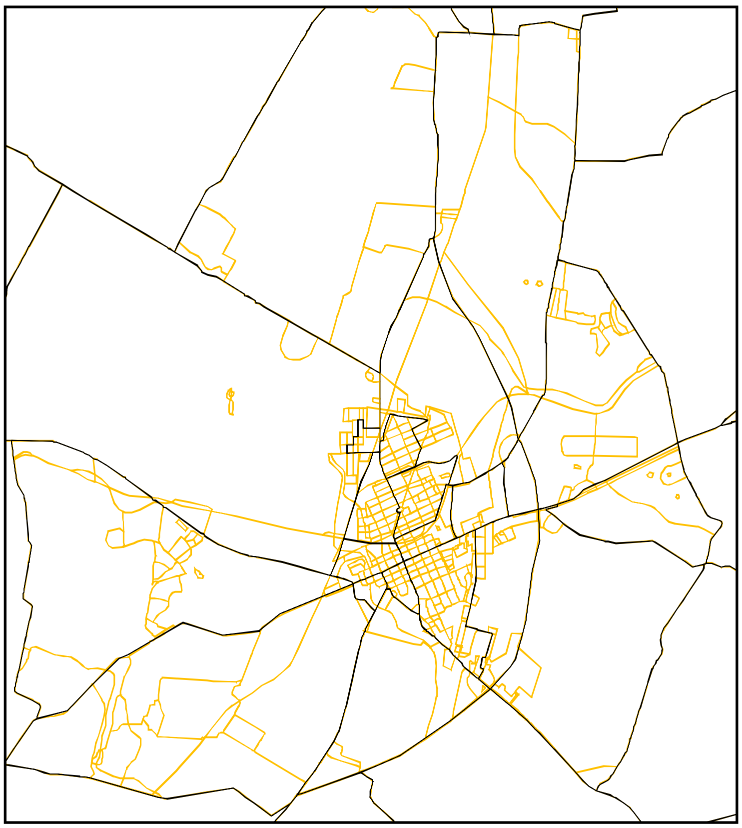
* *JCED refers to commercial lot sites obtained from Jefferson County Economic Development (now JCDA)*
** *Red lines indicate assumed development loading points onto the transportation network*

Exhibit 2.2: Development Assumptions on Households and Employment

Scenario	Households	Employment
2010 Travel Model Base Year	**8,647**	**15,015**
+		
RANSON Assumed Build-Out Growth		
American Heritage	655	444
Flowing Springs	597	8
Shenandoah Springs	434	218
Village of Shendoah Springs	296	-
Tackley Mill	1,861	182
Blackford Village	500	891
Tackley Mill North	390	1,782
Fairfax Crossing West (North Section)	-	1,193
Fairfax Crossing West (South Section)	800	547
Wild Rose	25	-
Lloyd Property	1,800	1,004
Clay Hill Farm	656	2,786
Lexington Park	3,106	2,510
Lakeland Place	510	88
Presidents Pointe	1,031	284
Briar Run	260	19
Potomac Marketplace	1,774	905
Potomac Town Center	-	1,360
Jefferson Orchards	-	7,722
Locust Knoll	197	936
Commerce Corridor	26	1,091
Powhatan Place	120	100
JCED - Sites 1-7	-	-
JCED Site 16	-	87
Charles Town Assumed Build-Out Growth		
Village of Samuel Station	5	18
Jefferson Heights	227	-
Langlett Property	950	665
Windmill Crossing	66	665
Huntfield	3,200	190
Norborne Glebe	1,000	612
Gateway Revitalization	-	500
Stolipher annexation	1,100	673
Booker's Landing	82	-
Daily Farm	890	545
JCED Site 8-14	-	901
Total Added Build-Out	**22,558**	**28,927**
=		
Forecast Build-Out Year	**31,205**	**43,942**
Comparison to HEPMPO LRTP Assumptions For 2035		
2035 LRTP Assumed Forecast	*16198*	*23483*
Avg Annual Growth from 2010	*3%*	*2%*

Each development was associated with a traffic analysis zone in the transportation model. The original HEPMPO travel model has a coarse zone system in the Ranson and Charles Town area that makes it difficult to code existing and future demographic information and represent its potential loading points to the highway network. As a result, the travel model zone system was enhanced for this study. This included sub-dividing traffic zones and revising loading points as illustrated in Exhibit 2.3. The disaggregation of zones were in most cases consistent with CENSUS Block-Level boundaries, allowing for the use of CENSUS data to assist in demographic allocation for existing land use. Additional model improvements to enhance capacity and congestion analyses in the study area are discussed in Section 3.

Exhibit 2.3: Enhancements to Existing Model Traffic Zone System



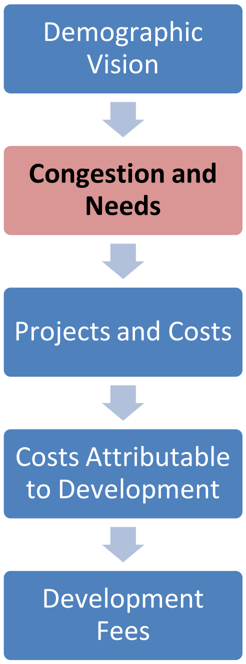
* Black boundaries illustrate the original HEPMPO zones; Orange boundaries represent new zone system

Growth Assumptions For Areas Outside of Ranson and Charles Town

The development of a "Build-out" scenario was focused on the Ranson and Charles Town urban growth boundary. However, the study area is significantly impacted by travel from those outside the region including high levels of through traffic on the Route 340 and Route 9 corridors.

To reflect the potential growth of these external influences, the HEPMPO LRTP 2035 demographic forecasts were used for all areas outside of the study area. These forecasts were developed through a "top-down" approach and discussions with key stakeholders involved in the long range planning process for the MPO.

SECTION 3: CONGESTION ANALYSIS



The congestion analysis was used to identify transportation needs, which were then used by project stakeholders to determine transportation projects within the region. The congestion analyses were also used to develop existing and future performance measures that were used in the development of the fee structure. This included the estimation of project costs attributable to future development, which accounted for existing congestion levels and the impacts of regional through travel on congestion.

The analysis process occurred in several key steps. First, data was collected on the transportation system. This included a roadway inventory to identify the physical characteristics (e.g. lanes, intersection control device, speeds, etc.) of each roadway segment. The WVDOH conducted traffic counts at key locations that assisted in determining existing demand and congestion levels on primary roads.

The HEPMPO regional travel demand model was then updated to improve applicability and performance for this study. These updates included an enhanced roadway network and demographic zone structure as illustrated previously in Exhibit 2.3.

Finally, the travel model was used to estimate future congestion levels based on the forecasted demographic scenario from Section 2. These analyses were integrated with other insights and observations from stakeholders involved in the development of this study. Key roadway corridors were assessed to determine congestion needs and potential projects. This section provides an overview of the data and analysis results.

DATA COLLECTION AND TRAFFIC COUNTS

Roadway and traffic data was collected to support the update of the travel model and congestion analyses. A field inventory was collected of the roadway characteristics. Appendix A provides a summary of the field notes including information on the number of lanes, intersection control devices, intersection turn lanes and observed speed limits. Verifications and adjustments to the data assumptions were also made based on the satellite imagery within the Google Map web system. The data was transferred to the travel model network as attribute variables and was used to estimate congestion measures.

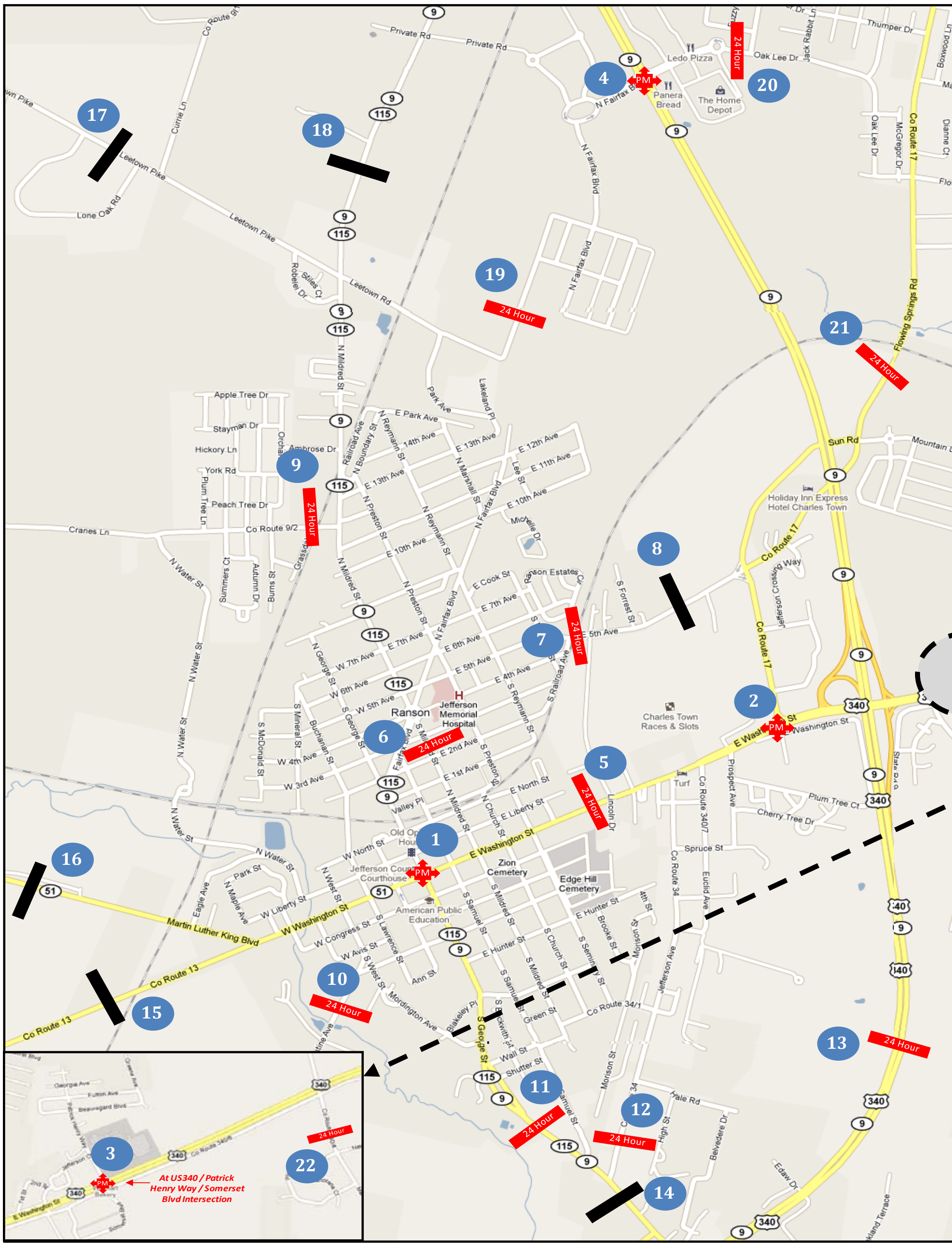
As part of this study, 2008 traffic count data was compiled from WVDOH. In addition, this study included the collection of additional 24-hour tube counts on key roadways in Ranson and Charles Town and four PM peak hour intersection counts at select locations. The counts were completed in October of 2010. The data has been summarized in this section and may serve as a valuable source of information for other traffic studies within the region.

Exhibit 3.1 summarizes the count locations and associated identification (ID) numbers which relate to the traffic count tables that follow. Exhibit 3.2 summarizes the weekday, peak hour and average annual daily (AADT) traffic volumes for locations where 24-hour tube counts were conducted. Exhibit 3.3 summarizes the PM peak hour intersection counts.

Exhibit 3.1: Traffic Count Location Identification Numbers

Legend:

- = Hourly and Vehicle Class Counts (May-Aug 2008)
- 24 Hour = 24-Hour Tube Counts (Oct 2010)
- PM = PM Peak Intersection Counts (Oct 2010)
- 1 = ID of Count



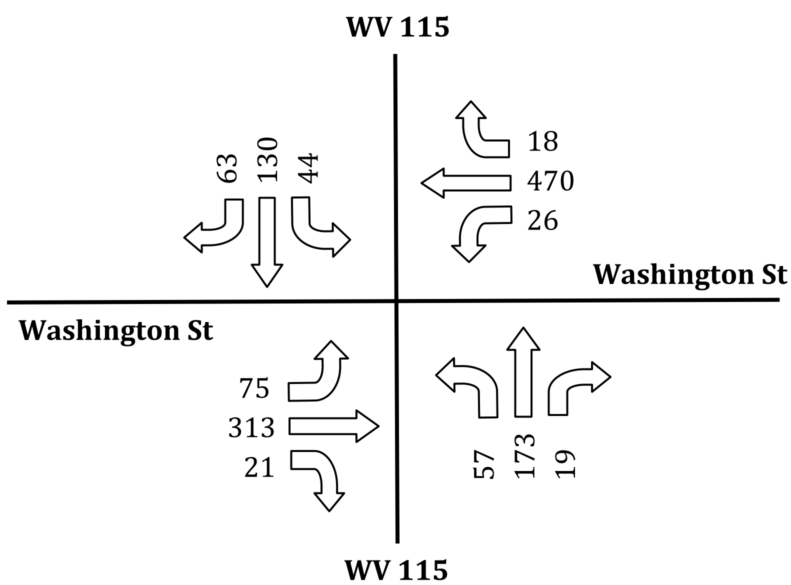
Base map from Google Maps

Exhibit 3.2 Traffic Count Volumes for Each Count ID Location

ID	Location	Year Count	Direction	AM Peak Hour	PM Peak Hour	Daily Total	AADT
5	East Washington Street *East of Court Street*	2010	WB	470	692	8192	
			EB	564	609	8435	
			Both	**1034**	**1301**	**16627**	**14087**
6	Mildred Street *North of 2nd Avenue*	2010	NB	121	141	1618	
			SB	120	121	1611	
			Both	**241**	**242**	**3229**	**3006**
7	East 5th Street *East of Railroad Avenue*	2010	WB	410	655	7737	
			EB	468	654	7596	
			Both	**846**	**1252**	**15333**	**14275**
8	5th Avenue *West of Co. Route 17*	2008	**Both**	**694**	**1219**	**17158**	**15102**
9	Cranes Lane *West of WV 115*	2010	WB	55	138	1194	
			EB	83	87	1226	
			Both	**138**	**225**	**2420**	**2253**
10	St. Augustine Avenue	2010	NB	203	220	2110	
			SB	190	189	2162	
			Both	**393**	**409**	**4272**	**3619**
11	WV 115 *North of Samuel Street*	2010	NB	222	323	3279	
			SB	232	235	3355	
			Both	**424**	**557**	**6634**	**6176**
12	Co. Route 34 *North of State Route 115*	2010	NB	226	279	3240	
			SB	182	272	3496	
			Both	**408**	**515**	**6736**	**5958**
13	US 340 *North of Crescent Drive*	2010	NB	787	1039	12054	
			SB	749	935	12429	
			Both	**1525**	**1963**	**24483**	**20742**
14	WV 15 *1 Mi. North of WV 9*	2008	NB	286	250	3573	
			SB	207	349	3524	
			Both	**453**	**592**	**7097**	**6540**
15	County Route 13 *3 Mi. West of WV 51*	2008	**Both**	**215**	**301**	**3588**	**3106**
16	WV 51 East *1.4 Mi. West of Co. Route 13*	2008	EB	520	271	4901	
			WB	185	606	4963	
			Both	**654**	**860**	**9864**	**9090**
17	Co. Route 15 *1 Mi. West of Co. Route 9/1*	2008	**Both**	**288**	**410**	**4781**	**4033**
18	WV 115 *1 Mi. North of Co. Route 15*	2008	**Both**	**405**	**504**	**5656**	**5032**
19	Foal Street *South of 18 th Avenue*	2010	NB	55	90	958	
			SB	48	87	893	
			Both	**90**	**177**	**1851**	**1723**
20	Oak Lee Drive *West of Peter Rabbit*	2010	WB	105	135	1587	
			EB	51	173	1624	
			Both	**155**	**303**	**3211**	**2989**
21	Flowing Spring Road *South of Grayrock Road*	2010	NB	193	340	3519	
			SB	269	335	3656	
			Both	**423**	**594**	**7175**	**6346**
22	Co. Route 340/4 *North of Pleasant Valley Dr.*	2010	NB	55	56	638	
			SB	17	80	512	
			Both	**72**	**136**	**1150**	**1017**

Exhibit 3.3 October 2010 PM Peak (5-6PM) Intersection Counts

Intersection ID = 1: WV 115 & Washington Street



Intersection ID = 2: East Washington Street & County Route 17

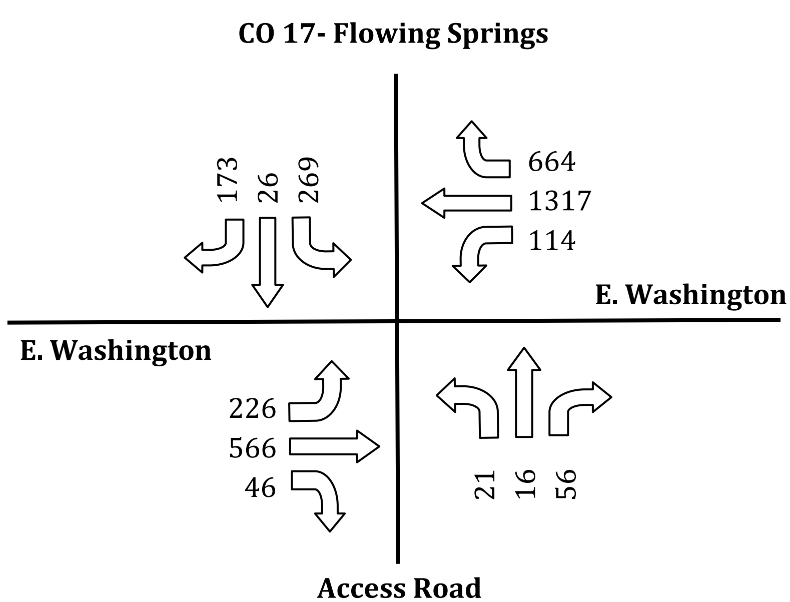
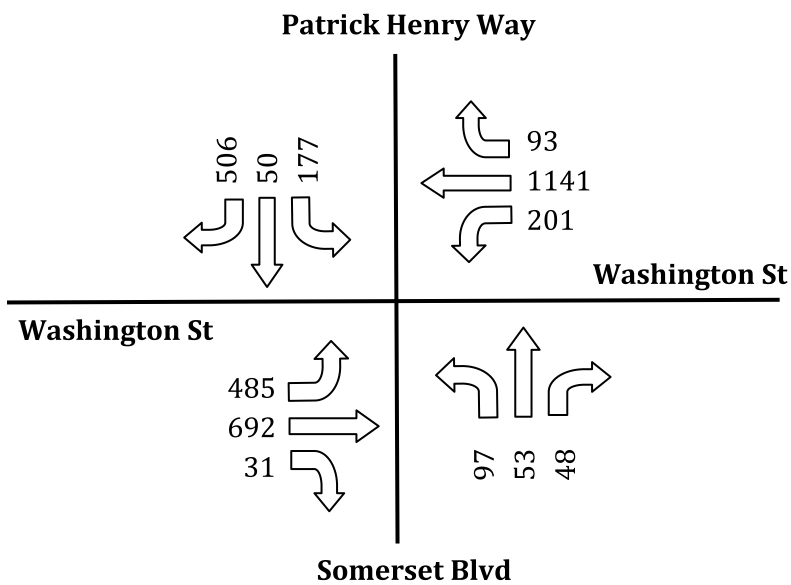
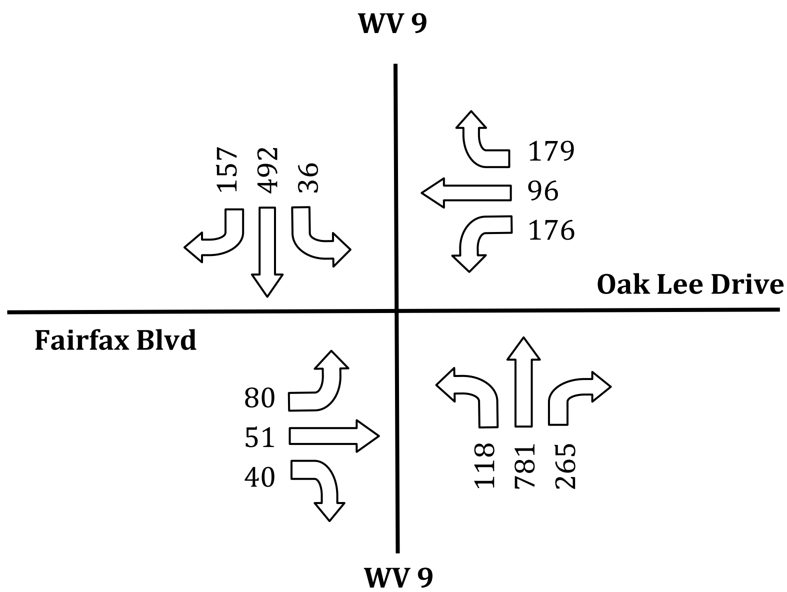


