BLACKSBURG/CHRISTIANSBURG/MONTGOMERY AREA
2035 TRANSPORTATION PLAN




DEVELOPED BY
the Blacksburg-Christiansburg-Montgomery Area Metropolitan Planning Organization

IN COOPERATION WITH
**the Virginia Department of Transportation,
the Virginia Department of Rail and Public Transportation,
the Federal Highway Administration, and
the Federal Transit Administration**

APPROVED NOVEMBER 4, 2010
AMENDED JUNE 2, 2011

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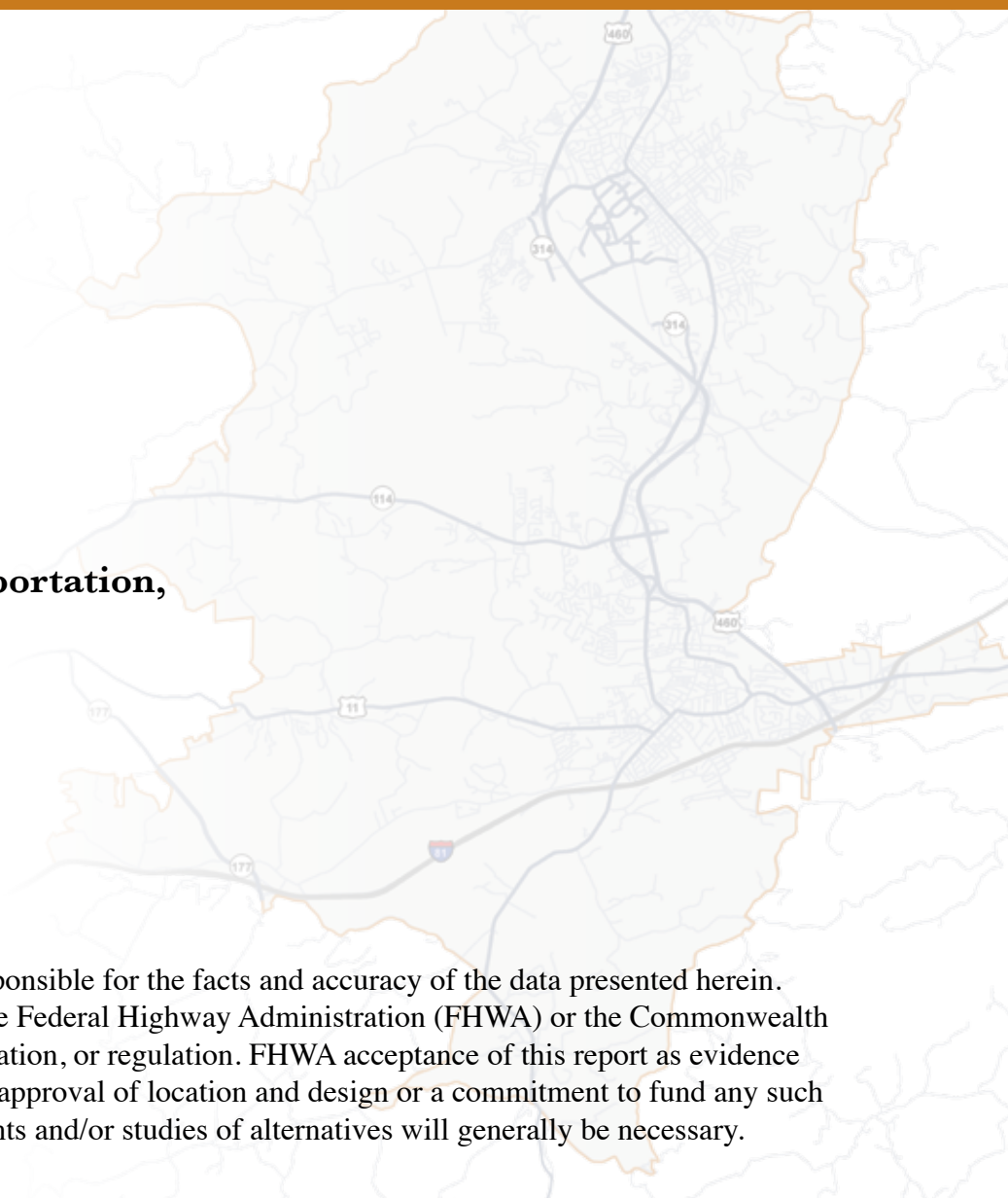

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The contents of this report reflect the views of the author(s), who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration (FHWA) or the Commonwealth Transportation Board. This report does not constitute a standard, specification, or regulation. FHWA acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute approval of location and design or a commitment to fund any such improvements. Additional, project-level environmental impact assessments and/or studies of alternatives will generally be necessary.

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LIST OF EXHIBITS

EXECUTIVE SUMMARY

The *Blacksburg/Christiansburg/Montgomery Area 2035 Transportation Plan* (the 2035 Plan) describes a comprehensive set of transportation improvements for the Towns of Blacksburg and Christiansburg and the surrounding urbanized portions of Montgomery County. These improvements seek to meet current travel demands, as well as projected travel demands to the year 2035. The 2035 Plan was developed in accordance with federal, state, and local requirements for an MPO Plan. These included early and ongoing public involvement, extensive coordination with local governments to ensure that local goals and objectives were reflected in the 2035 Plan recommendations, a 20-plus year horizon for 2035 Plan recommendations, consideration of anticipated transportation funding, and responsiveness to federal planning factors. Because anticipated needs exceeded funding projections to the year 2035, the 2035 Plan includes projects within a Financially Constrained Plan as well as a Vision Plan. Should funding projections increase prior to the usual five-year update cycle of the 2035 Plan, priority projects in the Vision Plan can be incorporated into the Financially Constrained Plan through an amendment to this document. Within the Vision Plan, projects were prioritized into two tiers. Tier 1 Vision Plan projects represent higher priority projects, and it is anticipated that these Tier 1 projects would be given first consideration for being shifted into an amended Financially Constrained Plan should additional funding be identified.

The development of the 2035 Plan included data collection, assessment of the existing transportation system, refinements to the regional computerized transportation model, and public meetings at key milestones to solicit input. Each of these is described within this document. Plan recommendations were based on technical analyses, public input, and consideration of local planning, mobility, safety, and economic development initiatives.

Exhibit E-1 shows current estimates of funding for fiscal years 2018 through 2035. The Financially Constrained Plan includes projects from two sources: 1) projects currently programmed for funding in the Virginia Department of Transportation (VDOT) Six-Year Improvement Program (SYIP), which covers fiscal years 2012 through 2017; and 2) projects that could be implemented based on anticipated funding streams between 2018 and 2035. Current funding amounts for projects in the SYIP total approximately $78.7 million.