Exhibit 3.3 (continued) October 2010 PM Peak (5-6PM) Intersection Counts

Intersection ID = 3: US340 & Patrick Henry Way



Intersection ID = 4: WV 9 & Fairfax Boulevard



TRAVEL MODEL UPDATE

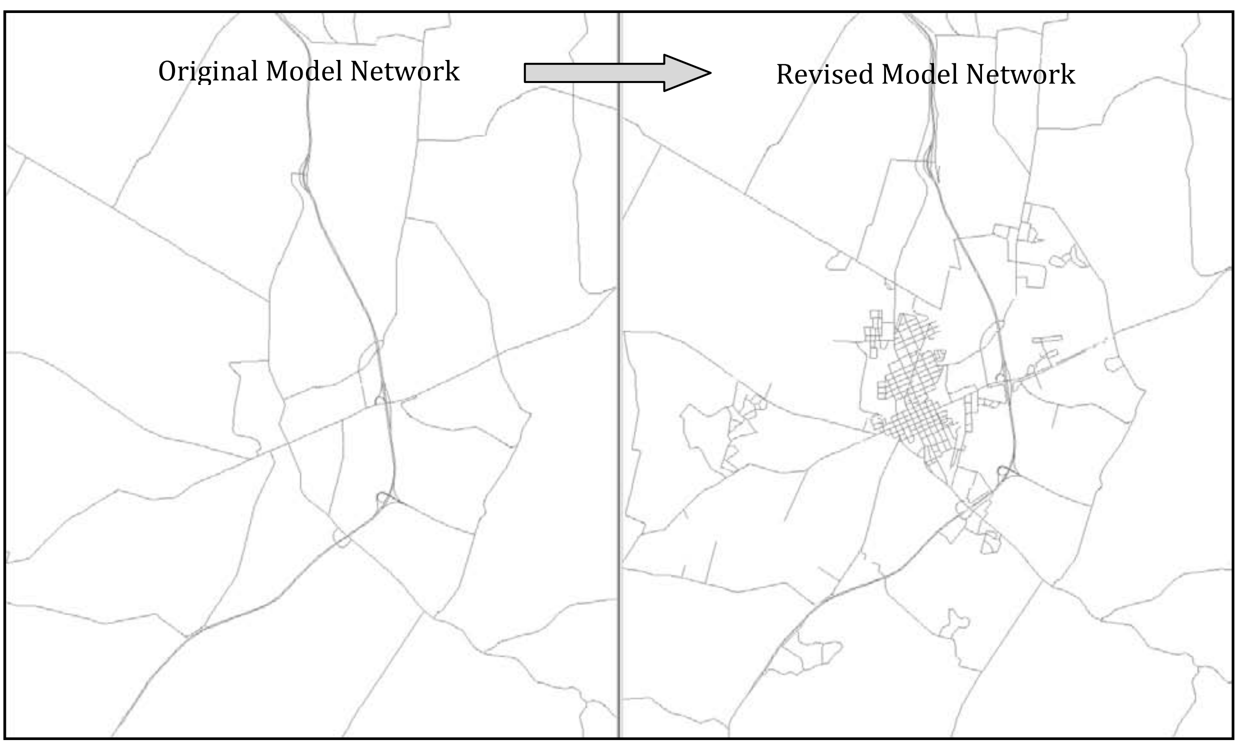
To complement qualitative observations and insights on congestion, this study utilized technical analyses to estimate future traffic volumes and potential areas of congestion. The HEPMPO regional travel demand model served as the key tool to conduct the analyses. The current version of the travel demand model was developed primarily for regional analyses and has some important limitations when utilized for local studies. These include a coarse zone structure, limited roadway network coverage, and a lack of specific intersection control representation. As a result, for this study the following modifications were made to the regional travel model:

1. Enhanced the regional traffic model traffic analysis zones (TAZs) in the Ranson and Charles Town area. Within the Ranson and Charles Town study area, the TAZs were disaggregated to the CENSUS Block-Level. This modification was illustrated previously in Section 2.

2. Enhanced the regional model roadway network to include additional Ranson and Charles Town local and collector roads. Exhibit 3.4 illustrates the revised network in comparison to the original HEPMPO model network. Roadway characteristics were determined from the roadway data inventory collected for this study.

3. Enhanced the capacity calculation process for roadways within the study area based on available signal information collected in the roadway inventory.

Exhibit 3.4 Revisions to the HEPMPO Travel Model Network



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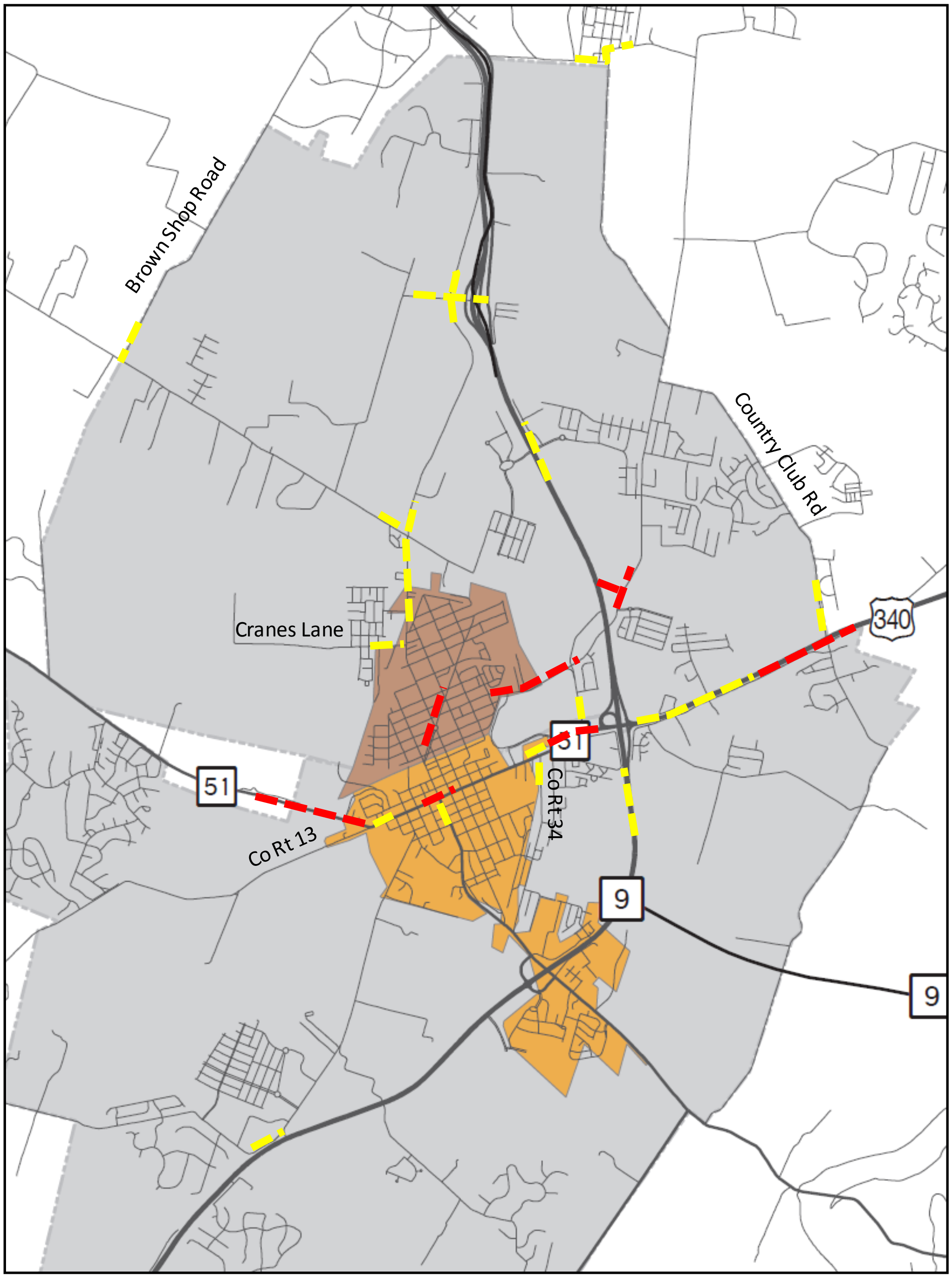
ANALYSIS RESULTS

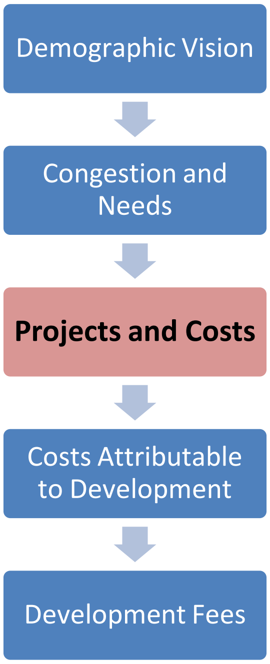
The travel model was used in combination with qualitative input from project stakeholders to develop current and future congested locations. Appendix B provides a summary assessment and performance measures for 23 defined corridors in the region. These results have been summarized in Exhibit 3.5 indicating locations of congestion. The results were used to identify projects and to allocate project costs to new development as described in the following sections.

Exhibit 3.5 Congested Locations

(Red = Current and Future Congestion, Yellow = Future Congestion)



SECTION 4: IDENTIFIED TRANSPORTATION PROJECTS AND COSTS



The identification of transportation projects is an important step in estimating potential funding that may be needed to address long range transportation congestion and needs as documented in previous sections. These funding estimates are used as a basis to determine the transportation development fee.

To address forecast regional congestion, project stakeholders including city, county, MPO and WVDOH staff worked to identify future multi-modal transportation capacity and enhancement projects within the Ranson and Charles Town urban growth boundary. This included projects that had been identified and included in the HEPMPO LRTP (*Direction 2035*), both in the financially constrained and un-constrained portions of that plan. Additional projects and studies were also identified based on the needs summarized within this study and recommendations from the consultant team.

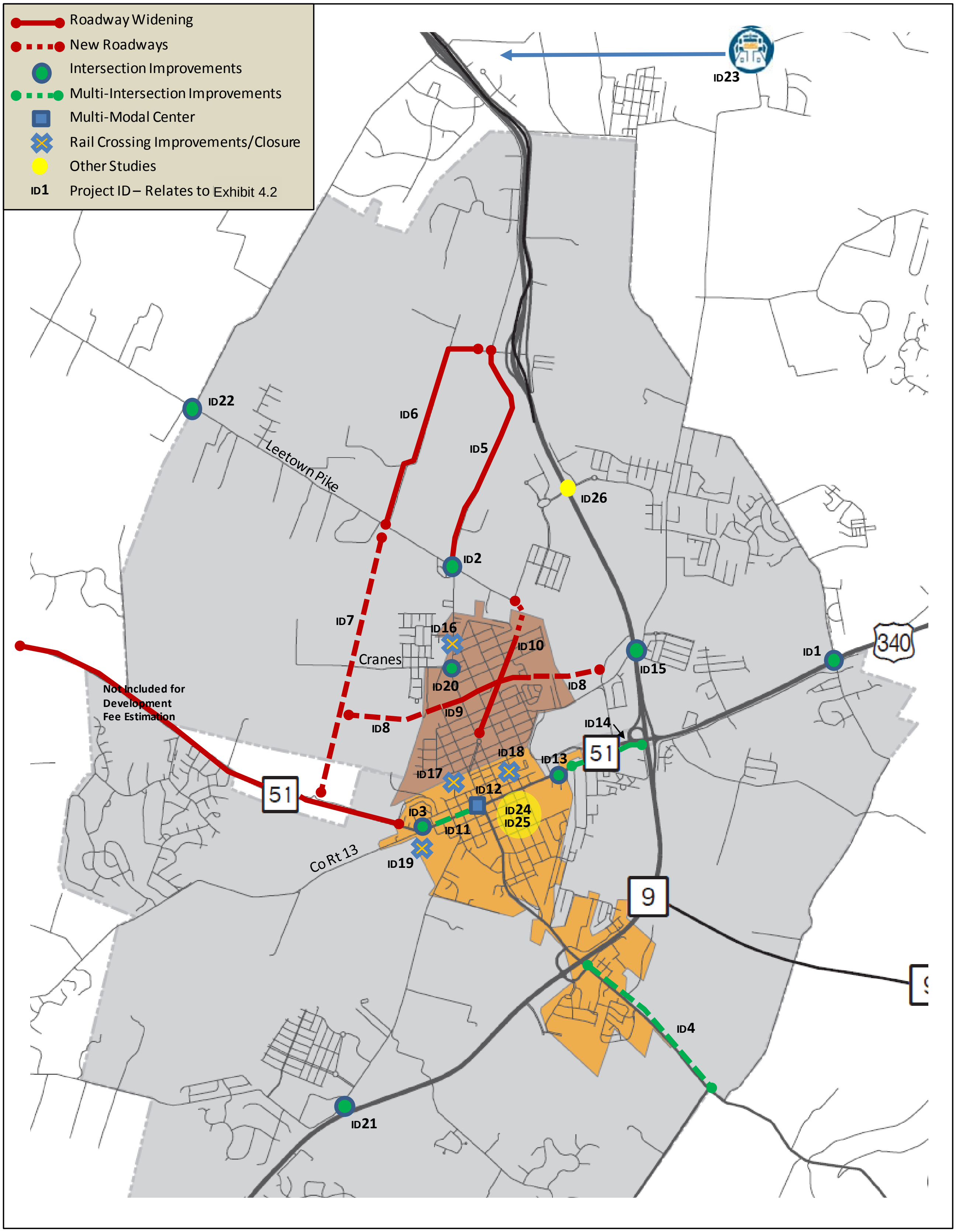
Exhibit 4.1 illustrates the locations of the identified projects, and Exhibit 4.2 provides a short description of each project. These projects have only been identified in a preliminary nature. Thus, specific right-of-way, engineering, and environmental issues have not been assessed in detail. As a result, some of these projects may not end up being programmed or funded but have been included here to assist in estimating reasonable fees, to illustrate future needs, and to initiate further discussion and studies for each project. It is the hope of both cities that this report and the projects included are not only used for fee development but also used as a long term plan for identifying key needs and evaluating alternative options to improve the transportation infrastructure.

INCLUDING "COMPLETE STREETS" CONCEPTS

Through this study and future planning efforts, Ranson and Charles Town will strive to ensure that future transportation project designs include the concept of *Complete Streets*. *Complete Streets* are important in helping town centers and Main Streets thrive by improving street connectivity and allowing everyone, whether on foot, bike, or public transportation, to reach community focal points. The construction or widening of streets that function as state highways takes its toll on pedestrian safety and can have a negative impact on small-town economies. In these cases, *Complete Streets* policies at the state and local level help communicate the community's vision and ensure safe, accessible, and attractive streets. Creating complete streets can facilitate reinvestment and economic development in the heart of a small town. Appendix C provides a summary of Complete Streets concepts from the National Complete Streets Coalition. In addition, Exhibit 4.3 provides an example of *Complete Streets* policy requirements.

The *Complete Streets* concepts have been stressed for each of the improvements identified in the Ranson and Charles Town region. These concepts are also applied to the cost estimates for each project as discussed in the following sections.

Exhibit 4.1: Summary of Identified Project Locations



Since the majority of WV51 widening is outside of the Study Area, the project is not included in the Development Fee assessment.

Exhibit 4.2: Summary of Identified Project Descriptions

ID	Project Name	Project Description	*In HEPMPO LRTP* Financially Constrained	*In HEPMPO LRTP* Not Financially Constrained
1	US 340 & Country Club Rd.	Convert at-grade intersection to a grade separated interchange.	X	
2	Mildred St. & Leetown Pike	Install a traffic control roundabout at intersection to improve operations and alignment.	X	
3	WV51 & Summit Point Rd.	Improve intersection where WV51 intersects West Washington St. and Summit Point Rd. Possible addition of a traffic circle.	X	
4	Old Rt. 9: Access Management	Intersection improvements along 4.2 mile segment of old WV9 between Mission Rd. and US340.	X	
5	Mildred St. Widening	Widening to 4 lanes between Currie Lane and Leetown Pike.		X
6	Currie Lane Widening	Widen Currie Lane to 4 lanes with pedestrian amenities between Route 9 and Leetown Pike		X
7	Currie Lane Extension	Extend Currie Lane (possibly as 4-lane roadway) from Leetown Pike to WV51.		X
8	Beltline Extension	Extend Beltline Ave from Currie Lane to possible junction with 5th Ave. or Sun Rd. Requires multiple rail crossings.		X
9	Beltline Widening	Widen and improve the existing portion of Beltline Ave.		X
10	Fairfax Blvd. Widening	Widen Fairfax Blvd. to 4 lanes with pedestrian amenities between Lancaster Circle to connection with Leetown Rd.		X
11	Traffic Safety and Pedestrian Mobility	Includes improvements referenced above for WV51 and Summit Point Rd. plus additional improvements along West Washington St. including pedestrian improvements.		
12	Charles Washington Hall Facility	Improvements to the multi-modal center including bike facilities, waiting areas, curb extensions, signage and additional amenities.		
13	Co.34 & Washington St.	Intersection improvements to address future congestion and possible deficient intersection operations.		
14	East Washington St. Intersection Improvements	General line item for intersection improvements from Co.34 to Route 9. Project may consist of signal timing improvements and possible turning lanes.		
15	Sun Rd. / Route 9	Intersection improvements with Sun Rd. / Route 9 / Flowing Springs Rd. Includes improved length of accelerations from Sun Rd. onto Route 9 (N and S).		
16	Mildred St. / NS Rail Crossing	Provide grade separated crossing of Norfolk Sothern tracks for Mildred St.		
17	Lawrence St. / CSX Rail Crossing	Signal upgrade or elimination of rail crossing for safety purposes.		
18	Church St. / CSX Rail Crossing	Elimination of rail crossing for safety purposes.		
19	Co. Rt. 13 Rail Crossing Consolidation	Consolidate County Rt. 13 crossing with WV51 crossing of Norfolk Southern rail line.		
20	Cranes Lane & Mildred St.	Improvements to the intersection to address sight distance and capacity issues.		
21	Huyett Road & Augustine Ave.	Intersection improvements to address future increase in traffic volumes at intersection.		

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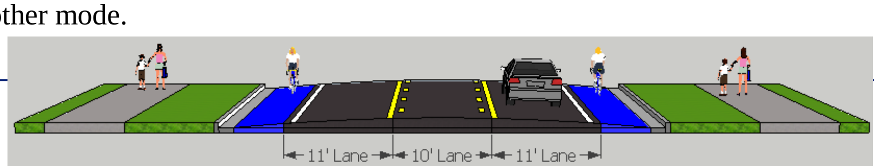
Exhibit 4.2: Summary of Identified Project Descriptions (continued)

ID	Project Name	Project Description	*In HEPMPO LRTP*	
			Financially Constrained	Not Financially Constrained
22	Brown Shop Rd. & Leetown Pike	Intersection improvements to address future increase in traffic volumes at intersection.		
23	MARC Train Station Relocation	Relocated Duffields train station to Jefferson Orchards development to improve regional access and promote transit-oriented development.		
24	Old Town Local Street Enhancements	General improvements to downtown streets to promote better vehicle and pedestrian mobility and improve streetscape.		
25	Trail and Sidewalk Connection Study	Study improvements to city trails and sidewalks. Address connectivity to Route 340 trail enhancements (not currently defined).		
26	Route 9 & Fairfax Blvd. Study	Study alternatives to intersection design and control to address forecast increases in traffic volumes and potential congestion.		

Exhibit 4.3: Example Complete Streets Policy

- Every project shall use the most appropriate design standards and procedures. Designs shall include accommodations of all users and be context-sensitive.
- A systems approach shall be used in developing roadway projects, including coordination with nearby jurisdictions, projects, and plans.
- Logical termini shall be chosen to include connections through "pinch points."
- The project shall provide the opportunity for nearby destination points to have access to pedestrians and bicycle facilities.
- Every project shall involve the local transit agency in the design process to ensure sufficient accommodation to transit vehicles and access to transit facilities. Public transit facilities shall be designed with the goals of Complete Streets in mind.
- Every project shall provide the opportunity for utility/telecommunications infra-structure to be appropriately accommodated to allow for existing/future growth.
- The provision of accommodations for one mode shall not prevent the safe use by another mode.