Exhibit E-1:
Anticipated Funding Stream for the Financially Constrained Plan

Funding Category	Anticipated Funding (2018 to 2035)
Federal Bridge	$947,031
Non-Federal Bridge	$6,740,265
Safety	$4,254,384
Interstate System	$14,895,060
Primary System	$29,568,876
Secondary System	$1,100,892
Urban System	$0
Federal Aviation[1]	$4,069,000
Federal Transit[2]	$10,000,000
SUBTOTAL	**$71,575,508**
Six-Year Program Funds[3]	$78,722,000
TOTAL	**$150,297,508**

1 – This represents funding for the relocation of Southgate and Tech Center Drive. Funds will be from the Federal Aviation Administration as the roadway relocations are part of the runway extension project for the Virginia Tech/ Montgomery Executive Airport.

2 – This represents funding for the proposed Multi-Modal Transfer Facility on Perry Street (Virginia Tech Campus). Funds are anticipated to be obtained from the Federal Transit Administration.

3 – Funding included in the FY 2012 to 2017 Six-Year Improvement Program (SYIP).

Projects in the Financially Constrained Plan are shown in Exhibit E-2. Several projects, as shown in Exhibit E-2, would be partially funded from the Six-Year Improvement Program, with the remainder being funded with anticipated funding streams from 2018 through 2035.

In addition, some projects would not be able to be fully funded from these two sources; these projects are also included in the Vision Plan for funding beyond the year 2035. Planning-level cost estimates for all projects are included in Appendix B.

Exhibit E-2:
Projects in the Financially Constrained Plan

Map Key	Jurisdiction	Route	Project Location	Description	SYIP[1]	FCLRP[2]	Vision Plan[3]
108	Blacksburg		Huckleberry Trail	Repave and widen first mile of trail	X		
13	Blacksburg	314	Duck Pond Road over Stroubles Creek (South)	Upgrade bridge		X	
41	Blacksburg	460	Route 460 Bypass at Southgate Drive	Relocate Southgate Drive to intersect with the US 460 Bypass by constructing a new interchange approximately 2,200 feet south of the current intersection	X		
14	Blacksburg	314	Duck Pond Road over Stroubles Creek (North)	Upgrade bridge		X	
39	Blacksburg	314	Tech Center Drive (Route 314) and Southgate Drive	Relocate Southgate Drive to intersect with the US 460 Bypass at approximately 2,200 feet south of the current intersection. Realign Tech Center Drive to intersect with the relocated Southgate Drive approximately 1,500 feet from the US 460 Bypass. [Part of airport runway extension project]		X	
64	Blacksburg	460	Route 460 Bypass at North Main Street (Route 460 Business)	Install rumble strips, flashing beacons and warning signs	X		
40	Blacksburg	460	North Main Street (Route 460 Bus) at Red Maple Drive	Improve sight distance	X		
1	Blacksburg		Progress Street and Givens Lane	Widens Givens Lane to include bike lanes and sidewalks from Main Street to Chickahominy Drive. Extend Progress Street to Givens Lane.	X		X
15	Blacksburg		Ramble Road at Industrial Park Drive	Upgrade intersection	X		
11	Blacksburg		College Avenue from North Main Street to Otey Street	Construct streetscaping	X		
4	Blacksburg		Prices Fork Road	Upgrade traffic signals and add ADA controls along Prices Fork Road to Plantation Road	X		
76	Blacksburg		Pratt Drive	Add curb and gutter to Kraft Drive	X		
*	Blacksburg		Various Locations	Curb and gutter, sidewalk, traffic signal emergency systems	X		
29	Blacksburg	460	Route 460 Bypass at Route 460 Business (South Main Street)	Add ramp for southbound Route 460 to westbound Route 460 Business		X	

Exhibit E-2:
Projects in the Financially Constrained Plan (Continued)

Map Key	Jurisdiction	Route	Project Location	Description	SYIP[1]	FCLRP[2]	Vision Plan[3]
16	Christiansburg	8	Route 8 (West Main Street) from Route 11 (Radford Street) to I-81	Widen to four lanes		X	X
17	Christiansburg	11	Roanoke Street (Route 11/460 Bus) at US 460 (Christiansburg Bypass)	Perform study to identify specific safety concerns.		X	
5	Christiansburg	81	I-81 southbound lanes over West Main Street (Route 8)	Replace bridge	X		
9	Christiansburg	81	I-81 northbound lanes over Route 8	Replace bridge	X		
18	Christiansburg	111	Depot Street (Route 111) over Walnut Branch	Upgrade bridge		X	
2	Christiansburg	114	Peppers Ferry Road (Route 114) from Route 460 to 0.126 kilometer west of west corporate limits	Widen to 4 lanes	X		
3	Christiansburg	114	Peppers Ferry Road (Route 114) Connector	Construct connector to Route 460 (preliminary engineering only)		X	
19	Christiansburg	460	North Franklin Street (Route 460 Business) at Cambria Street (Route 111)	Reconfigure intersection to provide for increased capacity and safety		X	
20	Christiansburg	460 Bus	North Franklin Street (Route 460 Business) at Peppers Ferry Road (Route 114)	Improve intersection for operations and safety; add additional approach lanes on Peppers Ferry Road to improve capacity.		X	
21	Christiansburg/ Montgomery	81	I-81 at West Main Street (Route 8)	Improve interchange for operations		X	
22	Christiansburg/ Montgomery	81	I-81 from west boundary of MPO to east of South Franklin Street (Milepost 116)	Widen to six lanes		X	X
7	Montgomery		Smart Road from Route 460 Bypass to West Route 642	Smart Road management of research - PE only		X	
23	Montgomery	8	Riner Road (Route 8) at Life Drive (Route 1295)	Add warning signs on Route 8		X	
24	Montgomery	11	Radford Road (US 11) at Walton Road (Route 663)	Add stop sign on Walton Road. Clear the vegetation on Walton Road at the intersection. Add warning signs on Route 11		X	
25	Montgomery	81	I-81 at Tyler Road (Route 177) -- Exit 109A	Consider installing signal at this intersection (pending warrant)		X	
10	Montgomery	114	Peppers Ferry Road (Route 114) at westbound lanes bridge over the New River	Replace bridge	X		

Exhibit E-2:
Projects in the Financially Constrained Plan (Continued)