Mid-Ohio Regional Planning Commission, Complete Streets Fact Sheet, August 2010

PROJECT PHASING PRIORITY

The development of the transportation fee considers the costs of all transportation needs for an assumed "build-out" scenario. However, the actual implementation and funding of projects will ultimately occur as distinct phases requiring an assessment of the priority of each project. The projects have been categorized into short-term, mid-term and long-term priority levels as defined in Exhibit 4.4

Exhibit 4.4: Project Priority Levels

Priority Level	Description
Short-Term	Projects that address current mobility, congestion and safety deficiencies that are expected to worsen significantly with future development.
Mid-Term	Projects needed to address future mobility, congestion and safety deficiencies that may occur before full "build-out" conditions are reached.
Potential Long-Term	Potential longer term mobility and congestion needs related to full "build-out" conditions; Will need to be re-evaluated in future plans.

Exhibit 4.5 provides an initial assessment of project priorities. This initial assessment has been based on the following:

- Current congestion and safety concerns
- Projected congestion levels
- Previous efforts in project planning or identification
- Economic development issues

As discussed in previous sections, congestion performance measures have been produced based on current and future projections of regional household and employment. Projects that address corridors that are currently congested have been considered short-term priorities. These include projects that are currently identified on the HEPMPO LRTP including those that improve traffic flow on Route 51, Route 340, Mildred Street and Old Route 9. Likewise, other proposed projects focus on addressing existing vehicle or pedestrian safety; and, these too are considered short-term priorities. These include the Charles Town Traffic Safety and Pedestrian Study and improvements to rail crossings within the city limits. Other short-term priority projects include the Charles–Washington Multi-Modal Facility that provides improved transit service and opportunities for economic development within the city.

Mid-term and long-term project priorities are focused on addressing future congestion problems that have been projected using regional analysis tools. These projects have been identified but may require additional review and stakeholder involvement to better define potential alternatives and to address key right-of-way and design considerations.

Exhibit 4.5: Initial Assessment of Project Priorities

Short - Term	Mid - Term	Potential Long - Term
• ID1: US 340 & Country Club Road • ID2: Mildred Street & Leetown Pike • ID3: WV51 & Summit Point Road • ID 4: Old Rt 9 Access Management • ID 8/9: Beltline Ave East Extension and Widening • ID 11: Traffic Safety and Pedestrian Mobility • ID 12: Charles Washington Hall Multi-modal Facility • ID17: Lawrence Street Rail Crossing • ID18: Church Street Rail Crossing	• ID5: Mildred Street Widening • ID 10: Fairfax Boulevard Widening • ID15: Sun Road / Route 9 Improvements • ID16: Mildred Street Rail Crossing • ID20: Cranes Lane and Mildred Street • ID24: Old Town Local Street Enhancements • ID25: Trail and Sidewalk Connection Study	• ID6: Currie Lane Widening • ID7: Currie Lane Extension • ID8: Beltline Extension West • ID13: CO34 & Washington Street • ID14: East Washington Street Improvements • ID19: CO13 Rail Crossing Consolidation • ID21: Huyett Road & Augustine Ave • ID22: Brown Shop Road & Leetown Pike • ID23: MARC Train Station Relocation • ID26: Route 9 & Fairfax Blvd. Study

Roadway Ownership/Maintenance Responsibilities

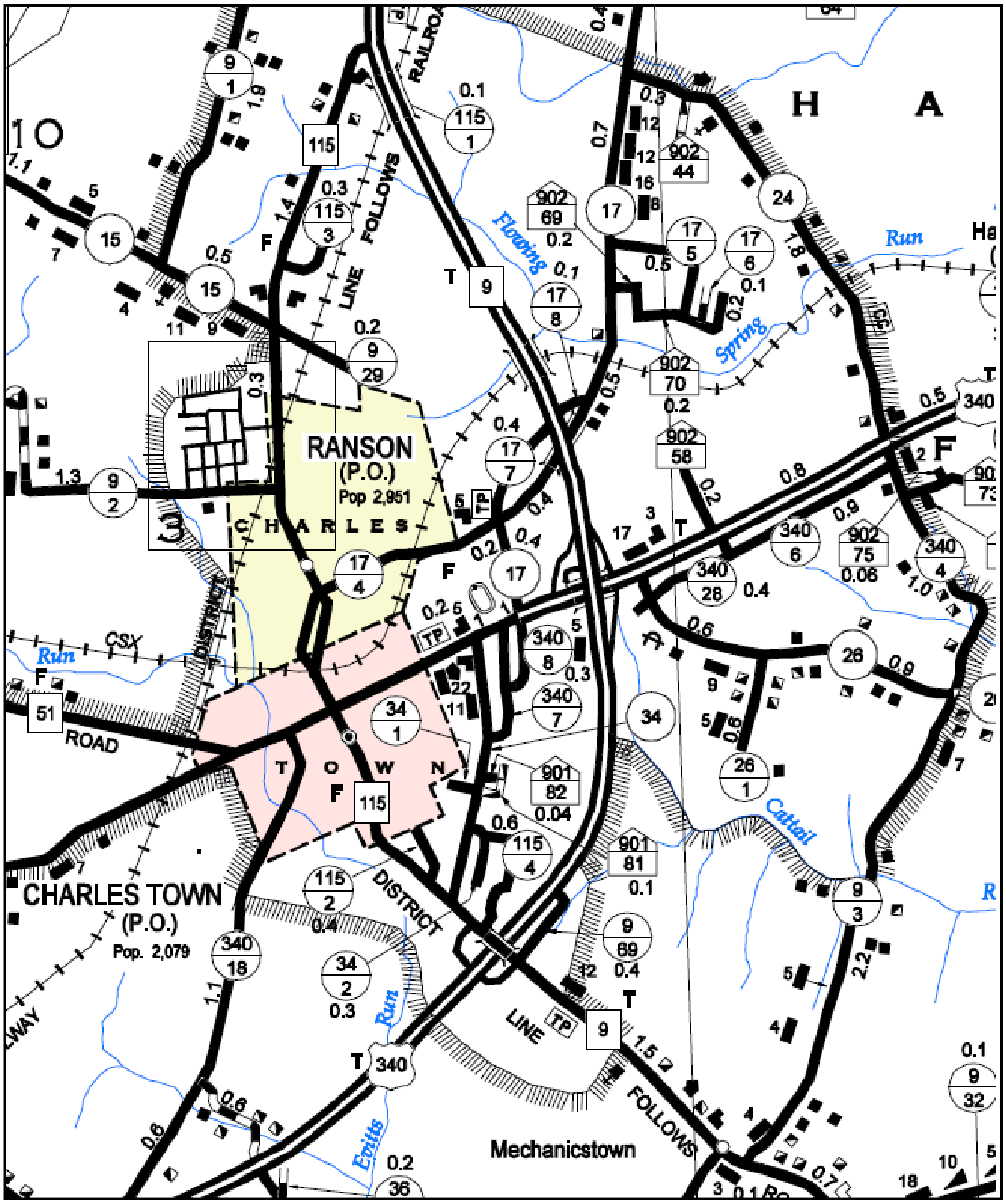
The West Virginia Division of Highways (WVDOH) is responsible for planning, engineering, right-of-way acquisition, construction, reconstruction, traffic regulation and maintenance of more than 34,000 miles of roads within the state. These include interstate routes, US routes, WV Routes and County Routes. Exhibit 4.6 illustrates the current roadways maintained by WVDOH within the study area.

Several of the proposed improvements involve roadways not covered under the current state system. These include the Fairfax Boulevard, Beltline Road, and Currie Road widening and extension projects. Each of these projects focus on providing future congestion relief to current state maintained routes; and may warrant future consideration for inclusion as part of the state roadway system.

As illustrated previously in Exhibit 3.5, traffic along Mildred Street, Washington Street and 5th Avenue are projected to exceed acceptable level-of-service standards based on forecast housing and employment development in the region over the next 20 years. However, there are significant constraints that prevent widening existing state maintained roadways. These include abutting businesses, lack of right-of-way (ROW), and rail crossings (e.g. Mildred Street - Norfolk Southern crossing). In addition, continued widening of downtown streets does not fit into the Complete Streets vision. As a result, alternative options and new roadway routes allow for congestion relief and Complete Streets design options to improve traffic operations and provide a unique city environment to promote future economic development. Both Ranson and Charles

Town will continue to work with WVDOH in reviewing project alternatives and whether the transfer of certain city streets to the WVDOH roadway system is justified and beneficial.

Exhibit 4.6: WVDOT State Maintained Roadways



General Highway Map: Jefferson County Sheet 2, 2011 West Virginia Department of Transportation

PROJECT COSTING ESTIMATES

To assist in the calculation of a transportation development fee, an estimated total cost is needed for each project. Estimating project costs can be difficult since environmental and engineering efforts have not been completed for most long range vision projects, many being conceptual in nature. For this study, cost estimates have relied on values prepared for the HEPMPO LRTP and a review of national research to determine average costs per mile for different project types. Exhibit 4.8 summarizes the unit costs for roadway improvements assumed for this study. Included in the exhibit are key resources used to determine these estimates.

Exhibit 4.8: Assumed Unit Costs by Project Type (2010 Million US $)

Project Type	*Undivided Highways*	
	Built-Up Area	**Outlying Area**
Right-of-Way (ROW) Acquisition	0.65 *(Per Lane Mile)*	0.26 *(Per Lane Mile)*
New Construction (New Road)	2.60 *(Per Lane Mile)*	2.19 *(Per Lane Mile)*
Reconstruction With New Lanes	3.26 *(Per Lane Mile)*	2.45 *(Per Lane Mile)*
Interchange	30.00	24.00
Sidewalk / Pedestrian Improvements	0.20 *(Per Mile)*	0.15 *(Per Mile)*
Trail Development	0.29 *(Per Mile)*	0.29 *(Per Mile)*
Intersection Signalization / Rail Crossing Improvements	0.36	0.25
Intersection Reconfiguration and Design	2.50	1.60
Add Intersection Turn Lanes	0.35	0.30

Resources:

- Victoria Transport Policy Institute, Transportation Cost and Benefit Analysis Techniques, Estimates and Implications [Second Edition], Chapter 5.6 Roadway Facility Costs, March 2011. Table 5.6.3-4 Adjusted to 2010 US dollars using CPI. (http://www.vtpi.org/tca/)
- VDOT Statewide Planning Level Cost Estimates, Transportation & Mobility Planning Division, January 2009.
- FDOT Generic Cost Per Mile Models (Updated annually). Version Used obtained in March of 2011. (http://www2.dot.state.fl.us/SpecificationsEstimates/costpermile.aspx)
- FDOT Roadway Cost Per Centerline Mile, June 2010 (http://www.dot.state.fl.us/planning/policy/costs/costs-D7.pdf)

For projects contained in the financially constrained portion of the HEPMPO LRTP (e.g. project ID1-4), the LRTP project costs are used as the estimates for this study with one key adjustment. For the LRTP, a significant portion of ROW costs were built into each total project cost as a conservative estimate. Based on the review conducted for this study, it was determined that these ROW costs were excessive for these four projects. As a result, the LRTP estimates were adjusted to remove the ROW costs. The remaining project costs were estimated using Exhibit 4.8 with some specific adjustments per individual project scopes. Exhibit 4.9 summarizes the individual project costs and total estimated cost for all regional projects.

Exhibit 4.9: Estimated Project Costs (2010 Million US $)

ID	Project Name	Notes	Cost
1	US 340 & Country Club Rd.	Cost Per HEPMPO LRTP	23.8
2	Mildred St. & Leetown Pike	Cost Per HEPMPO LRTP	3.9
3	WV51 & Summit Point Rd.	Cost Per HEPMPO LRTP	6.3
4	Old Rt. 9: Access Management	Cost Per HEPMPO LRTP	1.5
5	Mildred St. Widening	Per Exhibit 4.7: 1.5 mi length of 4 lane reconstruction and widening + Complete Streets	16.9
6	Currie Lane Widening	Per Exhibit 4.7 – 1.5 mi length of 4 lane reconstruction and widening + Complete Streets	16.9
7	Currie Lane Extension	Per Exhibit 4.7: 1.5 mi length of 4 lane new construction + ROW acquisition + Complete Streets	16.7
8	Beltline Extension	Per Exhibit 4.7: 1.2 mi length of 4 lane new construction + ROW acquisition + Complete Streets	13.3
9	Beltline Widening	Per Exhibit 4.7: 0.5 mi length of 4 lane reconstruction and widening + Complete Streets	5.6
10	Fairfax Blvd. Widening	Per Exhibit 4.7: 1.2 mi length of 4 lane reconstruction and widening + Complete Streets	13.5
11	Safety& Pedestrian Mobility	Charles Town Estimate – Reduced due to overlap with ID3	0.7
12	Charles-Washington Hall	Charles Town Estimate	3.0
13	Co. 34 & Washington St.	Per Exhibit 4.7: Intersection reconfiguration + 50% increase due to utility relocation needs	3.8
14	East Washington St. Intersections	Per Exhibit 4.7: Assume 2 intersection reconfigurations	5.0
15	Sun Rd. / Route 9	Per Exhibit 4.7: Extension of acceleration lane – assume 0.25mi new construction + Intersection reconfiguration	2.2
16	Mildred St. / NS Rail Crossing	Per Exhibit 4.7: Due to significant efforts to go over rail lines, assume 50% of interchange	12.0
17	Lawrence St./CSX Rail Crossing	Per Exhibit 4.7: Assume reconfiguration or possible signalization	0.4
18	Church St./CSX Rail Crossing	Per Exhibit 4.7: Assume closure requires intersection modifications	0.3
19	Co. Rt. 13 Rail Crossing	Per Exhibit 4.7: Assumes diversion of traffic and possible construction of new 2 lane roadway (0.1 mi)	0.5
20	Cranes Lane & Mildred St.	Per Exhibit 4.7: Intersection reconfiguration to improve sight distance	2.5
21	Huyett Road & Augustine Ave.	Per Exhibit 4.7: Possible intersection signalization	0.3
22	Brown Shop Rd. & Leetown Pike	Per Exhibit 4.7: Additional	0.3
23	MARC Train Station Relocation	Per offline assessment including construction of parking lot and loading platform.	15.0
24	Old Town Street Enhancements	Per Exhibit 4.7: Assume 2.3 miles of pedestrian and sidewalk improvements + Additional 50% for other beautification items.	0.7
25	Trail and Sidewalk Improvements	Assume 200k study + 2 miles of trail development	0.8
26	Route 9 & Fairfax Blvd. Study	Assume 200k study	0.2
		TOTAL	**166.1**

Some projects required specific assessments to determine costs. For new construction and existing reconstruction projects, the Complete Streets design concepts have been stressed in this study and in the project definitions. As indicated in Complete Streets research, careful planning can lead to the inclusion of effective measures at little or no extra cost and eliminate the need for costly retrofits. Some agencies (e.g. Mid-Ohio Planning Commission) have capped the costs of Complete Streets efforts to no more than 15% of the existing project cost. The assumption used for this study follows a similar approach and assumes that projects with Complete Streets concepts will include a 15% increase in cost. This does not apply to the Old Town Street Enhancements project, which may include these concepts as its core goal. This project was estimated using the typical costs for sidewalk and pedestrian improvements with some additional dollars added for landscaping and other city street beautification efforts.

Photo from Google Maps

The Duffields MARC train station project has been identified and includes relocation of the current station closer to Route 9. This project would allow for better regional access and support transit-oriented development. The project costs have been estimated assuming the station would be comparable to that at the current location, which consists of a parking lot and a platform for passenger loading. Estimates were developed based on consultant experience in project costs of similar train stations. The costs do not include the construction of station buildings if they should be deemed to be included in the project scope.

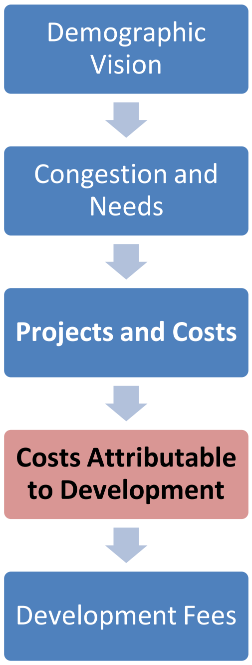
A Trail and Sidewalk Improvement Study and the Route 9 & Fairfax Boulevard Intersection Study have been estimated to be 200,000 dollars each. This represents an average cost for studies that include some assessment of alternatives. The trail study will be conducted in close coordination with other county trail plans along the Route 340 corridor and will aim to improve connectivity between the City of Ranson / Charles Town and other areas within the County. Included in the Trail and Sidewalk Improvement project are the costs associated with the construction of 2 miles of trails.

A total of 166.1 million dollars of transportation projects have been identified based on current and projected needs within the region. Exhibit 4.10 provides a breakout of the costs by the assumed project priority types.

Exhibit 4.10: Estimated Project Costs by Priority Level

Priority Level	Project Cost Totals
Short-Term	$52.2 million
Mid-Term	$48.6 million
Potential Long-Term	$65.3 million
Total	**$166.1 million**

SECTION 5: COSTS ATTRIBUTABLE TO DEVELOPMENT



This section focuses on the development of a cost per trip end for projected new development within the Ranson and Charles Town urban growth boundary. Over 166 million dollars of transportation improvements have been identified in Section 4; however, future development should not bear the burden of all of these costs. This section focuses on determining a project cost attributable to future development and addresses adjustments related to the following key factors:

- Applying project costs for short and mid-term projects only
- Reducing future development costs for projects already on LRTP
- Addressing existing roadway traffic congestion
- Addressing travel passing through the study area

Twenty six projects have been identified in the region, and they have been classified into three priority levels, short term, mid-term and potential long-term. It has been determined that the current development fee structure will only focus on costs related to short and mid-term projects. The long-term projects are focused on future congestion needs dependent on full "build-out" conditions and will need to be re-evaluated as part of future planning efforts.

Four of the short-term projects are identified on the financially constrained portion of the HEPMPO LRTP. For these projects, it has been assumed that future development costs would only be based on the 20% state and local match, rather than the total project cost.

Current traffic congestion provides the impetus for several of the identified projects. These projects are most likely the responsibility of existing development and roadway users. In addition, trips traveling through the Ranson and Charles Town urban growth area have a key impact on traffic congestion, especially on the Route 340 and Route 9 corridors. Similar to issues with current congestion, future development should not be solely responsible for congestion due to the traffic of those traveling through the region. This study presents an analytical approach to develop a percentage adjustment factor that can be applied to the total project funding to determine what portion is potentially attributable to new development within Ranson and Charles Town. This analytical approach uses results from the regional travel demand model and congestion analyses.

PROJECT COSTS ATTRIBUTABLE TO DEVELOPMENT

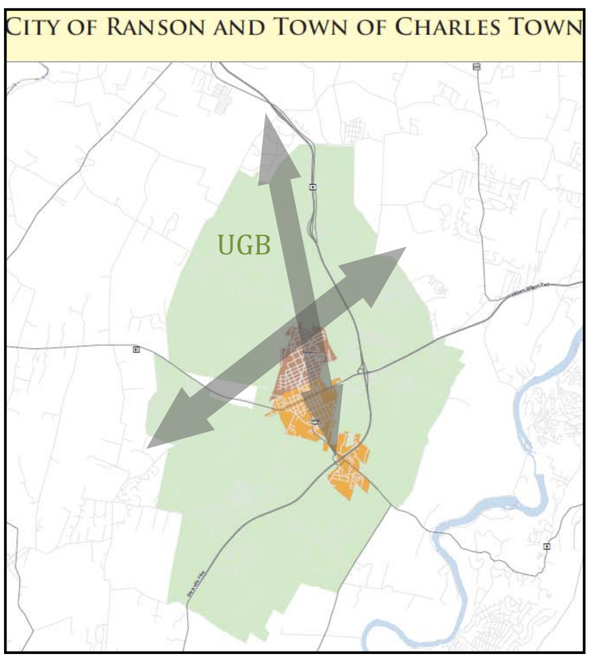
The project costs presented previously in Section 4 have been adjusted to determine what portion is attributable to future development in the project study area. The adjustments to project cost have been determined using outputs from the HEPMPO regional travel model, engineering judgment and other assumptions. Only project costs associated with short and mid-term projects have been included for the fee calculations. As illustrated in Exhibit 5.1, this equates to 100.8 million dollars of transportation projects.

Exhibit 5.1: Projects Costs Included in Fee Calculation

Priority Level	Project Cost Totals	Included for Fee Estimation
Short Term	$52.2 million	**YES**
Mid Term	$48.6 million	**YES**
~~Potential Long Term~~	~~$65.3 million~~	**NO**
Total Used for Fee Calculation	**$100.8 million**	

The travel model and associated congestion analyses were used to determine existing and future 2035 congestion levels and the amount of travel through the study area (e.g. the Ranson and Charles Town urban growth boundary). This includes the quantification of excess demand, which represents the number of vehicles per hour that exceeds the roadway capacity. The estimates of through percentages were conducted at selected locations throughout the study area using the "select link" features of the modeling software (e.g. TransCAD). Through traffic is defined for this study as travel that has both an origin and destination outside the Ranson and Charles Town urban growth boundary (e.g. UGB) as illustrated in Exhibit 5.2.