Map Key	Jurisdiction	Route	Project Location	Description	SYIP[1]	FCLRP[2]	Vision Plan[3]
26	Montgomery	114	Peppers Ferry Road (Route 114) at Walton Road (Route 663) and Prices Fork Road (Route 659)	Implement access management near intersection.		X	
8	Montgomery	8	Riner Road (Route 8) at Union Valley Road (Route 669)	Add left-turn lanes at intersection	X		
27	Montgomery	114	Peppers Ferry Road (Route 114) at Onyx Drive (Route 800)	Add warning signs on Route 114		X	
28	Montgomery	177	Route 177 (Tyler Road) at Route 600 (Mud Pike Road)	Implement access management near intersection		X	
32	Montgomery	643	Yellow Sulphur Road (Route 643) over Wilson Creek	Upgrade bridge		X	
33	Montgomery	649	Coal Bank Hollow (Route 649) over Toms Creek	Upgrade bridge		X	
30	Montgomery	655	Mount Zion Road (Route 655) over Toms Creek	Upgrade bridge		X	
38	Montgomery	657	Merrimac Road (Route 657) at Hightop Road (Route 808)	Improve intersection		X	
34	Montgomery	658	Meadow Creek Road (Route 658) over Meadow Creek	Upgrade bridge		X	
35	Montgomery	679	Nolley Road (Route 679) over Elliott Creek (South)	Upgrade bridge		X	
36	Montgomery	679	Nolley Road (Route 679) over Elliott Creek (North)	Upgrade bridge		X	
12	Montgomery	719	Route 719 Bridge	Replace bridge over Crab Creek	X		
31	Montgomery	785	Catawba Road (Route 785) over Indian Run	Upgrade bridge		X	
37	Montgomery	808	Hightop Road (Route 808) over Slate Branch	Upgrade bridge		X	
6	Montgomery		Smart Road -- new roadway from 0.671 kilometer east of Route 723 to Route I-81	Preliminary engineering and right-of-way for Smart Road (2 lanes roadway on 4 lanes of right-of-way)		X	X

1 – Anticipated to be funded as part of the Virginia Department of Transportation (VDOT) Six-Year Improvement Program (SYIP) covering fiscal years 2012 through 2017.

2 – Anticipated to be funded as part of the Financially Constrained Long Range Plan funding covering fiscal years 2018 through 2035.

3 – Anticipated to be funded with funds beyond fiscal year 2035 (in the Tier 1 Vision Plan).

Note: Map key refers to the project maps included in Chapter 4 of this document

* - Various locations, not shown on map in Chapter 4

As noted above, projects that are intended to address the region's transportation needs and strategic goals, but that are not able to be funded in the Financially Constrained Long Range Plan are included in the Vision Plan. Vision Plan projects are summarized in Exhibit E-3. Planning-level cost estimates for all projects are included in Appendix B.

Exhibit E-3:
Projects in the Vision Plan

Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
46	Blacksburg		Huckleberry Trail	Extend Huckleberry Trail from existing US Route 460 Bypass tunnel to Stroubles Creek.	X	
47	Blacksburg		Huckleberry Trail	Extend Huckleberry Trail from Stroubles Creek to Meadowbrook Drive		X
48	Blacksburg		Toms Creek Road at Patrick Henry Drive	Upgrade intersection.	X	
49	Blacksburg		Toms Creek Road from Meadowbrook Drive to Route 460 Bypass	Reconstruct as two-lane roadway with bicycle lanes and sidewalks		X
50	Blacksburg		Shadow Lake Road from Glade Road to Meadowbrook Drive	Reconstruct to current 2-lane standards including bicycle lanes and sidewalks		X
51	Blacksburg		Heather Drive Extension from Prices Fork Road to Glade Road	Construct as two-lane roadway with bicycle lanes and sidewalks	X	
52	Blacksburg		Hubbard Street Extension from Airport Road to Southgate Drive	Construct extension of Hubbard Street as two-lane roadway; includes bicycle lanes and grade-separated crossing for the Huckleberry Trail	X	
53	Blacksburg		Glade Road from Boxwood Drive to Linwood Lane	Reconstruct as 2-lane roadway with bicycle lanes, trail, and sidewalks		X
54	Blacksburg		Meadowbrook Road from Glade Road to Toms Creek Road	Reconstruct as 2-lane roadway with bicycle lanes, trail, and sidewalks		X
55	Blacksburg		Ramble Road from Industrial Park Drive to the Corporate Research Center	Reconstruct as 2-lane urban roadway plus transit pull-offs and bicycle lanes	X	
56	Blacksburg		Turner Street from Prices Fork Road (Route 412) to North Main Street (Route 460 Business)	Reconstruct as 2-lane urban roadway including turn lanes at the Creative Arts Center and a bicycle lane		X
57	Blacksburg		Giles Road Extension from North Main Street (Route 460 Business) to Turner Street	Construct/reconstruct as 2-lane roadway to improve access in the Barger Street area		X

Exhibit E-3:
Projects in the Vision Plan (Continued)

Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
58	Blacksburg		Progress Street Extension from Givens Lane to North Main Street (Route 460 Business)	Extension from Givens Lane through Northside Park to North Main Street	X	
59	Blacksburg		Farmview Drive/Mabry Lane from Hightop Road to Huckleberry Lane	Reconstruct as 2-lane roadway with bicycle lanes and sidewalks	X	
60	Blacksburg		Old Glade Road from Prices Fork Road (Route 412) to Glade Road	Construct 2-lane roadway with bicycle lanes and sidewalk		X
61	Blacksburg		Mount Tabor Road from North Main Street (Route 460 Business) to Bishop Road	Reconstruct road to current 2-lane standards with sidewalks and bicycle lanes, and bus pull-offs; align with Givens Lane at North Main Street	X	
62	Blacksburg		Commerce Street from Trade Street to Jennelle Road	Construct extension of Commerce Street as two-lane roadway	X	
63	Blacksburg		Connector from 460 Bypass to Toms Creek Road	Construct as 2-lane road		X
42	Blacksburg	460 Bus	North Main Street (Route 460 Business) at Progress Street	Traffic signal upgrade to current equipment and standards		X
43	Blacksburg	460 Bus	South Main Street (Route 460 Business) at Country Club Road	Improve intersection for operations and safety		X
45	Blacksburg	460 Bus	North Main Street (Route 460 Business) at Patrick Henry Drive	Add right turn bay on the southbound approach (Main Street)		X
96	Blacksburg	460 Bus	South Main Street (Route 460 Business) from Roanoke Street to Country Club Drive	Upgrade traffic operations and streetscape		X
97	Blacksburg		Draper Road from Miller Street to College Avenue	Upgrade streetscape		X
99	Blacksburg	460 Bus	North Main Street (Route 460 Business) from Mount Tabor Road to Route 460 Bypass	Widen to four lanes divided with bicyle lanes, sidewalk, and trail		X
107	Blacksburg		Patrick Henry Drive from Toms Creek Road to North Main Street	Improve operations and pedestrian safety by replacing second through lane in each dirction with median and turn lanes		X
44	Blacksburg		Ramble Road Extension from Ramble Road at airport property line to Ellett Road in the vicinity of Cedar Hill Drive	Construct new 2-lane roadway		X