Exhibit 5.2: Definition of Through Travel for Fee Calculations



Where applicable, the modeling results were adjusted per available traffic counts, congestion observations, and other insights and comments from city staff. The estimates of excess demand and through traffic were used to develop percentage adjustments to project costs as illustrated in the sample calculations shown in Exhibit 5.3.

Exhibit 5.3: Sample Calculations to Address Existing Congestion and Through Travel

ID	Item	Existing	Build-Out
1	"Acceptable" Capacity	1,120	1,120
2	Volume (Peak Hour)	1,300	1,700
3	Thru Travel %	15%	20%
4	Excess Demand (ID2 - ID1)	180	580
5	Excess Demand: "Thru" Portion (ID4 x ID3)	27	116
6	Excess Demand: Non "Thru" Portion (ID4 – ID5)	153	464
8	**Development Portion of Project Costs** ((464 – 153) / 580)	**------**	**54%**

Some projects like the Currie Lane Extension, Fairfax Boulevard and the Beltline Extension are focused on improving congestion on nearby roadways. For these analyses, Fairfax Boulevard uses the congestion and through percentages for vehicles on Mildred Street; and, the Beltline Extension project uses data from 5th Avenue. Currie Lane is expected to provide potential benefits in and around the city; and thus uses the average of costing adjustments calculated from the Fairfax Boulevard and Beltline Extension projects.

Other projects were determined to be more difficult to split between existing and future development. These included the railroad crossing projects for Lawrence, Church and County Route 13; Old Town Street Enhancements; MARC station relocation; Charles Washington multi-modal center, Old Route 9 access management, and the two studies. For these particular projects, it was assumed that existing and future development should share equally in financing this project, thus 50 percent of the project costs were attributed to future development.

Exhibit 5.4 summarizes the percentage calculations and costs attributable to future development in the region. Of the 166.1 million dollars of transportation needs, 57.9 million are used for the fee calculations. The U.S. 340 & Country Club Road and WV 51 & Summit Road projects were reduced by the highest values to account for existing congestion and high through traffic percentages along the Route 51 and Route 340 corridors. Projects with little or no existing congestion and low through traffic percentages were primarily attributed to future development. In addition, the base costs for those projects contained on the HEPMPO fiscally constrained LRTP were reduced to only include to the 20% match from state and local sources. This applies to project IDs 1-4.

Exhibit 5.4: Estimation of Project Costs Attributable To New Development (2010 Million US $)

ID	Project Name	*Estimated Analytic Measures*				% of Cost Due to Development	Project Cost	Project Cost Attributable to Development
		Existing Excess Demand	2035 Excess Demand	Existing % Through	2035 % Through			
Short and Mid Term Projects Included in Fee Calculations								
1	US 340 & Country Club Rd.	900	1,620	38%	39%	**27 % x .20**	23.8	**1.29**
2	Mildred St. & Leetown Pike	*100*	*700*	4%	1%	**85 % x .20**	3.9	**0.66**
3	WV51 & Summit Point Rd.	*500*	*800*	23%	34%	**18 % x .20**	6.3	**0.23**
4	Old Rt. 9: Access Management	-----	-----	-----	-----	**50 % x .20**	1.5	**0.15**
5	Mildred St. Widening	-----	750	4%	1%	**99 %**	16.9	**16.73**
8	Beltline Extension	*150*	1080	1%	1%	**85 %**	6.7	**5.65**
9	Beltline Widening	*150*	1080	1%	1%	**85 %**	5.6	**4.76**
10	Fairfax Blvd. Widening	100	620	3 %	1 %	**83 %**	13.5	**11.21**
11	Safety& Pedestrian Mobility	280	1,090	16%	25%	**53 %**	0.7	**0.37**
12	Charles-Washington Hall	*Equal split between existing/ new development*				**50 %**	3.0	**1.50**
15	Sun Rd. / Route 9	*50*	280	5%	4%	**79 %**	2.2	**1.74**
16	Mildred St. / NS Rail Crossing	100	620	3%	1%	**83 %**	12.0	**9.96**
17	Lawrence St./CSX Rail Crossing	*Equal split between existing/ new development*				**50 %**	0.4	**0.20**
18	Church St./CSX Rail Crossing	*Equal split between existing/ new development*				**50 %**	0.3	**0.15**
20	Cranes Lane & Mildred St.	0	570	0%	0%	**100 %**	2.5	**2.50**
24	Old Town Street Enhancements	*Equal split between existing/ new development*				**50 %**	0.7	**0.35**
25	Trail and Sidewalk Study	*Equal split between existing/ new development*				**50 %**	0.8	**0.40**
						TOTAL:	100.8	**57.85**
Potential Long-Term Projects Not Included in Fee Calculations								
6	Currie Lane Widening	-----	*500*	0%	0%	**100 %**	16.9	**16.90**
7	Currie Lane Extension	*Use Average of Fairfax / Beltline*				**84 %**	16.7	**14.03**
8	Beltline Extension	*150*	1080	1%	1%	**85 %**	6.7	**5.65**
13	Co. 34 & Washington St.	640	1,970	7%	13%	**57 %**	3.8	**2.17**
14	East Washington St. Intersections	320	1,790	10%	17%	**67 %**	5.0	**3.35**
19	Co. Rt. 13 Rail Crossing	*Equal split between existing/ new development*				**50 %**	0.5	**0.25**
21	Huyett Road & Augustine Ave.	0	640	*2%*	2%	**98 %**	0.3	**0.29**
22	Brown Shop Rd. & Leetown Pike	0	510	2%	1%	**99 %**	0.3	**0.30**
23	MARC Train Station Relocation	*Equal split between existing/ new development*				**75 %**	15.0	**11.25**
26	Route 9 & Fairfax Blvd. Study	*Equal split between existing/ new development*				**50 %**	0.2	**0.10**

Notes on Adjustments to Model Outputs:

- Mildred St. &/ Leetown Pike congestion adjusted upwards to reflect congestion on Leetown Pike approach.
- WV51 existing and future congestion adjusted upwards based on observations and insights from city staff.
- Currie Lane values based on average of conditions along roadway.
- Beltline Widening and Extension projects use info from high congested locations on 5th Avenue
- Fairfax Boulevard uses congestion on Mildred Avenue at 4th Avenue location.
- Adjusted Sun Road intersection to include additional existing congestion

Estimating a Cost Per Development Trip End

The impact of development on traffic is generally determined according to the number of trip ends produced by a particular land use. Resources like the Institute of Transportation Engineers *Trip Generation Manual* provide estimated trip ends for detailed land use types. Such data will play a key role in developing the fee structure in Section 6.

To support those calculations, a general cost per development trip end has been estimated based on the project costs presented in Exhibit 5.4 and outputs from the HEPMPO regional travel demand model. The HEPMPO regional travel model has been used to estimate the number of trip ends added by new development in the study area between 2010 and the "Build-out" scenario. The model estimates are based on the input demographic forecasts documented in Section 2 and internal model trip rate factors. Trip ends have been estimated for the daily and peak hour conditions (e.g. includes both AM and PM peak hours).

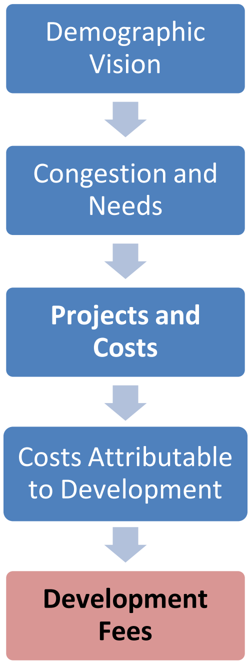
Using the estimated growth in trip ends, a new development cost per trip end can be simply calculated by dividing the total project costs (attributable to development) by the trip end estimates. Exhibit 5.5 summarizes the calculation and resulting values, which serve as a key component to the fee structure.

Exhibit 5.5: Calculation of Cost Per Trip End (2010 US $)

Category	Change in Trip Ends *(2010-2035)*	Total Project Costs *(Attributable to Development)*	Cost Per Trip End
Daily	255,013	57,850,000	**$227**
Peak Hour (AM+PM)	48,084	57,850,000	**$1,203**

Based on a consultant review of other development and traffic impact fees across the country, the above costs per trip end fall within in the typical ranges. Fees can vary significantly based on each local jurisdiction. In general, a peak hour per trip end cost will be more than a daily value because it will be multiplied by a lower number to determine the total cost (e.g. more daily trip ends than in the peak hour). The choice of the appropriate value for application in this fee study is discussed in Section 6.

SECTION 6: RANSON – CHARLES TOWN TRANSPORTATION FEE STRUCTURE

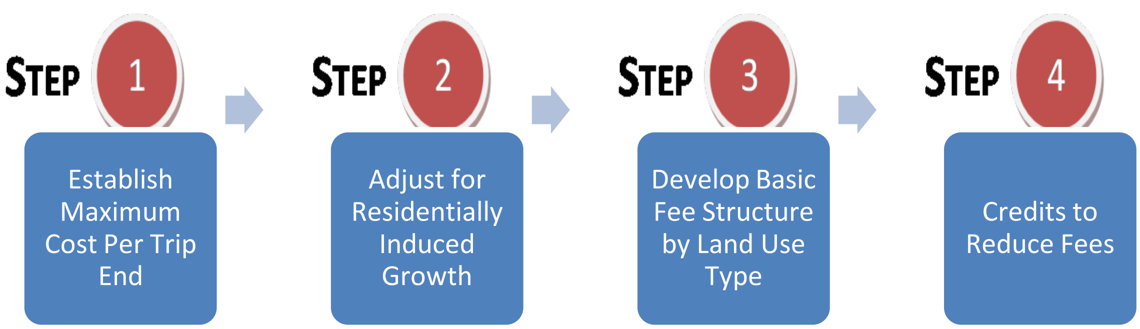


This section summarizes the fee structure for the Ranson and Charles Town urban growth area. One fee structure has been developed for both cities based on the data and analyses presented in previous sections. The basis of the fee is the cost per trip end values presented in Exhibit 5.5. These values are based on an analysis of transportation needs using the regional travel model, the identification and costing of transportation projects, the determination of project costs attributable to new development in the region, and an estimation of the number of trip ends related to future development.

Exhibit 6.1 illustrates the key steps used to determine the development fee structure. Trip end costs are adjusted to account for residentially-induced growth producing separate trip end costs for residential and non-residential land uses. The trip end costs are then converted into rates for different development types using information from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. These estimates provide the rates in terms of dwelling units and employment square footage, thus simplifying the application of the fee structure. Trip rates have been adjusted to address consistency with the travel model outputs and to account for specific pass-by-trips and trip length characteristics of different land use types.

The trip rates produced in Step 3 are considered the maximum fee rates that can be applied to development in the study area. Step 4 addresses additional credits to reduce transportation development fees. These may include credits for development densities, mixed land use, right-of-way donations, or other developer funded transportation projects. Other fee adjustments may occur as part of city and developer negotiations using other available studies or surveys.

Exhibit 6.1: Steps in Developing the Fee Structure



The following sections document the process and calculations used to estimate the transportation development fee structure. The documentation aims to provide enough detail to justify the calculation of the fee and to serve as a basis for future fee adjustments or revisions. The methodology has utilized available regional modeling tools and national trip rate data sources. As these tools and data sources are revised in the future, potential modifications to the fee structure may be required.

STEP 1: COST PER TRIP END

Estimates of a cost per trip end were presented in Exhibit 5.5. That table presents values for both daily and peak hour time periods. The use of a daily cost per trip end weights all potential development trips equally, no matter what time period they occur in. In these cases, estimates of the total daily trip ends produced by each development unit will be applied to the cost per trip end value. Application of a peak hour cost per trip end would produce higher costs for development units that produce more trips during the peak hours. Many traffic impact fees across the country are focused on the peak hour (e.g. typically the PM peak hour).

This development fee study has focused on addressing key transportation enhancements across the region including congestion relief, safety, multi-modal, and trail connectivity projects and studies. Complete Streets concepts have been included in an effort to improve the safety and livability of city streets, which may promote further economic development. Due to the wide range of regional projects being included, a daily cost per trip end was used for fee application since it weights fees based on the total trips produced by each land use type, not just those that produce trips during the peak hours. This approach has been used by other development fee studies of similar nature. Exhibit 6.2 provides the daily cost per trip end.

Exhibit 6.2: Unadjusted Cost Per Daily Trip End (2010 US $)

Cost Per Daily Trip End
$227

STEP 2: ADJUSTMENTS FOR RESIDENTIALLY-INDUCED GROWTH

Many employment categories, in particular commercial and retail establishments, have a significant number of trip ends per day. As a result, such land use types will typically bear a higher fee cost than at the household level. This fee study has adjusted the cost per trip end value to recognize that work and retail activity in the county is highly correlated to residential growth. The Ranson and Charles Town urban area is projected to have more working residents than non-resident workers, thus each new job created in the county reduces the aggregate need to have out-commuting. In addition, retail activity is highly dependent on the population of nearby residents, so such trip ends may also be attributed to the home end.

The regional travel model was used to develop adjustments to the cost per trip end value. The model has three trip purposes: Home-Based Work (HBW), Home-Based Non-Work (HBNW), and Non-Home-Based (NHB). Based on a review of production and attraction growth (between 2010 and the Build-out scenario) by trip purpose, trip ends were allocated to the home-end and non-home-end of activity.

A base case was developed that allocates HBW and HBNW trip ends equally between the home and non-home travel destination (e.g. typically the work location, shopping center, etc.). Next an adjustment scenario was created with allocation assumptions as follows:

- For HBW: Assume all work-related trip ends are assigned to the home end of trip (e.g. the household). This assumes that the household is primarily responsible for job growth in the region or that additional jobs added would reduce the potential for out-commuting.
- For HBNW: Assume that 75% of the trip ends are assigned to the home end and 25% of the trip ends are assigned to the travel destination. This assumes that future retail and commercial development will be added to the region to serve future population and household growth. Not all trips were assigned to the home end (like for HBW) since it was assumed that the household would not be responsible for some non-retail or service employment growth.
- For NHB: Assume all trip ends are not related to the home end of travel. This is inherent based on the definition of the trip purpose. These trips include trips between shopping centers, work to lunch trips, etc.

Exhibit 6.3 summarizes the scenarios and adjustment factors that have been calculated and provides a basis to adjust the cost per trip end values to reflect a larger burden on the household growth in the region. Exhibit 6.4 applies the adjustment factors to estimate a separate adjusted cost per trip end for household (residential) and employment (non-residential) units within the study area.

Exhibit 6.3: Residential-Induced Growth Adjustment Factors

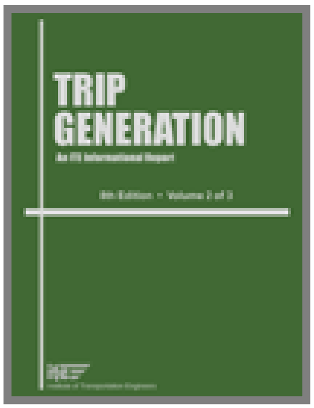
Change in Trip Ends 2010-2035	% Distribution of Total Trip Ends in Study Area	
	Home End	Non-Home End
Base Case HBW and HBNW (1/2 Trip Ends Related to Home) All NHB Ends at Non-Home	**30%**	**70%**
Adjustment Case HBW (Both Trip Ends Related to Home) HBNW (75% Trip Ends Related to Home – 25% to Destination) All NHB Ends at Non-Home	**49%**	**51%**
Delta Factor (Difference between Adjusted and Base Conditions)	**x 1.63**	**x 0.73**

Exhibit 6.4: Adjusted Cost Per Trip End (2010 US $)

Land Use Category	Original Cost Per Daily Trip End	Adjustment Factor	Cost Per Daily Trip End
Residential	**$227**	**1.63**	**$370**
Non-Residential	**$227**	**0.73**	**$166**

Step 3: Development of Fee Structure

A fee structure was developed that includes development fee rates for different types of land uses within the study area. To assist in application, the development fee rates have been expressed in terms of typical land use units, such as cost per dwelling unit and cost per square foot.



The development fee rate has been calculated by multiplying the cost per trip end values by a typical trip generation rate (by trip end) for the land use type. The ITE *Trip Generation Manual, 8th Edition* has been used for this study. The manual is based on hundreds of trip generation surveys nationwide for a range of land use types. It is the most commonly accepted data source for trip generation rates and is a commonly used source for transportation development fee and traffic impact studies. Exhibit 6.5 provides a summary of weekday trip generation rates for various land use types within the ITE manual. A column has been included in the table documenting the number of studies used to determine these rates. As can be seen, some of the land use types do not have a significant number of sources. As a result, care should be taken in the utilization and interpretation of these values.

The available options for a fee structure include developing fees for a detailed number of land use types (e.g. using all of land use types in Exhibit 6.5) or aggregating those land use types into category groups. Due to issues with the statistical relevancy of some of the land use types, a category approach was developed for this fee study.

Exhibit 6.6 presents the land use groups that have been assumed for this study. For each of the categories, an ITE land use type was assigned that best reflects that category and contains a sufficient number of background studies and observations, and included in the table is a description of each as presented in the ITE *Trip Generation Manual*. A category defined as "Other" has been included within the fee structure. This category is assumed to cover any development that cannot be directly related to the other categories. It is assumed that this category will have 50 percent of the trip generation rates of the "Retail" category.

The "Retail" category is a broad category that can include a variety of stores, shopping centers and restaurants. A review of Exhibit 6.5 illustrates that some retail land use types produce very high numbers of daily trips. These include convenience markets, banks, pharmacies, gasoline stations, restaurants and supermarkets. For this fee study, the "Retail" category has been defined using ITE's "Shopping Center" land use type (ITE Code 820). This land use type has trip rates much lower than some of the trip rates discussed above. Potential justifications for the application of lower trip rates to these developments include:

- Not all of these trips are "newly" generated trips due to the development. In many cases such land use generates intermediate stops for travelers on the way to other destinations (to be discussed further).
- Many smaller retail stores (e.g. convenience markets, gas stations, etc.) are the result of increased population in the region and directly serve that population.

The use of category fee rates will certainly create potential issues like those discussed above; however, it was determined that keeping the fee structure as simple as possible would aid in application of the fee structure.

Exhibit 6.5: Weekday Trip Generation Rates, ITE Trip Generation Manual, 8th Edition

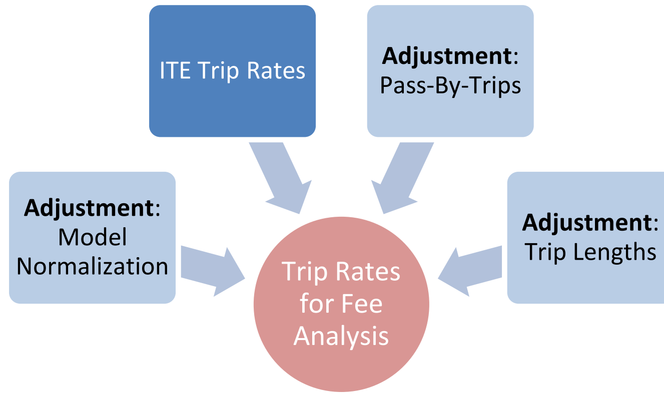
Land Use	Units	ITE Code	# of Studies	ITE Daily Trip End Rate
Residential				
Single Family Detached Housing	DU	210	351	9.57
Residential Condominium/Townhouse	DU	230	56	5.81
Industrial				
General Light Industrial	1000 sq ft	110	18	6.97
General Heavy Industrial	1000 sq ft	120	3	1.50
Industrial Park	1000 sq ft	130	49	6.96
Commercial – Office				
General Office Building	1000 sq ft	710	78	11.01
Business Park	1000 sq ft	770	15	12.76
Retail				
Warehousing	1000 sq ft	150	18	3.56
Mini Warehouse	1000 sq ft	151	14	2.50
Shopping Center	1000 sq ft	820	302	42.94
Convenience Market	1000 sq ft	851	8	737.99
Hardware/Paint Store	1000 sq ft	816	3	51.29
Home Improvement Superstore	1000 sq ft	862	9	29.80
Pharmacy	1000 sq ft	880	6	90.06
Furniture Store	1000 sq ft	890	13	5.06
Bank	1000 sq ft	912	7	148.15
Quality Restaurant	1000 sq ft	931	15	89.95
Restaurant (High turnover, sit down)	1000 sq ft	932	14	127.15
Fast Food Restaurant	1000 sq ft	934	21	496.12
Gasoline/ Service Station	Pumps	944	6	168.56
Gasoline Station with Convenience Market	Pumps	945	11	162.78
Discount Superstore	1000 sq ft	813/815	45/25	53.13/57.24
Supermarket	1000 sq ft	850/854	4/7	102.24/96.82
Nursery – Garden Center	1000 sq ft	817	11	36.08
Nursery – Wholesale	Acres	818	1	19.50
Health Club, Recreation Center	Ksf	492	1	32.93
Golf Course	Holes	430	18	35.74
Institutional				
Elementary School	Students	520	33	1.29
Middle School	Students	522	20	1.62
High School	Students	530	51	1.71
Church	Ksf	560	8	9.11
Park/ Open Space	Acres	411	3	1.59
Lodging				
Hotel	Rooms	310	10	8.17
Motel	Rooms	320	10	5.63

Exhibit 6.6: Fee Study Land Use Categories

Land Use Category	Assumed ITE Land Use Type To Represent Category	ITE Category Description
Residential Single-Family	**210** Single Family Detached Housing	Single-family detached housing includes all sing-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.
Residential Multi-Family	**230** Residential Condominium /Townhouse	Residential condominiums/townhouses are defined as ownership units that have at least one other owned unit within the same building structure. This category does not distinguish between a low-rise and high-rise condominium/townhouse.
Retail	**820** Shopping Center	A shopping center is an integrated group of commercial establishments that is planned, developed, owned and managed as a unit. A shopping center's composition is related to its market area in terms of size, location and type of store. Shopping centers, including neighborhood centers, community centers, regional centers and super regional centers were surveyed for this land use. Some of these centers contained office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities. The centers ranged in size from 1,700 to 2.2 million square feet (GLA).
Office	**710** General Office Building	A general office building houses multiple tenants; it is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building or buildings may contain a mixture of tenants including professional services, insurance companies, investment brokers and tenant services, such as a bank or savings and loan institution, a restaurant or cafeteria and service retail facilities.
Industrial	**110** General Light Industrial	Light industrial facilities are free-standing facilities devoted to a single use. The facilities have an emphasis on activities other than manufacturing and typically have minimal office space. Typical light industrial activities include printing, material testing and assembly of data processing equipment.
Warehouse	**150** Warehousing	Warehouses are primarily devoted to the storage of materials, but they may also include office and maintenance areas.
Other	**----**	Not defined in ITE Manual. Assumed as 50% of retail rate trip generation rates.