Exhibit E-3:
Projects in the Vision Plan (Continued)

Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
98	Blacksburg		Ellett Road from Cedar Hill Drive to South Main Street	Widen to four lanes with bicycle lanes or separate multi-use trail		X
100	Blacksburg		Construct Multi-Modal Transfer Facility on Perry Street (Virginia Tech Campus)	Construct new facility		X
64	Blacksburg/ Montgomery	460	Route 460 Bypass at North Main Street	Construct interchange		X
106	Blacksburg/ Montgomery		Park-and-ride in the vicinity of the US Route 460/US Route 460 Business interchange (south end of Town of Blacksburg)	Construct new park-and-ride lot	X	
67	Blacksburg/ Montgomery		Route 460 Connector from existing Route 460 Bypass to Prices Fork Road south of the community of Prices Fork (vicinity of Coal Hollow Road)	Construct new road with four-lane or two lane with sufficient right-of-way to allow for widening to four lanes.		X
68	Blacksburg/ Montgomery		Harding Avenue and Harding Road from Progress Street to Lusters Gate Road	Reconstruct road to current 2-lane standards; sidewalks and bicycle lanes, and bus pull-offs in Town portion		X
66	Blacksburg/ Montgomery	603	Ellett Road/Cedar Run Road (Route 603) from Cedar Hill Drive to Ellett Road/Lusters Gate Road (Route 723)	Upgrade road to current 2-lane standards; sidewalks and bicycle lanes or trail in Town portion	X	
69	Christiansburg	8	West Main Street (Route 8) at Phlegar Street/Radford Street	Improve intersection for operations and safety: shift Phlegar Street to align with Radford Street and create single intersection	X	
70	Christiansburg	8	West Main Street (Route 8) at Mud Pike/Moose Drive (Route 666)	Widen approaches to intersection to include two through lanes in the northbound and southbound directions. Consider long term relocation of Mud Pike and/or Moose Drive to provide additional spacing to between this intersection and the I-81 ramps (pending detailed study)	X	
71	Christiansburg	11	East Main Street (Route 11/460 Bus) at Roanoke Street (Route 11/460 Bus)	Change the westbound approach to a left and left-right configuration. Disallow access from this intersection to/ from Pepper Street SE to improve long-term safety and reduce conflict points.	X	
72	Christiansburg	11	Radford Street (Route 11) at Depot Street	Add right turn bay for all approaches except northbound; convert the current through-right lanes into through-only lane.	X	
73	Christiansburg	111	Cambria Street (Route 111) at Ellet Road	Improve intersection for operations; install signal pending warrants	X	

Exhibit E-3:
Projects in the Vision Plan (Continued)

Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
77	Christiansburg		Huckleberry Trail	Extend southern terminus of Huckleberry Trail to Downtown Christiansburg (route to be determined)	X	
74	Christiansburg	460 Bus	Franklin Street (Route 460 Business) at Main Street (Route 11)	Improvements recently made at this intersection; continue to monitor for congestion.	X	
75	Christiansburg	460 Bus	North Franklin Street (Route 460 Business) at Depot Street	Add turn lanes on both eastbound and westbound directions (North Franklin Street)	X	
78	Christiansburg/ Montgomery		Parkway Drive Extension from existing Parkway Drive (Route 1416) at Technology Drive to South Franklin Street	Extend road as 2-lane roadway on 4-lanes of right-of-way		X
102	Christiansburg/ Montgomery		Park-and-ride lot in or near Town of Christiansburg	Construct new park-and-ride lot (potential locations include Route 11 or Radford Road west of Christiansburg)	X	
105	Christiansburg/ Montgomery		Park-and-ride in the vicinity of I-81 Exit 118 (US Route 460)	Expand existing park-and-ride lot	X	
79	Christiansburg/ Montgomery	11	Radford Road and Radford Street (Route 11) from Silver Lake Road western intersection (Route 662) to West Main Street (Route 8)	Widen road to four lanes with a center bi-directional turn lane, bicycle lanes, and sidewalks	X	
80	Christiansburg/ Montgomery		Parkway Drive Extension from Radford Road (Route 11) to South Franklin Street	Extend Parkway Drive as a 2-lane facility		X
81	Montgomery	8	Riner Road (Route 8) from Union Valley Road (Route 669) to Christiansburg South Corporate limits	Widen road; improve intersections at Smith Creek Road (Route 675), Childress Rd. (Route 693), and Meadow Creek Rd. (Route 658/Dairy Road (Route 670)	X	
82	Montgomery	8	Riner Road (Route 8) from South Study Area Boundary to Union Valley Road (Route 669)	Reconstruct to current 2-lane standards with 4 lanes of right-of way	X	
83	Montgomery	8	Riner Road (Route 8) and Smith Creek Road (Route 675)	Add turn lanes at intersection	X	
84	Montgomery	11	Radford Road (Route 11) from West Study Area Boundary to western intersection of Silver Lake Road (Route 662)	Widen to 4-lanes with median (rural cross-section); 5-lane cross-section in Plum Creek area	X	
85	Montgomery	114	Peppers Ferry Road (Route 114) from RAAP main entrance to 0.789 km east of Christiansburg WCL	Widen road to 4-lanes divided with bicycle lanes	X	

Exhibit E-3:
Projects in the Vision Plan (Continued)

Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
86	Montgomery	114	Peppers Ferry Road Extension from Route 460 Bypass to Ellett Road (Route 723)	Construct 2-lane roadway	X	
87	Montgomery	114	Peppers Ferry Road (Route 114) and Rolling Hills Road (Route 1286)	Add turn lanes at intersection	X	
88	Montgomery	460	Route 460 Bypass from Route 460 Business (South Main Street) to I-81	Widen to six lanes		X
89	Montgomery	642	Jenelle Road (Route 642) from Route 460 Business to Route 603	Reconstruct road to current 2-lane standards	X	
90	Montgomery	657	Merrimac Road (Route 657) from North Franklin Street (Route 460) to Prices Fork Road (Route 685)	Reconstruct road to current 2-lane standards	X	
91	Montgomery	669	Fairview Church Road (Route 669) from West Study Area Boundary to Riner Road (Route 8)	Reconstruct road to current 2-lane standards		X
92	Montgomery	669	Union Valley Road (Route 669) from Riner Road (Route 8) to East Study Area Boundary	Reconstruct road to current 2-lane standards	X	
93	Montgomery	723	Ellett Road/Lusters Gate Road (Route 723) from Christiansburg Corporate Limits to Route 603	Reconstruct road to current 2-lane standards		X
94	Montgomery	808	Hightop Road (Route 808) from Merrimac Road (Route 657) to South Main Street (Route 460)	Reconstruct road to current 2-lane standards	X	
95	Montgomery	658/627	Meadow Creek/Barn Road (Route 658) from Riner Road (Route 8) to Tyler Road (Route 600)	Reconstruct road to current 2-lane standards		X
6	Montgomery		Smart Road -- new roadway from 0.671 kilometer east Route 723 to Route I-81	Construct new 4-lane roadway		X
101	Montgomery		Park-and-ride lot near the community of Prices Fork	Construct new park-and-ride lot	X	
103	Montgomery		Park-and-ride lot in or near the community of Riner	Construct new park-and-ride lot	X	
104	Montgomery		Park-and-ride in the vicinity of I-81 Exit 109 (VA Route 177)	Construct new park-and-ride lot	X	

Note: Map key refers to the project map included in Chapter 5 of this document.

The region's transportation system integrates multiple travel modes, including those that primarily function on roadways (or within, or immediately adjacent to, roadway rights-of-way), as well as modes that use separate facilities. Roadway-related modes include single occupant vehicles, rideshare (and park-and-ride facilities), trucks, bus transit, bicycles, and pedestrians. Improvements to support these modes are included in both the Constrained and Vision Plan projects. Modes not directly related to roadways include air and rail travel.

The 2035 Plan also incorporates expansion recommendations for the Virginia Tech/Montgomery Executive Airport, which are more fully described in the airport's Master Plan, most recently updated in May of 2008 (the Airport Layout Facility Plan is included in Appendix B). Similarly, recommendations for transit improvements are incorporated in the 2035 Plan, while details on the transit system's plans are included in a Transit Development Plan (TDP) developed and regularly updated by Blacksburg Transit. The primary intercity rail recommendations in the 2035 Plan include continued support for implementation of the Commonwealth's proposed TransDominion train service as well as the development of the Christiansburg train station and rail infrastructure to accommodate a stop for the proposed TransDominion service. The region also supports increasing choices for intercity passenger service through re-establishing robust intercity bus service (such as Greyhound) to/from the MPO.

Exhibit E-3 also includes a multi-modal transfer facility as well as several regional park-and-ride facilities to address travel by transit, rideshare, bicycle, and walking (as well as the interface between these travel modes). These are included below in a summary of transportation recommendations for these modes. The summary also includes recommendations related to studies, planning goals, as well as implementation of policies to enhance travel choices throughout the region.

Transit Improvements

- Construct Multi-Modal Transfer Facility (MMTF) on Perry Street on the Virginia Tech campus to accommodate transfers between regional public transportation providers, taxis, limousines, bicycles, and pedestrians, and connect to adjacent parking. Conceptual design has begun on this project and is expected to be complete in 2011. Construction of the MMTF is anticipated within a three to five year timeframe.
- Study expansion of transit services into the Blacksburg/Christiansburg/Montgomery MPO area and adjacent jurisdictions with service along main arterial streets, making stops at large commercial areas, at local and county facilities, and central downtown locations. Details on Blacksburg Transit's (BT) plans are included in the 2017 Transit Development Plan (TDP), required and funded by the Virginia Department of Rail and Public Transportation, and developed and regularly updated by BT. The TDP, anticipated to be completed by April 2011, will outline a six-year plan for service expansion, and will include integrated, constrained and unconstrained planning suggestions for both transportation and land-use.
- Provide transit service from the Blacksburg/Christiansburg/Montgomery MPO and adjacent jurisdictions to the Christiansburg train station to accommodate riders of proposed rail service.
- One consideration in transit planning for the region is to consider the feasibility and cost-effectiveness of expanding and/or supplementing paratransit service through contracting.
- Continue to ensure the efficiency and effectiveness of transit service in the region. BT has submitted a proposal to receive grants to complete a Comprehensive Operational Analysis (COA) to analyze the entire transit system, including a detailed review of existing bus routes and bus stops, and future expansion needs, especially as they relate to the proposed MMTF.

- The 2035 Plan will be updated and amended to include information and recommendations from the MMTF planning effort as well as the 2017 TDP.

Rideshare/Park-and-Ride Improvements

- Improve existing regional park-and-ride lots through enhanced wayfinding signs, information kiosks, and seating/waiting areas. Continue to monitor the park-and-ride network and expand as needed. Potential park-and-ride locations include Route 460 Bypass and South Main Street, Southgate Drive, Tom's Creek Road, North Main Street and Price's Fork Road; and Route 460 and Peppers Ferry Road. Integrate the locations of park-and-ride lots into transit route planning (consider shuttle connections between one of more of these lots and the proposed MMTF).
- Construct additional regional park-and-ride lots to serve Radford, Roanoke, and Giles County commuters, along with shuttle service and/or a rideshare program. Park-and-ride lots should be considered at the locations listed below. The exact locations and design details would be developed in studies performed by the New River Valley Planning District Commission with funding provided partially through a recently awarded Sustainable Communities Grant. Preliminary candidate locations include:
  - Prices Fork Road in the vicinity of the Prices Fork community
  - In or near Christiansburg (potential locations include Route 11 or Radford Road) west of Christiansburg)
  - In or near the community of Riner
  - Near I-81 Exit 109 (VA Route 177)
  - Near I-81 Exit 118 (US Route 460) – expansion/modification to existing park-and-ride lot
  - Near the Route 460/Route 460 Business interchange at the south end of the Town of Blacksburg (South Interchange Park)

Bikeway/Walkway Improvements

- Implement priority elements of the Town of Blacksburg and the Town of Christiansburg bikeway and greenway plans; provide enhanced connections between existing facilities.
- Continue to plan for a bicycle network that enables bicycles to be used as a primary means of transportation, as well as for recreational purposes.
- Identify and address any connectivity issues for bicycles and pedestrians to key public sites including parks, recreation centers, libraries, shopping centers, and other appropriate locations around the region. Provide amenities such as bicycle lock posts/racks and lockers at these key destinations.
- Continue to encourage new development to provide for trails and recreational areas.
- Assess the need for pedestrian overpasses and/or tunnels within the commercial districts on US Route 460, Peppers Ferry Road, and Main Street. Key pedestrian safety locations include Prices Fork and Main Street in Blacksburg, along Main Street near the Virginia Tech Mall, and Peppers Ferry Road and North Franklin Street in the New River Valley (NRV) Mall area (sidewalks surrounding the NRV Mall area are needed as are pedestrian signals at major street crossings).
- Widen sidewalks, as appropriate, within the downtowns of Christiansburg and Blacksburg.
- Construct bikeways and walkways in the communities of Prices Fork, Riner, Plum Creek, and Belview.