A trip-end-based methodology is used to estimate transportation development fees in order to attribute them to residential and non-residential land uses. The trip end rates from the ITE *Trip Generation Manual* were used as the starting point for fee calculations but were adjusted to account for the following issues:

- Differences between the travel model and ITE trip rates
- Pass-By-Trips
- Trip Lengths



The HEPMPO regional travel model was used to determine the number of future trip ends due to projected development in the Ranson / Charles Town study area and to calculate a cost per trip end. These estimates were based on the travel model's household-based trip rates. Note, for the home-based trip purposes (e.g. trips with one trip end at home end), the model estimates total trips based on the number of households and the trip rates. The employment categories are only used as weighted adjustments to allocate and distribute the origins and destinations of those trips. The ITE *Trip Generation Manual* was used to provide a more detailed assessment of trip ends by land use type. The rates are applied to the cost per trip end to develop fees for each land use. To ensure there is some consistency between these two resources, the total household trip productions were compared against the ITE values for single family homes. The model rates were 8% lower; thus an adjustment factor of 0.92 was applied to the ITE trip rates for all land uses to improve total trip consistency between the sources.

Transportation development fee studies typically also account for pass-by-trips and differing trip lengths due to each land use type. Pass-by trips are made by traffic already using the adjacent roadway and include intermediate stops on the way to another destination (e.g. on the way to work). These trips may not be considered as "newly" generated trips by the land use and are often discounted from the fee calculations. The ITE T*rip Generation Handbook (2nd Edition)* has been used to estimate typical pass-by-trip percentages for the land use categories that the fee structure is based on. The pass-by-trip percentages vary based on time period and size of the development. For example, smaller shopping centers typically have higher pass-by-trip percentages than very large shopping centers or malls. In addition, pass-by-trips may be higher during peak periods. Based on the ITE handbook, adjustments to trip rates have only been applied for the "Retail" and "Other" categories included in this fee structure. A typical pass-by-trip percentage of 40 percent (equates to a factor adjustment of trip rate of 0.60) was applied to the "Retail" category. A higher pass-by-trip percentage of 50 percent was applied to the "Other" category due to the fact that this category may include smaller developments that may be more likely intermediate stop locations.

The trip rates for some non-residential development were further adjusted to account for the length of trips associated with each land use type. Trip lengths for retail and other purposes may be considered less than standard trips. Supermarkets, restaurants, and convenience markets may even have average trip lengths shorter than other commercial trips. There are limited available research studies and resources on trip lengths by land use type, as this information is difficult to collect without detailed trip diary surveys. For this fee study, trip lengths were evaluated qualitatively and assumed adjustment values were applied to the trip rates. A 25 percent (equates to a factor adjustment of trip rate of 0.75) reduction was assumed for the "Retail" and "Other" land use categories.

Exhibit 6.7 summarizes the final fees and calculations by residential dwelling unit and non-residential square footage. These fees represent the maximum allowable fee by land use category. Additional fee credits and developer negotiations are addressed in Step 4.

Exhibit 6.7: Fee Calculations (2010 US $)

Land Use Category	Unit	Daily Trip End Cost	ITE Code	ITE Daily Trip End Rate	Model-ITE Adjustment	Trip Length Adjustment	Pass–By–Trip Adjustment	Fee ($)
Residential								
Single-Family	Dwelling Unit	$370	210	9.57	0.92	1.00	1.00	$3,254
Multi-Family	Dwelling Unit	$370	230	5.81	0.92	1.00	1.00	$1,976
Non-Residential								
Retail	1,000 Square Feet	$166	820	42.94	0.92	0.75	0.60	$2,943
Office	1,000 Square Feet	$166	710	11.01	0.92	1.00	1.00	$1,677
Industrial	1,000 Square Feet	$166	110	6.97	0.92	1.00	1.00	$1,061
Warehouse	1,000 Square Feet	$166	150	3.56	0.92	1.00	1.00	$542
Other	1,000 Square Feet	$166	----	21.00	0.92	0.75	0.50	$1,199

Exhibit 6.8 provides a comparison of the fee structure to other areas across the country. The survey of fees was conducted by Duncan Associates in 2010 and is summarized on the website: www.impactfees.com. The results indicate that the estimated fees are consistent with national and nearby state averages. Due to the adjustments for residentially induced travel, the fee structure values are higher for households and lower for employment.

Exhibit 6.8: Comparison of Fees to Other Jurisdictions

		Draft Fees	2010 National Impact Fee Survey *Duncan Associates*	
Land Use Category	Unit	Fee ($)	National Average (275 Jurisdiction Sample)	PA-MD-VA-OH (16 Jurisdiction Sample)
Single-Family	Dwelling Unit	$3,254	$3,227	$2,791
Multi-Family	Dwelling Unit	$1,976	$2,179	$2,041
Retail	1,000 Square Feet	$2,943	$5,946	$3,758
Office	1,000 Square Feet	$1,677	$3,360	$3,240
Industrial	1,000 Square Feet	$1,061	$2,060	$2,004
Warehouse	1,000 Square Feet	$542	-----	-----
Other	1,000 Square Feet	$1,199	-----	-----

STEP 4: FEE CREDITS

The fee structure provided in Exhibit 6.7 provides the maximum fees that may be applied to different development types. Specific fee credits are identified to promote reduced trip making and livable communities, account for possible right-of-way donations that will support future regional transportation projects, and account for project construction for projects that are deemed by the city to provide regional benefits. Exhibit 6.9 summarizes the fee credit structure and values. Fee credits for development types and livable community improvements have been estimated based on a literature review of potential benefits of such developments. A key reference to those values, as used for this fee study, is the following report: *Impact Fee Credits for Livable Communities Improvements: Technical Memorandum #1 Literature Review and Alternative Approaches*, Center for Urban Transportation Research, University of South Florida, January 2004.

Exhibit 6.9: Fee Credits

Category	Fee Credit	Description
Mixed Use Development	**30%**	▪ Applies to all land use categories ▪ Mixed-Use as defined by Ranson Zoning Ordinance
Traditional Neighborhood Development (TND)	**50%**	▪ Applies to all land use categories ▪ TND as defined by Ranson Zoning Ordinance
Livable Community Improvements	**10%**	▪ Applies to all land use categories ▪ Requires: - Construction of off-road internal bike/pedestrian network, connection to nearest arterial roadway, connection to nearby commercial/retail/park/school/transit station, and connections to other nearby existing shared-use paths.
Right-of-Way Property Donation	**$ credit**	▪ Estimated cost of property donation needed for regional capacity improvement project that benefits regional congestion and safety
Transportation Capacity Project Construction	**$ credit**	▪ Portion of construction costs from developer for regional capacity improvement project that benefits regional congestion and safety

SECTION 7: FEE APPLICATION SUMMARY

This report has summarized the technical methodologies and assumptions used to estimate a transportation development fee for Ranson and Charles Town, West Virginia. These fees represent the maximum fees that may be justified for transportation purposes. The cities of Ranson and Charles Town will use an ordinance to carry out the fee structure documented in this report and decide on potential fee credits to reflect unique development characteristics, developer projects or donations, and to ensure that the fees do not prevent regional housing and economic growth within the region. All adjustments to fees should be made fairly, agreed upon and be documented sufficiently. Appendix D provides a 2-page summary of the fee structure and can serve as a public information document.

FEE PROCESS

Exhibit 6.10 summarizes the process to determine the transportation development fee. After determining and reviewing the development characteristics, a decision will determine if the development is exempt from transportation development fees. Typical exemptions include:

- Existing dwelling units and non-residential buildings
- Re-development within existing buildings
- Low-income housing
- Brownfield development

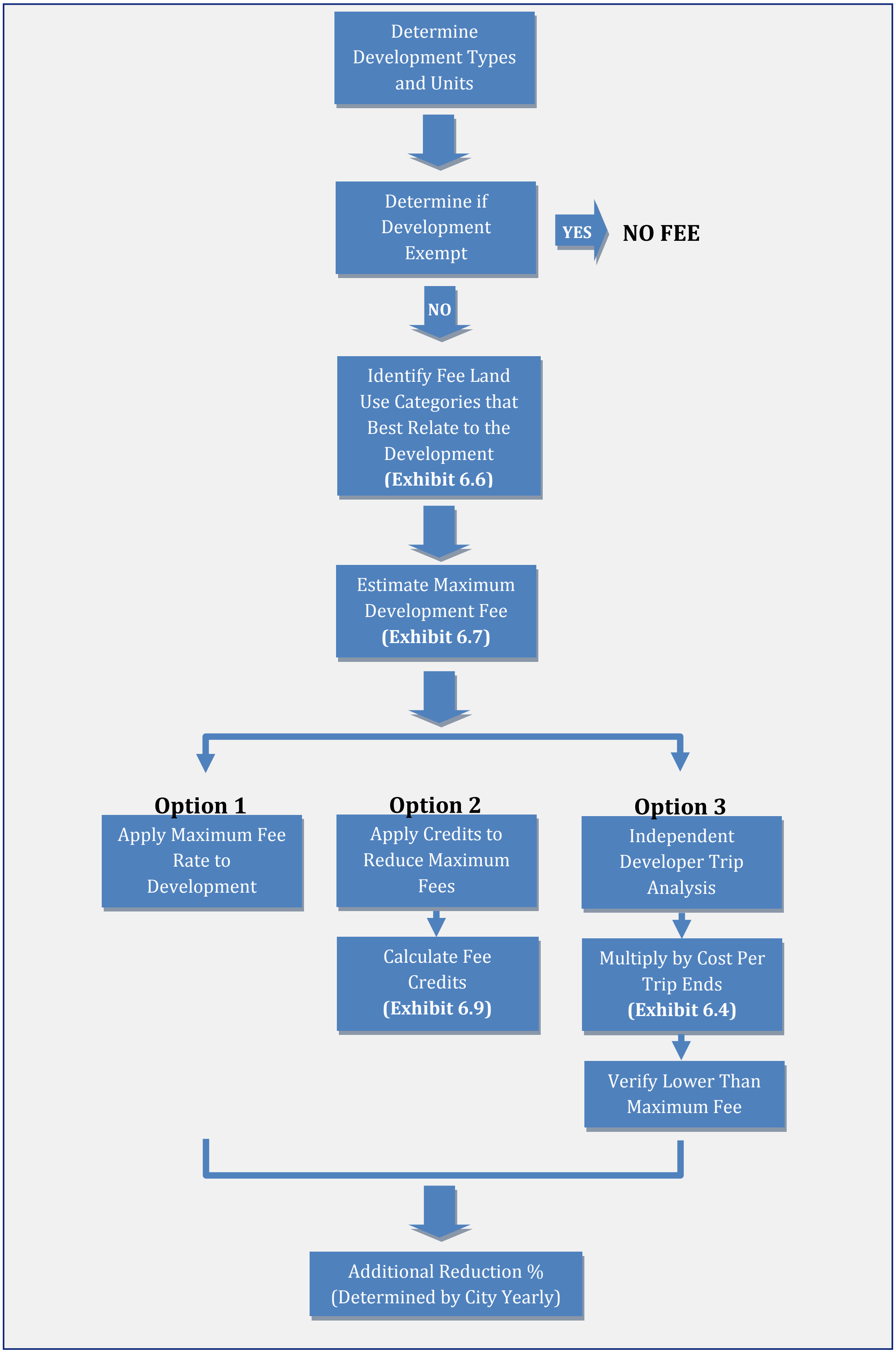
Additional exemptions can be determined in writing and subject to appeal by the appropriate city council. Next, the development land use will be correlated to the fee development types. Mixed-use development should be divided into housing and employment types separately. Exhibit 6.7 can then be used to estimate the maximum fees for each development type and summed to determine a total fee cost if there are multiple development categories.

At this point, several options exist for fee application:

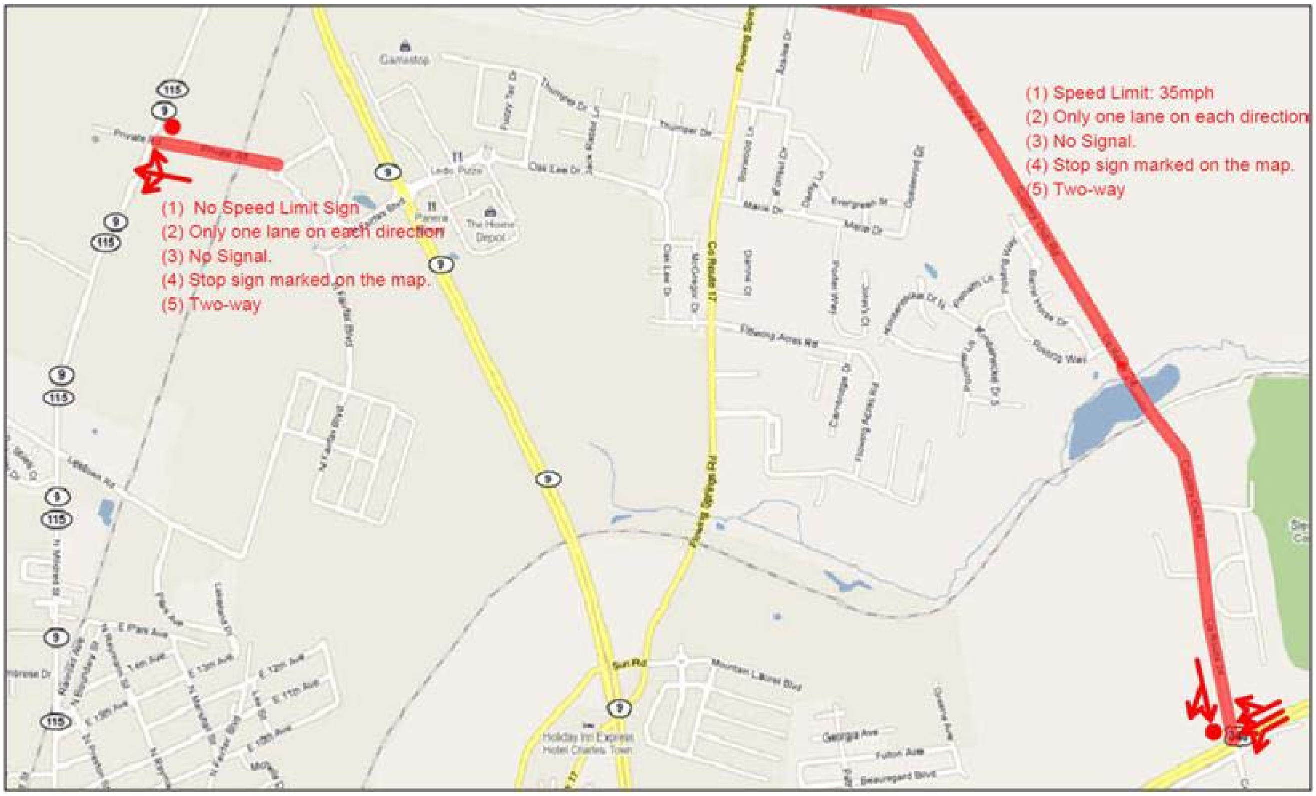
1. Apply the maximum fee rates.
2. If applicable, apply fee credits as summarized in Exhibit 6.9.
3. If in the judgment of the city, none of the fee categories or fee amounts set forth in the fee structure accurately describe or capture the impacts of a new development on roads, the city may ask the applicant to conduct independent fee analysis and the city may impose alternative fees on a specific development based on the application. The fee calculations may be based on the cost per trip end values presented in Exhibit 6.4. The alternative fees and the calculations shall be set forth in writing and shall be agreed to by the city and the fee payer. The documentation submitted must show the basis upon which the independent fee calculation was made.

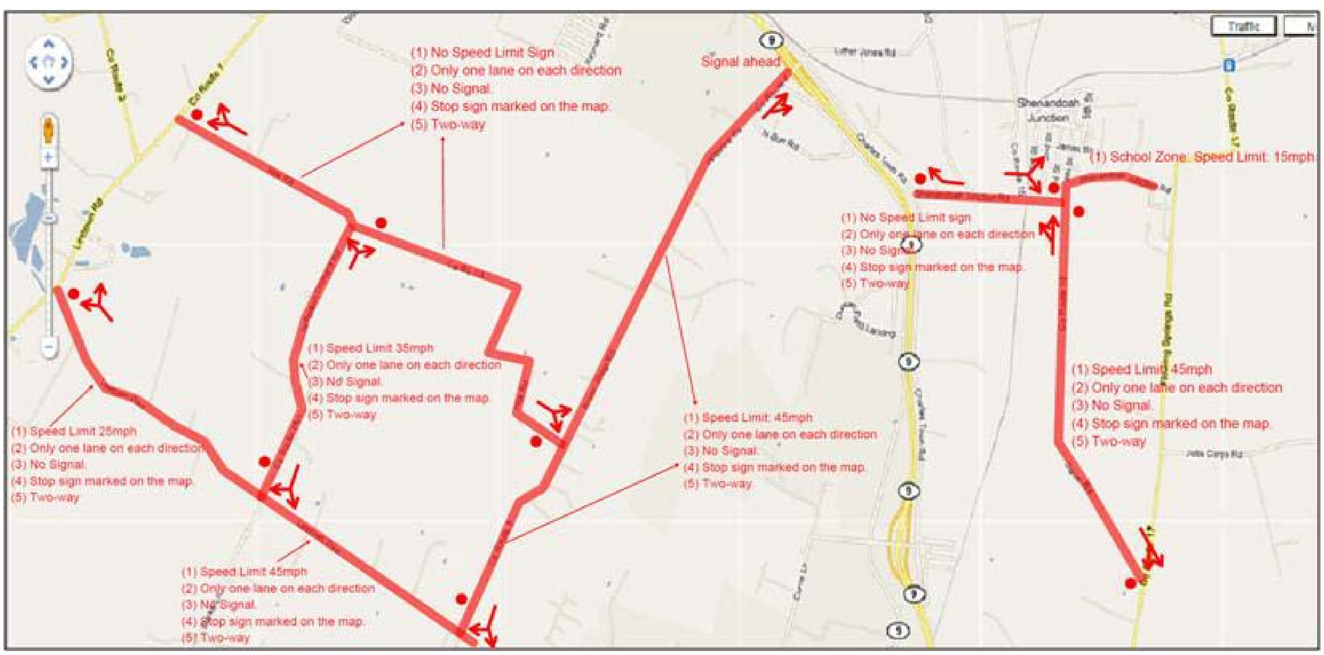
In addition to the above fee adjustments, the city council has the option to review and adjust the development fee on an annual basis. This may be conducted to ensure that fees are reasonable under the current economic situation and to ensure that regional growth and economic development are not negatively impacted by the fee amounts. This fee report has documented maximum fee amounts that may be charged to the development; however, the city does have the flexibility to lower fees as long as it is done in a fair process to all parties and is documented sufficiently.