Intercity Transportation Improvements

- Re-establish inter-city bus service (e.g., Greyhound, Megabus) within the MPO. Following adoption of this Plan, Megabus began offering intercity bus service to the region on December 15, 2010. Service is provided from I-81in Christiansburg (at Exit 118) to Washington DC and Knoxville, Tennessee.

- Support implementation of the proposed TransDominion train service.
- Develop Christiansburg train station and rail infrastructure to accommodate a stop for the proposed TransDominion rail service.

A public hearing to review and receive comments from the general public on the Blacksburg/Christiansburg/Montgomery Area 2035 Transportation Plan was held on September 29, 2010. The transportation plan was adopted by the Blacksburg-Christiansburg-Montgomery Area Metropolitan Planning Organization on November 4, 2010.

CHAPTER 1: INTRODUCTION




The *Blacksburg/Christiansburg/Montgomery Area 2035 Transportation Plan* (the Plan) was developed to provide the Towns of Blacksburg and Christiansburg and the surrounding urbanized portions of Montgomery County with a comprehensive set of transportation improvements that will meet current travel demands, as well as projected travel demands to the year 2035. The Plan addresses the complete transportation system; covering all modes of travel within the region including roadway (single occupant vehicle, rideshare, taxi, truck, etc.), transit, walking, bicycle, rail, and air. The Plan also serves an important function by ensuring that improvements across travel modes are coordinated.

The primary component of the Plan is the Financially Constrained Long-Range Plan (FCLRP), which consists of projects that can be funded based on anticipated funding streams to the year 2035. Regional transportation needs that are beyond those that could be funded based on current funding estimates are included in the Vision Plan component of this document. This is an update to the previously prepared 2030 Transportation Plan that was the first prepared for the Blacksburg/Christiansburg/ Montgomery Area Metropolitan Planning Organization (BCM-MPO) in 2005.

1.1 Development of the Transportation Plan

The 2035 Transportation Plan was developed using a comprehensive methodology that included:

1. Identification of existing transportation needs: The identification of transportation needs included quantitative analysis through such procedures as roadway capacity analysis and review of safety data, as well as input from transportation providers, local governments, the general public, and other stakeholders.
2. Forecasting of future (2035) travel demands using a regional computerized transportation model: The regional travel demand model was updated and validated to year 2008 volumes by the Virginia Department of Transportation (VDOT). Year 2035 forecast year traffic volumes are a function of expected changes in population and employment between 2008 and 2035.
3. Assessment of future transportation needs based on these projected travel demands: Based on the year 2035 traffic forecasts produced by the regional travel demand model, potential capacity deficiencies were identified based on analysis of roadway operations.

4. Development and refinement of transportation solutions in cooperation with local governments and the general public: Input from stakeholders, as well as analysis of existing conditions and future deficiencies, was used to develop improvement recommendations. These recommendations were reviewed and refined through meetings with the BCM-MPO Technical Advisory Committee and the general public.
5. Cost estimates and environmental overview: Cost estimates were developed for proposed recommendations. In addition, projects were reviewed against known environmental constraints such as floodplains and wetlands, minority communities, historic sites, community resources, etc.

1.2 Transportation Plan Requirements

The 2035 Transportation Plan was developed to meet federal requirements for metropolitan area transportation planning. While individual jurisdictions often prepare local transportation plans, projects that receive any federal transportation funds must be included in a regionally adopted Transportation Plan that meets federal regulations. These regulations apply to both the content of the Plan and the way in which it is developed. Key requirements include:

- Early, proactive, and ongoing public involvement process
- Coordinated planning across local, state, and federal agencies
- Reflect local transportation, land use, and economic goals and objectives
- Assess needs and develop improvements that address transportation needs for a minimum horizon of 20 years
- Consideration of the social, environmental, and economic impacts of transportation recommendations
- Recommended projects must be able to be funded based on reasonable estimates of transportation funding between today and 2035 (financially constrained)

Federal regulations also require that the Transportation Plan and the recommendations contained within the Plan address eight planning factors. These factors are listed below and specifically addressed in Appendix A. The Transportation Plan should:

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

1.3 Metropolitan Area Boundary

This Technical Report describes the methodologies used in developing transportation recommendations within the boundaries of the BCM-MPO, as well as the projects themselves. The BCM-MPO area includes the Towns of Blacksburg and Christiansburg, as well as the adjacent urbanized portions of Montgomery County. A metropolitan area is defined as a "core area containing a substantial population nucleus, together with adjacent communities having a high degree of economic and social integration with that core"