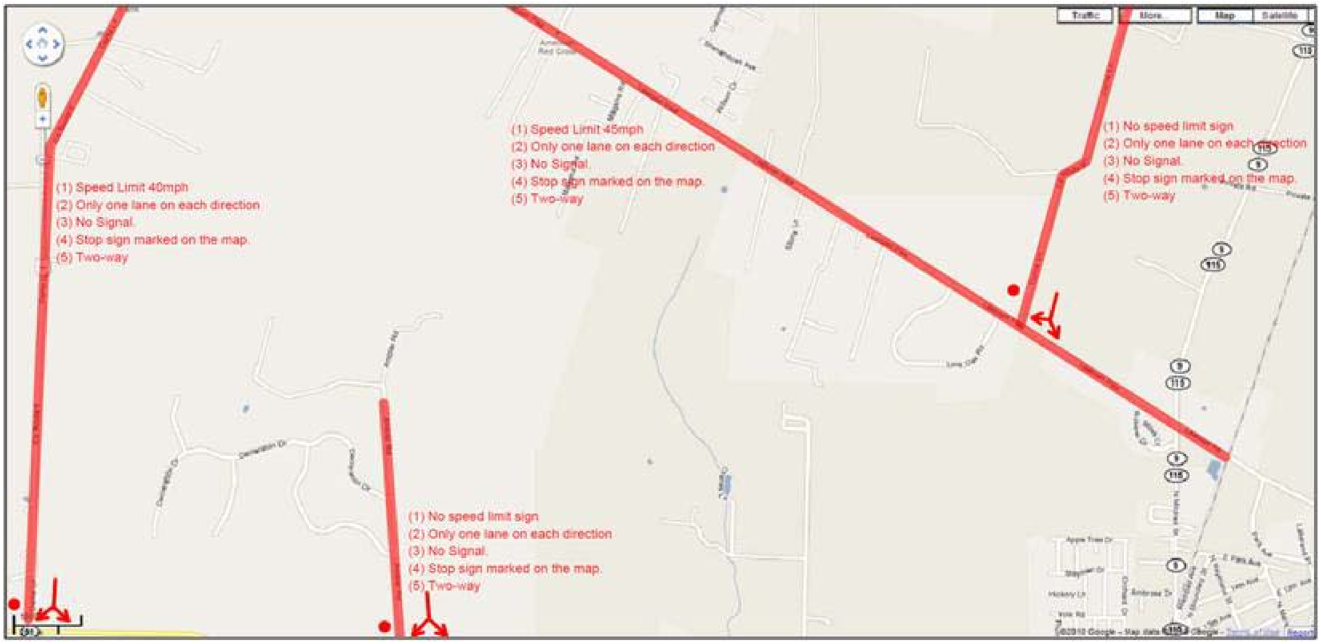
Exhibit 6.10: Fee Application Process



APPENDIX A: ROADWAY INVENTORY FIELD NOTES



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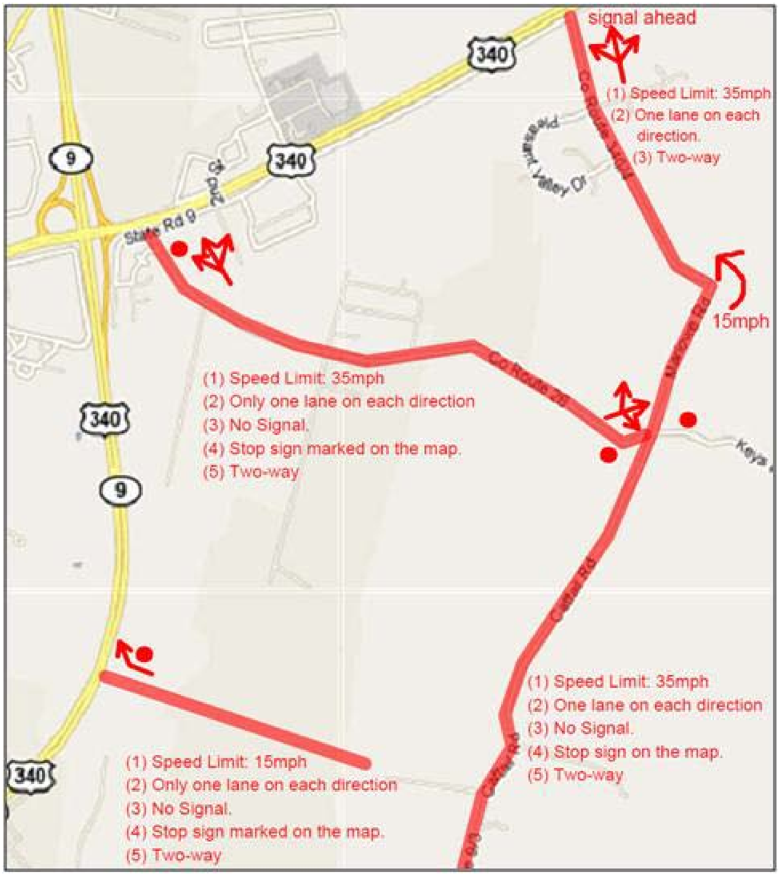
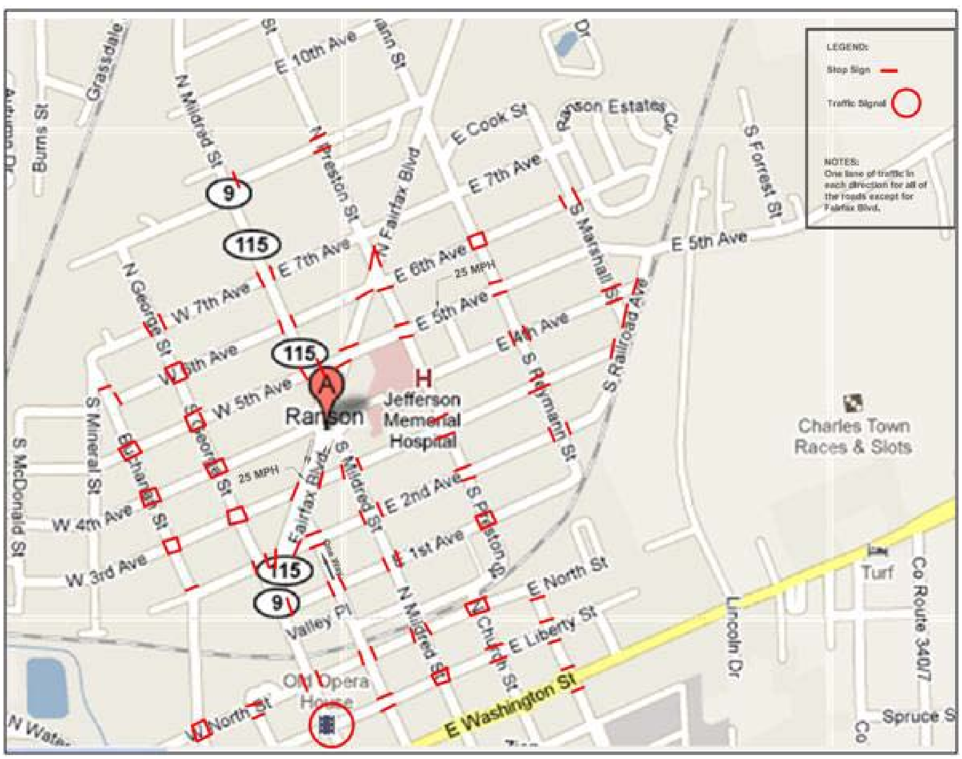
(2) Only one lane on each direction
(3) No Signal.
(4) Stop sign marked on the map.
(5) Two-way
(1) Speed Limit 45mph
(2) Only one lane on each direction
(3) No Signal.
(4) Stop sign marked on the map.
(5) Two-way
(1) No speed limit sign
(2) Only one lane on each direction
(3) No Signal.
(4) Stop sign marked on the map.
(5) Two-way
(1) No speed limit sign
(2) Only one lane on each direction
(3) No Signal.
(4) Stop sign marked on the map.
(5) Two-way


(1) Speed Limit: 30mph
(2) Only one lane on each direction
(3) No Signal/ No stop sign
(4) Two-way
(1) Speed Limit: 35mph
(2) Only one lane on each direction
(3) No Signal.
(4) Stop sign marked on the map.
(5) Two-way
(1) Speed Limit: 40mph->25mph
(2) Only one lane on each direction
(3) No Signal/ No stop sign
(4) Two-way
(1) Speed Limit: 40mph
(2) Only one lane on each direction
(3) No Signal/ No stop sign
(4) Two-way
Ranson
Charles Town
Charles Town Races & Slots
Edge Hill Cemetery
E Washington St
W Washington St
Co Route 13
Summit Point Rd
Cranes Ln
Co Route 9/2


signal ahead
(1) Speed Limit: 35mph
(2) One lane on each direction.
(3) Two-way
15mph
(1) Speed Limit: 35mph
(2) Only one lane on each direction
(3) No Signal.
(4) Stop sign marked on the map.
(5) Two-way
(1) Speed Limit: 35mph
(2) One lane on each direction
(3) No Signal.
(4) Stop sign on the map.
(5) Two-way
(1) Speed Limit: 15mph
(2) Only one lane on each direction
(3) No Signal.
(4) Stop sign marked on the map.
(5) Two-way


Speed limit: 45mph
Speed limit:30mph
Speed limit:40mph
(1) Only one lane on each direction
(2) No Signal.
(3) Stop sign marked on the map.
(4) Two-way
(1) Speed Limit: 30mph
(2) Only one lane on each direction
(3) No Signal.
(4) Stop sign marked on the map.
(5) Two-way
(1) Speed Limit: 30mph
(2) Only one lane on each direction
(3) No Signal.
(4) Stop sign marked on the map.
(5) Two-way


LEGEND:
Stop Sign
NOTES:
One lane of traffic in each direction for all of the roads
40 MPH
25 MPH
Leetown Rd
N Mildred St
Apple Tree Dr
Stayman Dr
Hickory Ln
York Rd
Plum Tree Ln
Peach Tree Dr
Co Route 9/2
Orchard Dr
Ambrose Dr
Grassdale St
Summers Ct
Autumn Dr
Burns St
Railroad Ave
N Boundary St
N Reymann St
E Park Ave
Park Ave
Lakeland Pl
14th Ave
E 13th Ave
E 12th Ave
E 11th Ave
E 10th Ave
N Preston St
N Marshall St
N Fairfax Blvd
Lee St
E Cook St
E 7th Ave
S Forrest


LEGEND:
Stop Sign
Traffic Signal
NOTES:
One lane of traffic in each direction for all of the roads except for Fairfax Blvd.
25 MPH
E 10th Ave
N Mildred St
N Preston St
N Fairfax Blvd
E Cook St
E 7th Ave
E 6th Ave
E 5th Ave
E 4th Ave
E 2nd Ave
E 1st Ave
E North St
E Liberty St
E Washington St
S Forrest St
S Marshall St
S Railroad Ave
S Reymann St
S Preston St
S Mildred St
W 7th Ave
W 5th Ave
W 4th Ave
W 3rd Ave
N George St
S George St
S Mineral St
S McDonald St
Burns St
Grassdale
Ranson
Jefferson Memorial Hospital
Charles Town Races & Slots
Turf
Lincoln Dr
Co Route 340/7
Spruce S
Valley Pl
Old Opera House
W North St


LEGEND:
Stop Sign
Traffic Signal
NOTES:
One lane of traffic in each direction for all of the roads
25 MPH
40 MPH
35 MPH
W Washington St
E Washington St
Old Opera House
Jefferson County Courthouse
American Public Education
Zion Cemetery
Edge Hill Cemetery
S George St
S Samuel St
S Mildred St
Church St
S Seminary St
Co Route 34
Co Route 340/7
Jefferson Ave
Euclid Ave
Spruce St
Cherry Tree Dr
Plum Tree Ct
Hale Rd
Belvedere Dr
High St
Morison St
E Hunter St
Green St
Wall St
Shutter St
Mordington Ave
Blakeley Pl
St Augustine Ave
Ann St
W Congress St
W Avis St
E North St
E Liberty St
Valley Pl
W 3rd Ave
Lincoln Dr
Brooke St
4th St

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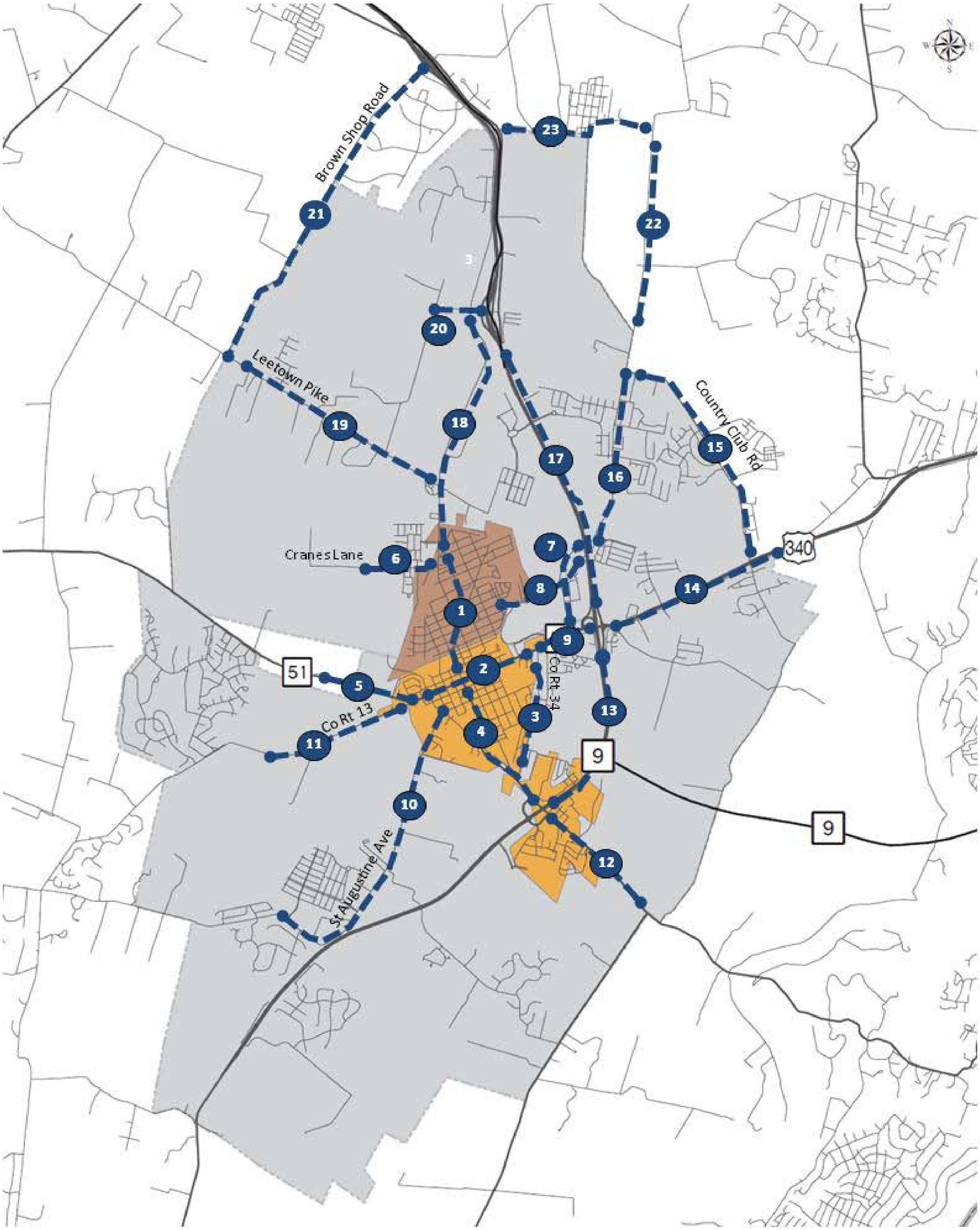
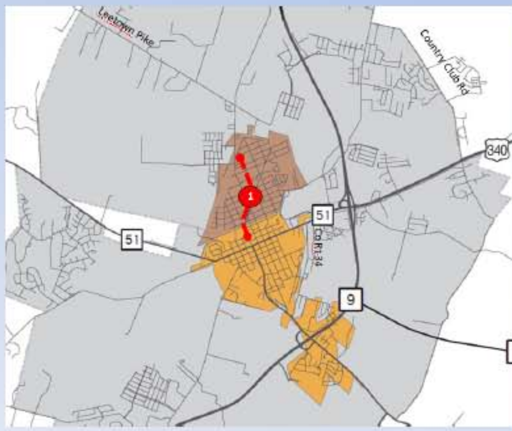
APPENDIX B: CORRIDOR CONGESTION SHEETS

Corridor Definitions



Corridor 1: Route 115/9

Project Location



Corridor Details

	Existing Conditions				Projected 2020				Projected 2035			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with E Washington St	6,100	0.95	190	3%	8,300 (36%)	0.98	290	2%	10,800 (77%)	1.13	530	1%
Intersection with 4th Ave	5,600	0.88	100	3%	8,100 (45%)	1.06	420	2%	10,800 (93%)	1.19	620	1%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	Limited ROW	X	X	X

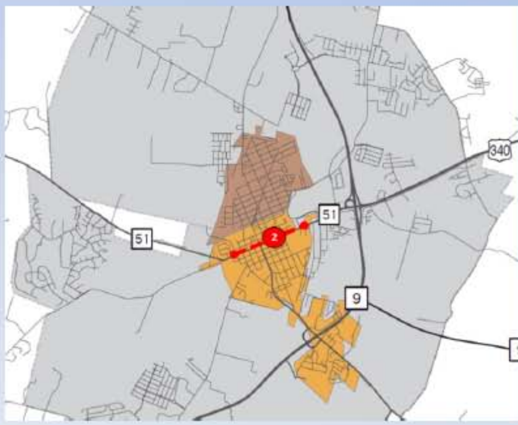
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Fairfax Blvd	Divert traffic to parallel facility	Yes
Currie Road Extension	Divert traffic to parallel facility	Yes

CORRIDOR DETAIL SHEETS

Corridor 2: Route 51 – Washington St

Project Location



Corridor Details

	Existing Conditions				Projected 2020				Projected 2035			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Martin Luther King Blvd	8,200	1.03	280	16%	9,000 (10%)	1.28	770	22%	10,300 (26%)	1.48	1,090	25%
Intersection with N George	8,200	0.83	40	18%	8,600 (5%)	0.84	60	26%	9,200 (12%)	1.02	350	27%
Intersection with Hollywood	14,000	0.81	20	9%	14,100 (1%)	0.89	180	15%	15,400 (10%)	0.95	300	17%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	Limited ROW	X	X	X

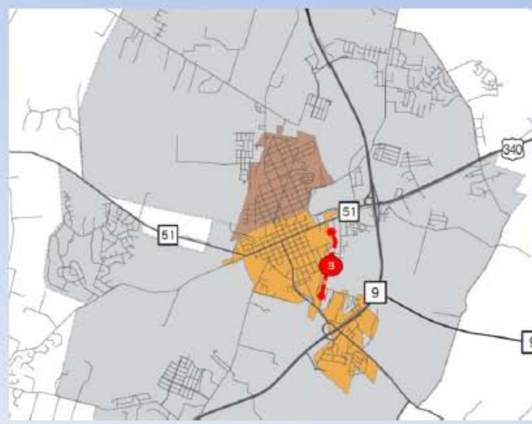
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Traffic Safety & Pedestrian Mobility	Improve pedestrian safety and improve intersection design along Washington Street	No (Identified by City)
Charles Washington Hall Multimodal Center	Improve access to transit stops	No (Identified by City)

CORRIDOR DETAIL SHEETS

Corridor 3: Co Route 34

Project Location



Corridor Details

	Existing Conditions				Projected 2020				Projected 2035			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Washington St	6,500	0.43	-	0%	7,000 (8%)	**0.91**	170	0%	8,100 (25%)	**1.01**	320	1%
Intersection with Rt 115	6,000	0.36	-	0%	6,000 (0%)	0.58	-	1%	6,600 (10%)	0.67	-	2%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
		x		

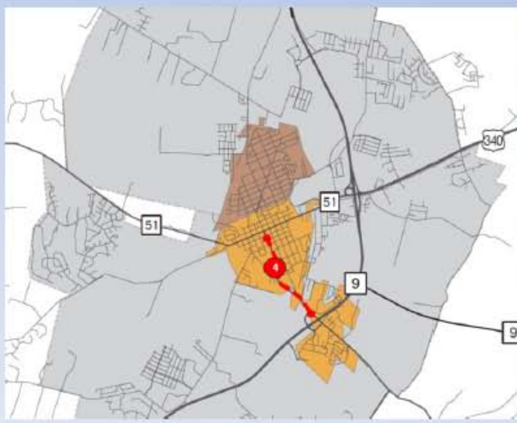
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Co34 @ Washington Street Intersection Improvement	Improve operations at intersection (improved signal timing / turning lanes)	No (From this study)