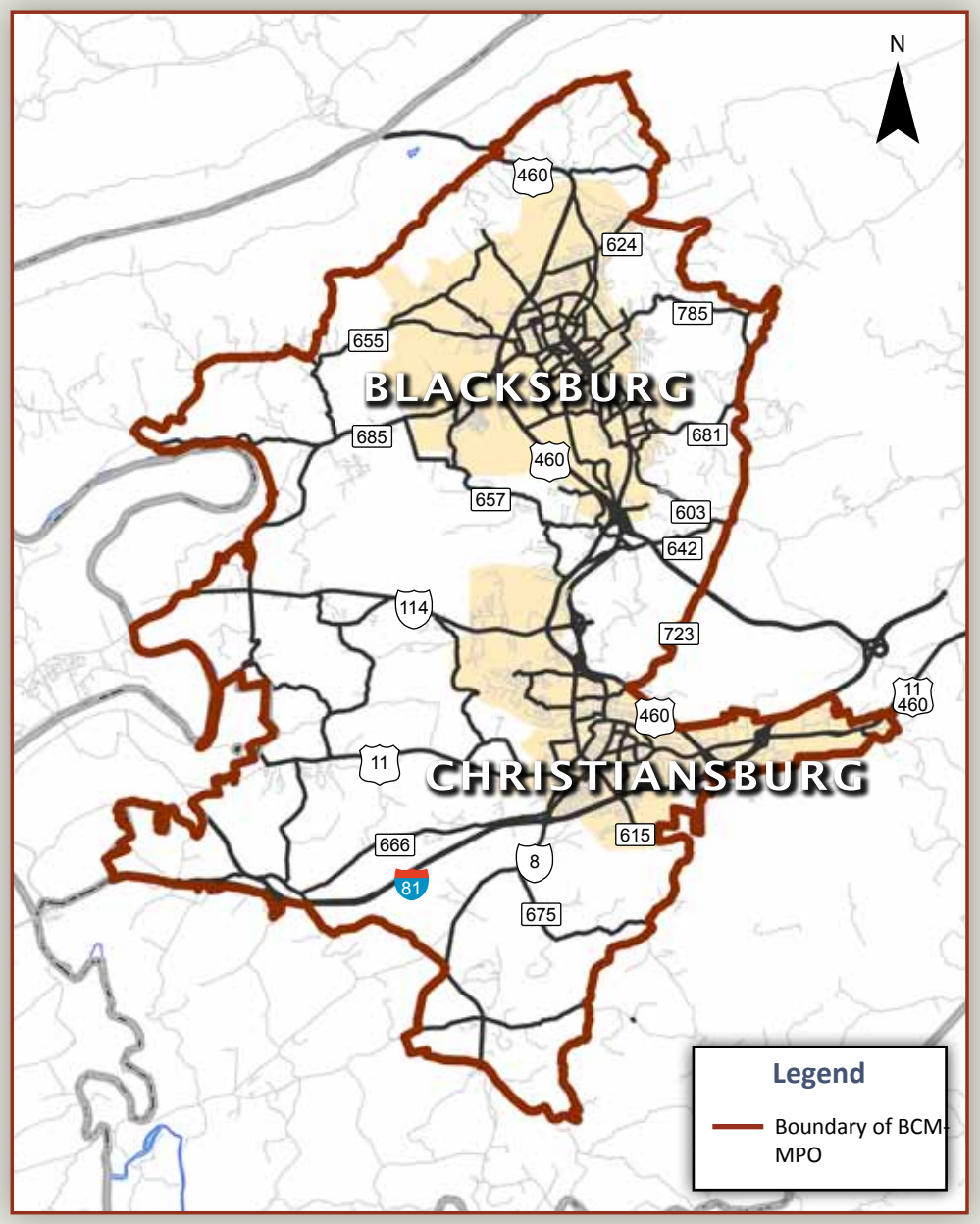
(http://www.census.gov/population/www/estimates/aboutmetro.html). The metropolitan area must include one urbanized population center with at least 50,000 people. The Blacksburg/Christiansburg/Montgomery region met these thresholds after the 2000 US Census. The boundaries of the BCM-MPO area are shown in Exhibit 1.

1.4 Demographic Overview

The BCM-MPO study area is currently home to over 83,000 persons (Exhibit 2). The region's population grew by approximately 12 percent between 2003 and 2008. The MPO's estimated 2008 population of 83,593 is projected to increase to 109,593 persons by 2035. The population forecasts shown in Exhibit 2 were developed as a cooperative effort by the MPO's Technical Advisory Committee. The forecasts were based on detailed zone-by-zone assessments of growth. The forecasts also reflect generalized estimates as developed by the Virginia Employment Commission (VEC) and the official state-endorsed forecasts from the Tayloe-Murphy Center.

Exhibit 3 summarizes the existing and 2035 employment for the BCM-MPO area. These forecasts were also developed as a cooperative effort by the MPO and were initially based on a database of all employers in the region provided by the VEC. This data was checked and validated by local jurisdictions. Employment forecasts were developed based on local land use plans, current development patterns, employment trends, and generalized estimates by the VEC. Additional information on the population and employment forecasts are included in Appendix B.

Exhibit 1:
Study Area (BCM-MPO Boundary)



Future transportation needs in the region were identified using a computerized regional travel demand model that was updated and validated by VDOT using 2008 as a base year. Increases in population and employment are the primary inputs into the travel forecasting process.

Exhibit 2:
Existing and Forecast Population

Area	2003	2008	2003 to 2008	2035 (Forecast)	2008 to 2035
Blacksburg	31,637	35,192	11.24%	44,333	26.0%
Virginia Tech	9,066	9,120	0.60%	12,038	32.0%
Blacksburg plus Virginia Tech	40,703	44,312	8.87%	56,371	27.2%
Christiansburg	17,697	22,343	26.25%	28,011	25.4%
Portion of Montgomery County in MPO	16,250	16,938	4.23%	25,211	48.8%
MPO*	74,650	83,593	11.98%	109,593	31.1%

Sources: US Census, BCM-MPO. * Not a total of all lines above; Blacksburg plus Virginia Tech is a subtotal.

Exhibit 3:
Existing and Forecast Employment

Area	2003	2008	2035 (Forecast)	2008 to 2035
Blacksburg	12,043	13,667	19,007	39.1%
Virginia Tech	8,717	7,794	12,713	63.1%
Blacksburg plus Virginia Tech	20,760	21,461	31,720	47.8%
Christiansburg	12,427	13,464	17,278	28.3%
Portion of Montgomery County in MPO	3,188	3,198	6,346	98.4%
MPO*	36,375	38,123	55,344	45.2%

Sources: Virginia Employment Commission, BCM-MPO. * Not a total of all lines above; Blacksburg plus Virginia Tech is a subtotal.