CORRIDOR DETAIL SHEETS

Corridor 4: Route 115/9

Project Location



Corridor Details

Location	Existing Conditions: Daily Volume	Existing Conditions: Peak V/C	Existing Conditions: Excess Demand (VPH)	Existing Conditions: % Thru UGB Traffic	Projected 2020: Projected Volume *(Growth)*	Projected 2020: Peak V/C	Projected 2020: Excess Demand (VPH)	Projected 2020: % of Thru UGB Traffic	Projected 2035: Projected Volume *(Growth)*	Projected 2035: Peak V/C	Projected 2035: Excess Demand (VPH)	Projected 2035: % of Thru UGB Traffic
Bridge over US 340	14,700	0.74	-	12%	14,700 (0%)	0.68	-	10%	17,400 (18%)	0.88	160	10%
Intersection with S Samuel	6,200	0.28	-	14%	8,400 (35%)	0.53	-	10%	11,000 (77%)	0.62	-	9%
Intersection with Washington St	6,100	0.38	-	9%	8,400 (38%)	**1.03**	370	7%	10,500 (72%)	**1.20**	640	4%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
		Limited ROW		X

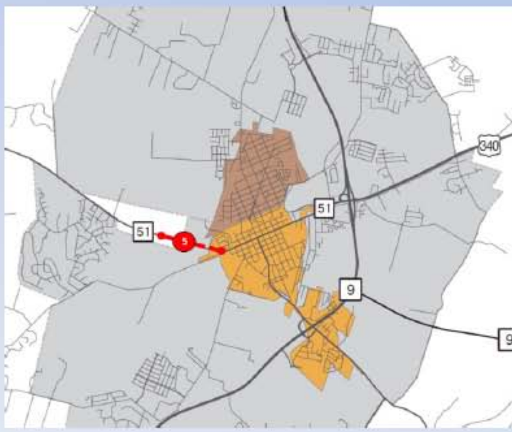
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Route 9 TSM	Intersection improvements on southern end of corridor	Yes
Downtown Traffic Flow Study	Address future traffic concerns through a future study of key intersections	No (From this Study)

CORRIDOR DETAIL SHEETS

Corridor 5: Route 51

Project Location



Corridor Details

Existing Conditions

Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic
Intersection with Washington St*	8,200	**0.89**	110	23%
Intersection with Eagle Ave	9,100	0.48	-	23%

Projected 2020

Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
9,100 (11%)	**0.94**	220	31%
10,300 (13%)	0.48	-	30%

Projected 2035

Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
10,100 (23%)	**1.01**	340	34%
11,600 (27%)	0.53	-	32%

* Identified as current congested location – traffic counts do not properly account for peak hour vehicle queueing

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	x	x		x

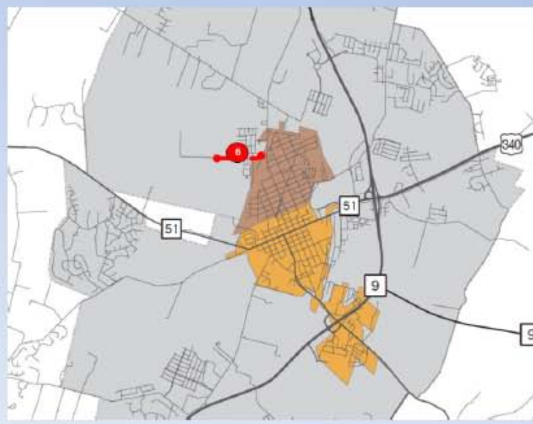
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
WV51 Washington and Summit Point Road	Intersection Redesign to improve flow on eastbound Route 51	Yes
WV51 Widening	New Alignment with Capacity Improvements	Yes

CORRIDOR DETAIL SHEETS

Corridor 6: Cranes Lane

Project Location



Corridor Details

	Existing Conditions				*Projected 2020*				*Projected 2035*			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Rt 115	2,300	0.16	-	0%	5,500 (139%)	**0.93**	190	0%	8,900 (287%)	**1.19**	570	0%
Intersection with Grassdale St	2,300	0.12	-	0%	5,500 (139%)	0.49	-	0%	8,900 (287%)	0.65	-	0%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	X	X		X

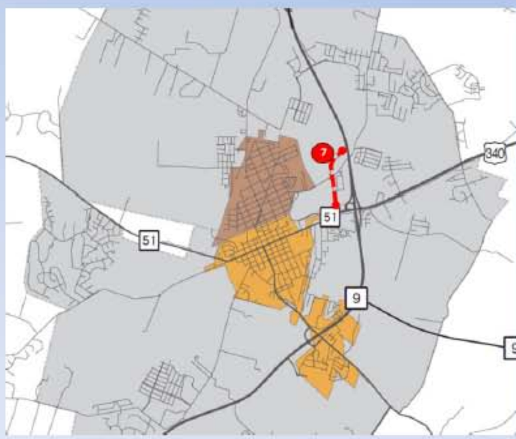
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Currie Road Extension	Provide access to downtown for new development in area	Yes
Beltline Ave West Extension	Provide access to downtown for new development in area	Yes

CORRIDOR DETAIL SHEETS

Corridor 7: Sun Rd/Flowing Springs Rd

Project Location



Corridor Details

	Existing Conditions				Projected 2020				Projected 2035			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with 5th Ave	12,900	0.89	130	1%	15,000 (16%)	0.74	-	1%	18,000 (40%)	0.88	140	4%
Intersection with Washington St	12,900	0.85	80	1%	14,500 (12%)	0.89	140	1%	17,200 (33%)	**1.02**	330	4%

* Intersection of Sun Rd / Rt 9 also identified as congested location outside of model analysis

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
		X	X	

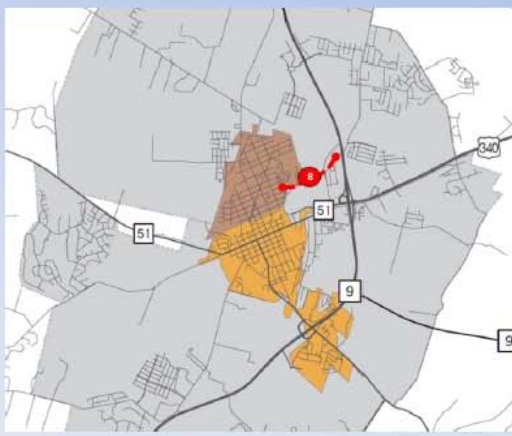
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Beltline Ave East Extension	Provide relief to Intersection with 5th avenue	Yes

CORRIDOR DETAIL SHEETS

Corridor 8: 5th Ave/Co Route 17

Project Location



Corridor Details

Location	*Existing Conditions* Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	*Projected 2020* Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	*Projected 2035* Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Hollywood	14,300	0.66	-	0%	16,000 (12%)	1.31	970	0%	18,300 (28%)	1.44	1,220	1%
1 Mile W/O CO 17	15,100	0.64	-	0%	17,200 (14%)	1.28	910	0%	18,600 (23%)	1.37	1,080	1%
Intersection with Sun Road	13,000	0.90	150	0%	14,900 (15%)	2.02	2,140	0%	16,200 (25%)	2.18	2,420	1%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	x	x		x

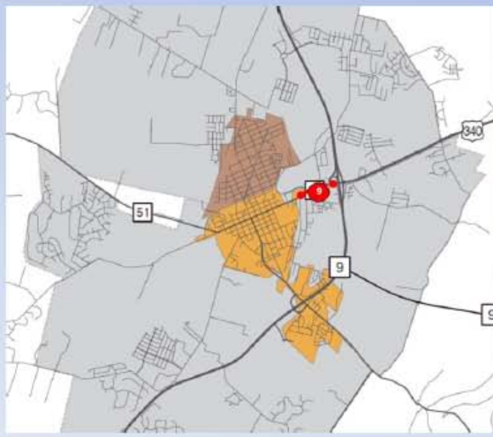
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Beltline Ave East Extension	Provide relief to 5th avenue	Yes

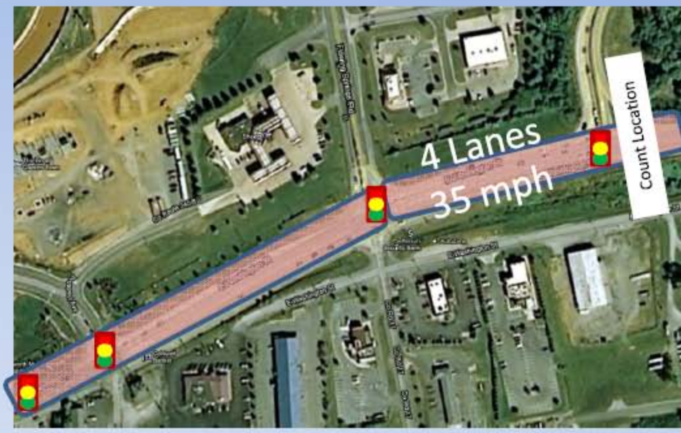
CORRIDOR DETAIL SHEETS

Corridor 9: E Washington St

Project Location



Corridor Details



Existing Conditions

Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic
Intersection with Hollywood	16,000	1.00	320	10%
Intersection with Co Route	16,000	1.33	640	7%
Intersection with Rt 9 Ramp	16,000	0.67	-	23%

Projected 2020

Location	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Hollywood	17,700 (11%)	1.79	1,580	15%
Intersection with Co Route	18,300 (14%)	2.25	1,740	11%
Intersection with Rt 9 Ramp	18,300 (14%)	1.35	1,320	26%

Projected 2035

Location	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Hollywood	20,300 (27%)	1.92	1,790	17%
Intersection with Co Route	19,900 (24%)	2.44	1,970	13%
Intersection with Rt 9 Ramp	20,800 (30%)	1.47	1,610	27%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	x	x	x	x

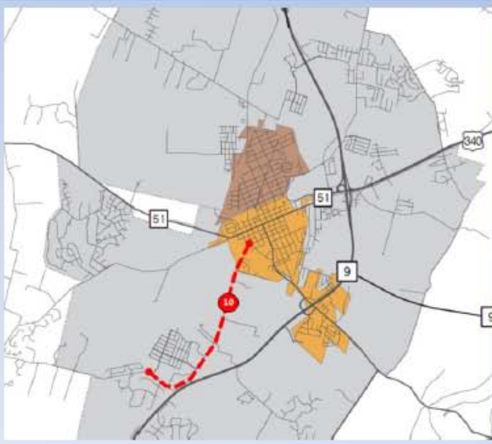
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
East Washington Street Traffic Improvements	Increase capacity and signal optimization	No (From this Study)

CORRIDOR DETAIL SHEETS

Corridor 10: Huyett Rd / St Augustine Ave

Project Location



Corridor Details

Existing Conditions / Projected 2020 / Projected 2035

Location	Existing Conditions: Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected 2020: Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected 2035: Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with S West St	3,600	0.22	-	0%	5,400 (50%)	0.48	-	0%	8,200 (128%)	0.63	-	0%
S/O W Academy St	3,600	0.22	-	0%	5,300 (47%)	0.41	-	0%	8,900 (147%)	0.59	-	0%
Huyett Rd	1,600	0.13	-	20%	5,600 (250%)	0.81	10	6%	9,300 (481%)	1.31	640	2%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
			X	

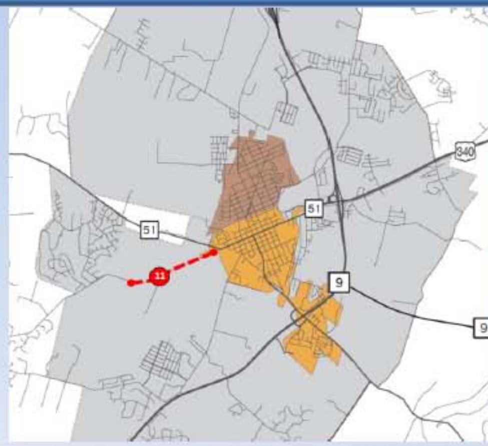
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Huyett Road Intersection Improvements	Improve intersection operation at St. Augustine Avenue – Possible signalization	No (From this Study)

CORRIDOR DETAIL SHEETS

Corridor 11: Co Route 13 / Summitt Point Rd

Project Location



Corridor Details

Location	Existing Conditions: Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected 2020: Projected Volume *(Growth)*	Peak V/C	Excess Deman d (VPH)	% of Thru UGB Traffic	Projected 2035: Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Washington St	3,100	0.21	-	5%	3,200 (3%)	0.49	-	5%	3,700 (19%)	0.61	-	7%
3 Mile W/O WV 51	3,100	0.16	-	5%	3,200 (3%)	0.25	-	5%	3,600 (16%)	0.32	-	7%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
X				

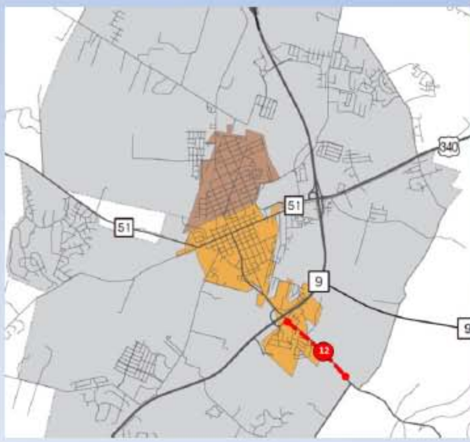
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
WV51 Washington Street and Summitt Point Rd	Project focuses on WV51 congestion reduction but should provide adequate operations for Summitt Rd Approach	Yes

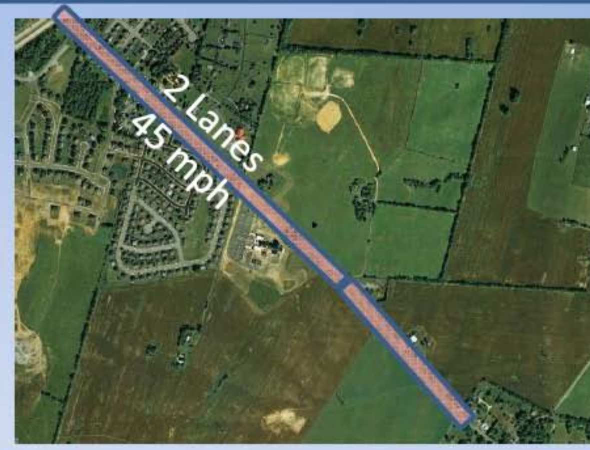
CORRIDOR DETAIL SHEETS

Corridor 12: Old Route 9

Project Location



Corridor Details



	Existing Conditions				Projected 2020				Projected 2035			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with US 340 Ramp*	14,700	0.74	-	26%	14,700 (0%)	0.61	-	24%	14,700 (0%)	0.59	-	21%
Intersection with Crosswinds Dr*	14,700	0.74	-	27%	14,700 (0%)	0.59	-	24%	14,700 (0%)	0.61	-	21%

* Identified as current congested location – traffic counts do not properly account for peak hour vehicle queueing

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	x	x	x	

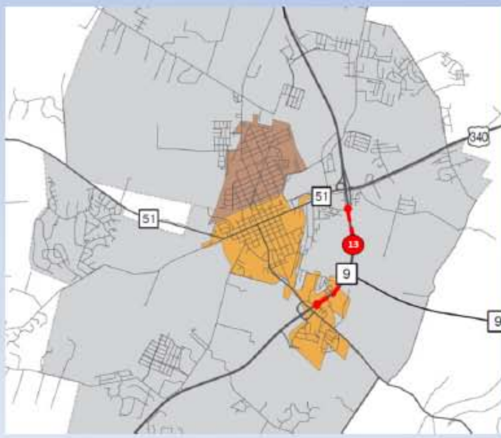
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Old Route 9 TSM	Access Management improvements to relieve intersection congestion	Yes

CORRIDOR DETAIL SHEETS

Corridor 13: US 340 / Route 9

Project Location



Corridor Details

Existing Conditions					Projected 2020				Projected 2035			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
N/O Crescent Dr (New Interchange) Both	20,700	0.41	-	44%	32,000 (55%)	**0.99**	910	33%	43,200 (109%)	**1.26**	2,210	29%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	X			X

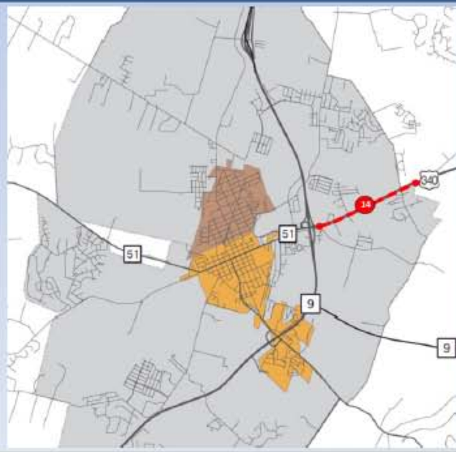
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
WV9: US340 to VA State Line New Alignment 4 Lanes	Improve operations and relieve congestion	Yes TIP Project

CORRIDOR DETAIL SHEETS

Corridor 14: US 340

Project Location



Corridor Details

Location	Existing Conditions: Daily Volume	Existing Conditions: Peak V/C	Existing Conditions: Excess Demand (VPH)	Existing Conditions: % Thru UGB Traffic	Projected 2020: Projected Volume *(Growth)*	Projected 2020: Peak V/C	Projected 2020: Excess Demand (VPH)	Projected 2020: % of Thru UGB Traffic	Projected 2035: Projected Volume *(Growth)*	Projected 2035: Peak V/C	Projected 2035: Excess Demand (VPH)	Projected 2035: % of Thru UGB Traffic
Intersection with Route 9 Ramp	37,700	1.57	1,850	32%	41,100 (9%)	1.66	2,060	34%	45,500 (21%)	1.79	2,380	35%
Intersection with Patrick Henry Way	37,700	1.05	900	38%	38,800 (3%)	1.25	1,620	38%	38,500 (2%)	1.25	1,620	39%
Intersection with Country Club Road	37,700	1.05	900	38%	38,800 (3%)	1.06	1,010	38%	38,500 (2%)	1.12	1,250	39%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	x	x	x	x

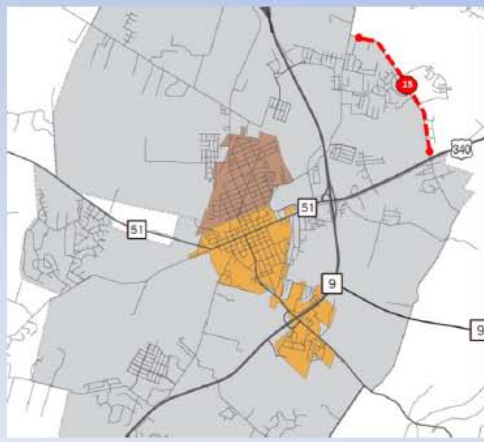
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
US 340 & Country Club Interchange	Improve corridor operation and remove signal constraints	Yes

CORRIDOR DETAIL SHEETS

Corridor 15: Country Club Road

Project Location



Corridor Details

	Existing Conditions				*Projected 2020*				*Projected 2035*			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with US 340	3,500	0.23	-	9%	6,400 (83%)	0.67	-	10%	9,100 (160%)	0.82	-	13%
Intersection with Co Route 17	3,500	0.24	-	6%	7,100 (103%)	0.86	90	7%	10,100 (189%)	1.15	510	8%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	X	X		X

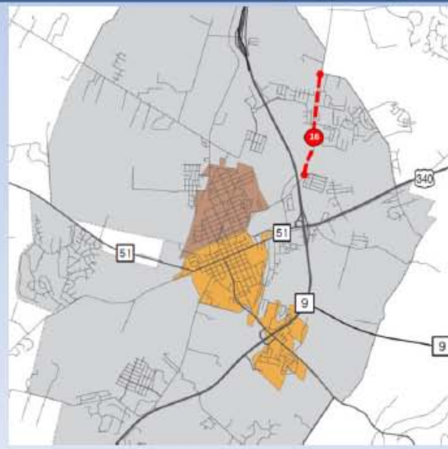
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
US 340 & Country Club Interchange	Improve corridor operation and remove signal constraints	Yes

CORRIDOR DETAIL SHEETS

Corridor 16: Flowing Springs Road / Co Route 17 / Sun Road Connection to Route 9

Project Location



Corridor Details

Existing Conditions / Projected 2020 / Projected 2035

	Existing Conditions				Projected 2020				Projected 2035			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Sun Road	6,300	0.52	-	6%	7,600 (21%)	0.82	40	6%	10,000 (59%)	0.92	230	5%
Intersection with Country Club Road	5,000	0.58	-	5%	7,600 (52%)	0.87	130	5%	10,600 (112%)	0.94	280	4%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
		x	x	

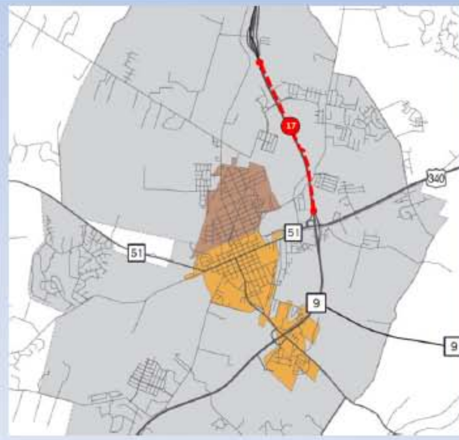
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Sun Road / Route 9 / Flowing Springs Road Intersection Improvements	Possible Signalization to improve intersection operations	No (From this Study)

CORRIDOR DETAIL SHEETS

Corridor 17: Route 9

Project Location



Corridor Details

	Existing Conditions				*Projected 2020*				*Projected 2035*			
Location	**Daily Volume**	**Peak V/C**	**Excess Demand (VPH)**	**% Thru UGB Traffic**	**Projected Volume *(Growth)***	**Peak V/C**	**Excess Demand (VPH)**	**% of Thru UGB Traffic**	**Projected Volume *(Growth)***	**Peak V/C**	**Excess Demand (VPH)**	**% of Thru UGB Traffic**
Intersection with Oak Lee Drive/Fairfax Blvd	17,600	0.85	120	27%	27,800 (58%)	1.52	1,730	17%	38,400 (118%)	2.01	2,920	11%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	x	x		x

Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Route 9 Traffic Study	Study possible increase in lanes / removal of add-grade access	No (From this Study)

CORRIDOR DETAIL SHEETS

Corridor 18: Route 115/9 – Mildred St

Project Location

Corridor Details

Existing Conditions

Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic
South of Leetown Pike	5,600	0.53	-	4%
North of Leetown Pike	5,000	0.42	-	0%
Intersection with Currie Lane	5,600	0.70	-	0%

Projected 2020

Location	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
South of Leetown Pike	9,300 (66%)	0.77	-	2%
North of Leetown Pike	12,700 (154%)	0.64	-	0%
Intersection with Currie Lane	11,900 (113%)	0.95	230	0%

Projected 2035

Location	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
South of Leetown Pike	13,800 (146%)	0.96	320	1%
North of Leetown Pike	22,900 (358%)	0.90	200	0%
Intersection with Currie Lane	18,400 (229%)	1.30	750	0%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	x	x		x

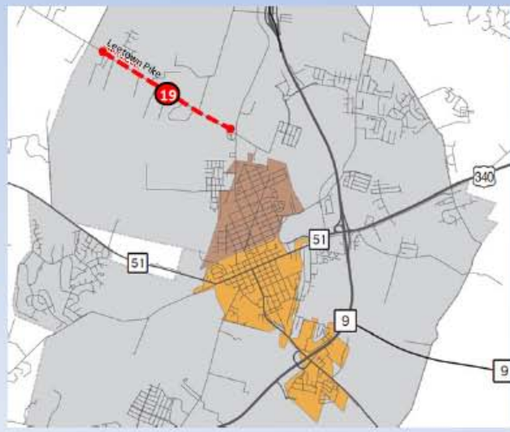
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Mildred St: Widen to 4 Lanes	Increase Capacity along Rt 115	Yes
Mildred St & Leetown Pike Intersection Improvement	Increase Capacity along Rt 115	Yes

CORRIDOR DETAIL SHEETS

Corridor 19: Leetown Pike

Project Location



Corridor Details

	Existing Conditions				*Projected 2020*				*Projected 2035*			
Location	**Daily Volume**	**Peak V/C**	**Excess Demand (VPH)**	**% Thru UGB Traffic**	**Projected Volume *(Growth)***	**Peak V/C**	**Excess Demand (VPH)**	**% of Thru UGB Traffic**	**Projected Volume *(Growth)***	**Peak V/C**	**Excess Demand (VPH)**	**% of Thru UGB Traffic**
Intersection with Lone Oak Road	4,000	0.17	-	9%	5,300 (33%)	0.37	-	4%	7,300 (83%)	0.53	-	3%
Intersection with Lone Wiltshire Road	4,400	0.18	-	7%	9,900 (125%)	0.68	-	2%	16,500 (275%)	**1.02**	530	1%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
		X	X	

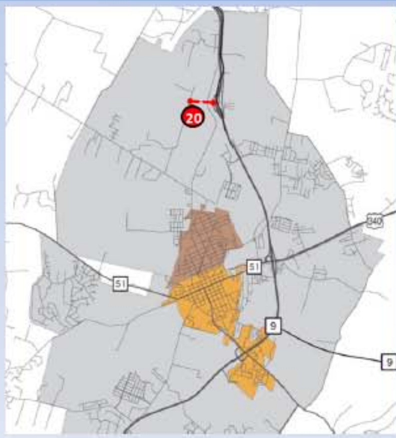
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Mildred St & Leetown Pike Intersection Improvement	Increase Capacity along Rt 115	Yes

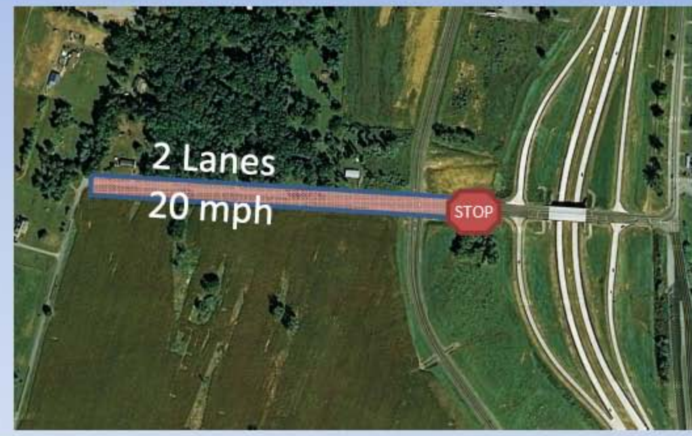
CORRIDOR DETAIL SHEETS

Corridor 20: Currie Lane

Project Location



Corridor Details



	Existing Conditions				*Projected 2020*				*Projected 2035*			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Rt 9 Ramp	2,500	0.50	-	0%	11,300	1.80	1,250	0%	22,400	2.68	2,350	0%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
	x	x	x	

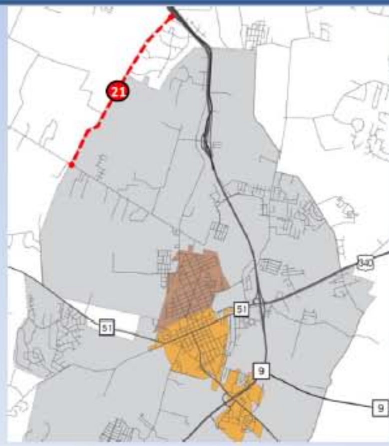
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Currie Road Widening	Increase Capacity along Currie Road	Yes

CORRIDOR DETAIL SHEETS

Corridor 21: Co Route 8 / Brown Shop Road

Project Location



Corridor Details

	Existing Conditions				*Projected 2020*				*Projected 2035*			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Leetown Pike	1,800	0.14	-	2%	4,100 (128%)	0.85	60	1%	7,700 (328%)	**1.21**	510	0%
Intersection with Rt 9 Ramp	1,800	0.12	-	1%	5,200 (189%)	0.81	20	0%	8,800 (389%)	**1.20**	600	0%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
		X	X	

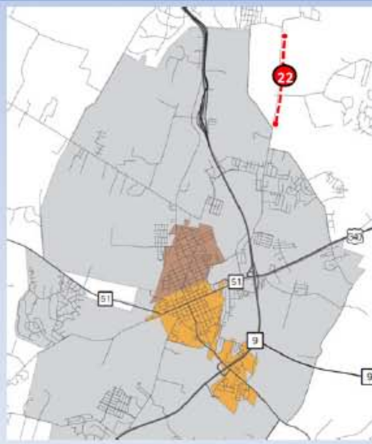
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Brown Shop Rd Intersection Improvements	Possible addition of turn lanes or signalization	No (From this Study)

CORRIDOR DETAIL SHEETS

Corridor 22: Flowing Springs Road

Project Location



Corridor Details

	Existing Conditions				*Projected 2020*				*Projected 2035*			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Daniel Rd	5,000	0.21	-	9%	6,000 (20%)	0.82	50	10%	7,900 (58%)	0.86	140	9%
Intersection with Shenandoah Junction Rd	5,000	0.21	-	22%	6,700 (34%)	0.91	260	25%	9,700 (94%)	0.97	410	23%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
X				

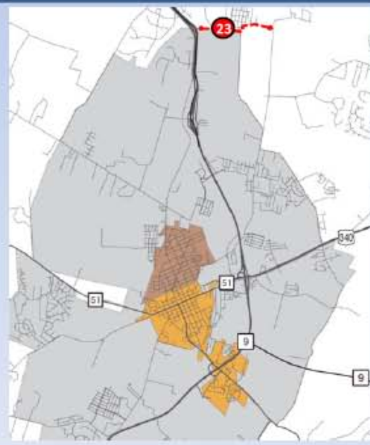
Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
No Projects Identified; Projected congestion near thresholds , no major intersections in UGB		

CORRIDOR DETAIL SHEETS

Corridor 23: Shenandoah Junction Road

Project Location



Corridor Details

Existing Conditions / Projected 2020 / Projected 2035

	Existing Conditions				Projected 2020				Projected 2035			
Location	Daily Volume	Peak V/C	Excess Demand (VPH)	% Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic	Projected Volume *(Growth)*	Peak V/C	Excess Demand (VPH)	% of Thru UGB Traffic
Intersection with Flowing Springs Rd	2,300	0.14	-	77%	3,800 (65%)	1.88	1,840	59%	7,000 (204%)	1.86	1,800	39%
Intersection with Charles Town Rd	2,300	0.14	-	40%	3,600 (57%)	1.26	780	37%	5,900 (157%)	1.43	1,070	35%

Applicable Improvements

No Improvements Needed	Add "Thru" Lanes	Intersection Turn Lanes	Signal / Coordination	Other
		X	X	

Identified Projects

Project Name	Project Impact on Corridor	Identified During LRTP Process
Shenandoah Intersection Improvements	Possible addition of turn lanes or signalization	No (From this Study)

CORRIDOR DETAIL SHEETS

APPENDIX C: COMPLETE STREETS POLICY – NATIONAL COMPLETE STREETS COALITION

NATIONAL COMPLETE STREETS COALITION
1707 L ST NW, SUITE 250 • WASHINGTON DC 20036
www.completestreets.org • p: 202-955-5543 • f: 202-955-5592 • e: info@completestreets.org

ELEMENTS OF AN IDEAL COMPLETE STREETS POLICY

Regardless of a policy's form, the National Complete Streets Coalition has identified ten elements of a comprehensive complete streets policy, as discussed below. For examples of strong policy language, see our current chart of selected policies: http://www.completestreets.org/webdocs/policy/cs-chart-samplepolicy.pdf

- Includes a vision for how and why the community wants to complete its streets
- Specifies that 'all users' includes pedestrians, bicyclists and transit passengers of all ages and abilities, as well as trucks, buses and automobiles.
- Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design criteria and guidelines while recognizing the need for flexibility in balancing user needs.
- Directs that complete streets solutions will complement the context of the community.
- Establishes performance standards with measurable outcomes.
- Includes specific next steps for implementation of the policy

Sets a vision

A strong vision can inspire a community to follow through on its complete streets policy. Just as no two policies are alike, visions are not one-size-fits-all either. In the small town of Decatur, GA, the Community Transportation Plan defines their vision as promoting health through physical activity and active transportation. In the City of Chicago, the Department of Transportation focuses on creating streets safe for travel by even the most vulnerable - children, older adults, and those with disabilities.

Specifies all users

A true complete streets policy must apply to everyone traveling along the road. A sidewalk without curb ramps is useless to someone using a wheelchair. A street with an awkwardly placed public transportation stop without safe crossings is dangerous for riders. A fast-moving road with no safe space for cyclists will discourage those who depend on bicycles for transportation. A road with heavy freight traffic must be planned with those vehicles in mind. Older adults and children face particular challenges as they are more likely to be seriously injured or killed along a roadway. Automobiles are an important part of a complete street as well, as any change made to better accommodate other modes will have an effect on personal vehicles too. In some cases, like the installation of curb bulb-outs, these changes can improve traffic flow and the driving experience.

Creates a network

Complete streets policies should result in the creation of a complete transportation network for all modes of travel. A network approach helps to balance the needs of all users. Instead of trying to make each street perfect for every traveler, communities can create an interwoven array of streets that emphasize different modes and provide quality accessibility for everyone. This can mean creating bicycle boulevards to speed along bicycle travel on certain low-traffic routes; dedicating more travel lanes to bus travel only; or pedestrianizing segments of routes that are already overflowing with people on foot. It is important to provide basic safe access for all users regardless of design strategy and networks should not require some users to take long detours.

All agencies and all roads

Creating complete streets networks is difficult because many agencies control our streets. They are built and maintained by state, county, and local agencies, and private developers often build new roads. Typical complete streets policies cover only one jurisdiction's roadways, which can cause network problems: a bike lane on one side of a bridge disappears on the other because the road is no longer controlled by the agency that built the lane. Another common issue to resolve is inclusion of complete streets elements in sub-division regulations, which govern how private developers build their new streets.

All projects

For many years, multi-modal streets have been treated as 'special projects' requiring extra planning, funding, and effort. The complete streets approach is different. Its intent is to view all transportation improvements as opportunities to create safer, more accessible streets for all users, including pedestrians, cyclists, and public transportation passengers. Under this approach, even small projects can be an opportunity to make meaningful improvements. In repaving projects, for example, an edge stripe can be shifted to create more room for cyclists. In routine work on traffic lights, the timing can be changed to better accommodate pedestrians walking at a slower speed. A strong complete streets policy will integrate complete streets planning into all types of projects, including new construction, reconstruction, rehabilitation, repair, and maintenance.

Exceptions

Making a policy work in the real world requires developing a process to handle exceptions to providing for all modes in each project. The Federal Highway Administration's guidance on accommodating bicycle and pedestrian travel named three exceptions that have become commonly used in complete streets policies: 1) accommodation is not necessary on corridors where non-motorized use is prohibited, such as interstate freeways; 2) cost of accommodation is excessively disproportionate to the need or probable use; 3) a documented absence of current or future need. Many communities have included their own exceptions, such as severe topological constraints. In addition to defining exceptions, there must be a clear process for granting them, where a senior-level department head must approve them. Any exceptions should be kept on record and publicly-available.

Design criteria

Communities adopting a complete streets policy should review their design policies to ensure their ability to accommodate all modes of travel, while still providing flexibility to allow designers to tailor the project to unique circumstances. Some communities will opt to re-write their design manual. Others will refer to existing design guides, such as those issued by AASHTO, state design standards, and the Americans with Disabilities Act Accessibility Guidelines.

Context-sensitive

An effective complete streets policy must be sensitive to the community context. Being clear about this in the initial policy statement can allay fears that the policy will require inappropriately wide roads in quiet neighborhoods or miles of little-used sidewalks in rural areas. A strong statement about context can help align transportation and land use planning goals, creating livable, strong neighborhoods.

Performance measures

The traditional performance measure for transportation planning has been vehicular Level of Service (LOS) – a measure of automobile congestion. Complete streets planning requires taking a broader look at how the system is serving all users. Communities with complete streets policies can measure success through a number of ways: the miles of on-street bicycle routes created; new linear feet of pedestrian accommodation; changes in the number of people using public transportation, bicycling, or walking (mode shift); number of new street trees; and/or the creation or adoption of a new multi-modal Level of Service standard that better measures the quality of travel experience. The fifth edition of Highway Capacity Manual will include this new way of measuring LOS. Cities like San Francisco and Charlotte have already begun to develop their own.

Implementation

Taking a complete streets policy from paper into practice is not easy, but providing some momentum with specific implementation steps can help. Some policies establish a task force or commission to work toward policy implementation. There are four key steps for successful implementation: 1) Restructure procedures to accommodate all users on every project; 2) Develop new design policies and guides; 3) Offer workshops and other training opportunities to planners and engineers; and 4) Institute better ways to measure performance and collect data on how well the streets are serving all users.

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APPENDIX D: SAMPLE FEE STRUCTURE SUMMARY HANDOUT

SEE FOLLOWING SHEETS

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Introduction

The Cities of Ranson and Charles Town, West Virginia, effective *Date*, have established a transportation development fee for areas within its urban growth boundary. With limited state funding available for local transportation improvements, a transportation-specific development fee has been identified as a method to assist in funding key transportation infrastructure improvements that would support regional access and reduce congestion. The transportation development fees would be implemented as municipal fees as enabled by West Virginia Code §8-13-13, which provides that every municipality has the plenary power and authority to impose an ordinance fee to support municipal services including the maintenance and improvement of streets within its jurisdiction.

Transportation Development Fee

A fee structure has been developed as part of a technical fee study that includes estimates of future transportation project needs and an allocation of project costs to new development. Fees have been developed for different land use type groupings based on categories within the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. An "Other" category has been included for developments that do not fall into the given categories. The maximum development fees that can be charged to future development are as follows:

Maximum Development Fees

Land Use Category	Unit	Daily Trip End Cost	Fee ($)
Single-Family	Dwelling Unit	$370	$3,254
Multi-Family	Dwelling Unit	$370	$1,976
Retail	1,000 Square Feet	$166	$2,943
Office	1,000 Square Feet	$166	$1,677
Industrial	1,000 Square Feet	$166	$1,061
Warehouse	1,000 Square Feet	$166	$542
Other	1,000 Square Feet	$166	$1,199

Fee Credits

Credits are available to reduce transportation development fees. The credits include:

Fee Credits

Category	Credit
Mixed Use Development	30%
Traditional Neighborhood Development (TND)	50%
Livable Community Improvements	10%
Right-of-Way Property Donation	$ Credit
Transportation Project Construction	$ Credit

The mixed use and TND development must be consistent with the definitions contained in the zoning ordinances in both cities. Livable community improvements require the construction of an off-road internal bike and pedestrian network, a connection to the nearest arterial roadway, a connection to nearby commercial /retail /park /school /or transit station, and/or connections to other nearby existing shared-use paths. Other credit deductions can be based on the estimated cost of property donation or construction costs for regional capacity improvement projects that benefit regional congestion and traffic safety.

Exemptions

The following development is exempt from the transportation development fee:

- Existing dwelling units and non-residential buildings
- Re-development within existing buildings
- Low-income housing
- Brownfield development

Additional exemptions will be determined by each city in writing and subject to the appeal by the city council.

Fee Application Process

The transportation development fee will be determined using the following steps:

➢ **Step 1**: *Identify Development Type*

The developer will work with the city to identify the appropriate development type and characteristics.

➢ **Step 2**: *Exemptions*

The city will determine if the development is exempt from the transportation development fees. Exemptions outside of those presented above will be required in writing with approval from city council.

➢ **Step 3**: *Correspondence to Fee Land Use Categories*

The developer and city will work to identify what land use categories within the fee structure are applicable to each development type. The fee study provides detailed definitions of the categories.

➢ **Step 4**: *Maximum Development Fee*

A maximum per unit fee will be determined from the fee table. A developer cannot be charged more than this per unit fee. In cases, where there are no fee credits or adjustments, the maximum fee will be applied to the number of development units.

➢ **Step 5**: *Fee Credits*

Reductions in fees will be estimated based on the fee credits applicable to the development. The city will review credit applications to ensure they meet applicable criteria.

➢ **Step 6**: *Fee Modifications*

If in the judgment of the city, none of the fee categories or fee amounts set forth in the fee structure accurately describe or capture the impacts of the new development on the transportation system, the city may ask the applicant to conduct independent fee calculations and the city may impose alternative fees on a specific development based on those calculations. The fee calculations may use the cost per trip end values presented in the fee structure table. The alternative fees and the calculations should be set forth in writing and shall be agreed upon by the city and fee payer. The documentation submitted shall show the basis upon which the independent fee calculation was made.

➢ **Step 7**: *Final City Reduction Percentages*

On an annual basis, each city will determine a fee reduction percentage to ensure that fees are reasonable and will not negatively affect regional growth and economic development. These fee reductions will be agreed upon and documented by each city council and applied fairly to all development applications.

Sample Development Fee Calculation

Sample Mixed-Use Development:

10 Single Family Homes
10,000 square feet Retail Space
5,000 square feet Office Space

Sample Fee calculations:

Residential		
Units	Unit Fee	Max Fee
10	$3,254	$32,540

Non-Residential		
Units (1,000 sf)	Unit Fee	Max Fee
10 Retail	$2,943	$29,430
5 Office	$1,677	$8,385

Total Maximum Fee		
		$70,355

Fee Credits (Mixed-Use)		
	$70,355 x -30%	($21,107)

Total Applicable Fee		
		$49,248

Time of Fee Assessment

An applicant is required to pay the Transportation Development Fee prior to the issuance of a zoning certificate by each city. Payments may be made in either a lump sum payment or in a series of annual payments over a 5, 10, or 20 year payment schedule.

For More Information

The Transportation Development Fee Study is available for download at the following website: www.xxxxxx.com. For additional information, please contact:

Ranson:
xxxxxxxx: (xxx) xxx-xxxx or
xxx.xxx@xxxxxx.com

Charles Town:
xxxxxxxx: (xxx) xxx-xxxx or
xxx.xxx@xxxxxx.com