CHAPTER 2: EXISTING TRANSPORTATION SYSTEM



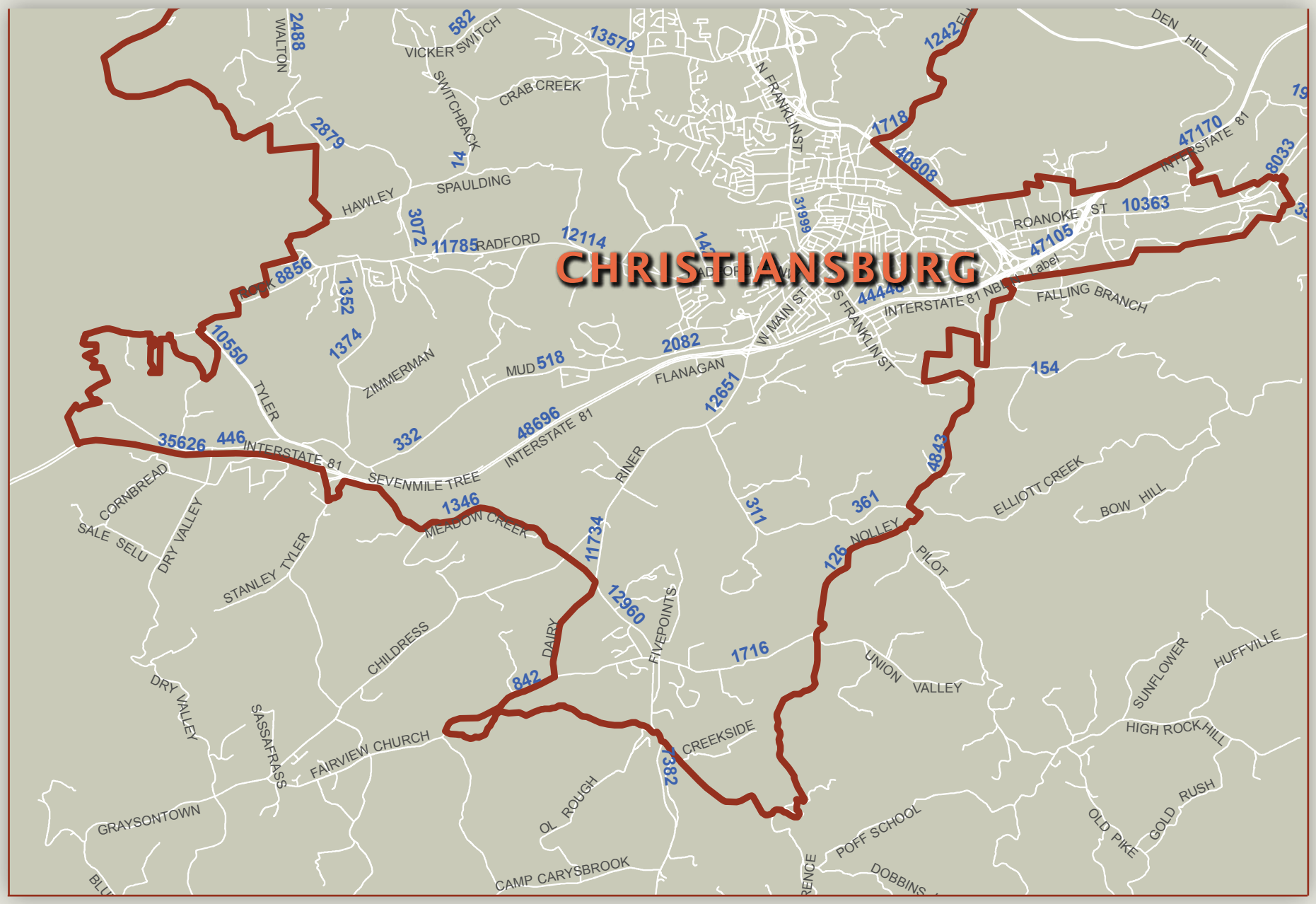

The study area is served by a network of roads, sidewalks, and bicycle facilities. Pedestrian travel is served by sidewalks within the downtowns and on local and thoroughfare roads elsewhere. In general, bicycle travel is permitted on existing roads. On-street parking is permitted in Blacksburg and Christiansburg unless restrictions are posted. Transportation needs are also served by Blacksburg Transit (fixed route, deviated fixed-route, demand response, and paratransit service), Smart Way bus service between Blacksburg/Christiansburg and Salem/Roanoke, taxi service, and the Virginia Tech-Montgomery Executive Airport. Commercial air travel is provided out of Roanoke Regional Airport (approximately 35 miles to the northeast), while the closest location for intercity passenger train service (Amtrak) is either Clifton Forge, 67 miles to the north, or Lynchburg, approximately 90 miles to the northeast. Intercity bus service was reinstituted in the BCM-MPO with the introduction of Megabus service on December 15, 2010. This service offers three daily departures to Knoxville and three daily departures to Washington from its arrival and departure location at the Falling Branch Park & Ride Lot (I-81 Exit 118).

2.1 Roadway Network

The focus of the Plan is the functionally classified urban thoroughfare system. The urban thoroughfare system is a subset of the area's overall road network that is designated by VDOT, the Federal Highway Administration, and the Towns of Blacksburg and Christiansburg. The thoroughfare system includes roads that are functionally classified as arterials or collectors, and comprises approximately 130 roadway miles (360 lane-miles) within the BCM-MPO study area. Arterial roads serve as the major traffic-carrying facilities in the area, and carry through traffic. Collector roads carry a lesser volume of traffic and feed traffic to the arterial roadways. Since these roadways make use of federal and state funds for construction and maintenance, they must be included in the Plan.

Blacksburg and Christiansburg lie at the convergence of several major north-south and east-west routes. Interstate 81 lies along the eastern edge of Christiansburg, providing a connection with the upper Shenandoah Valley and the Mid-Atlantic states to the north, and southwest Virginia and Tennessee to the south. US 11 parallels I-81 in a genrally north-south direction, and traverses the central business district of Christiansburg. This road is designated as Roanoke Street, Main Street, and Radford Street at various locations. US 460 travels in an east-west direction in the Blacksburg/Christiansburg area and provides a connection between the two towns. The road is designated

Exhibit 4:
Existing Year ADT


CHRISTIANSBURG
WALTON
VICKER SWITCH
SWITCHBACK
CRAB CREEK
N FRANKLIN ST
DEN HILL
HAWLEY
SPAULDING
RADFORD
ROANOKE ST
INTERSTATE 81
W MAIN ST
S FRANKLIN ST
FALLING BRANCH
TYLER
ZIMMERMAN
MUD
FLANAGAN
SEVENMILE TREE
RIVER
MEADOW CREEK
ELLIOTT CREEK
BOW HILL
CORNBREAD
SALE SELU
DRY VALLEY
STANLEY TYLER
CHILDRESS
NOLLEY
PILOT
DAIRY
FIVEPOINTS
UNION VALLEY
SUNFLOWER
HUFFVILLE
HIGH ROCK HILL
SASSAFRASS
FAIRVIEW CHURCH
CREEKSIDE
GRAYSONTOWN
OL ROUGH
CAMP CARYSBROOK
POFF SCHOOL
DOBBINS
OLD PIKE
GOLD RUSH

Franklin Street in Christiansburg and Main Street in Blacksburg. Each town has a US 460 Bypass that provides a route around its downtown area, and there is an additional bypass between the two towns.

The area is also served by three Virginia primary routes. These include VA 8 and VA 111 in Christiansburg, designated as Riner Road and Depot Street, respectively. VA 114 ties into US 460 between Christiansburg and Blacksburg, and is designated as Pepper's Ferry Road. Existing (year 2008) daily traffic volumes on study area roads are shown in Exhibit 4.

2.2 Bicycle and Pedestrian Network

The bicycle and pedestrian network in the BCM-MPO area is an important element in the transportation network due to the location of universities in the area and the recreational opportunities inside and outside of the BCM-MPO. These facilities are currently used for basic transportation, as well as for recreational purposes. Within the MPO, the principal facilities are the Huckleberry Trail and US Bike Route 76. There is a wide-ranging network of existing bike routes and greenways within both towns as well as connections between the facilities.

The Blacksburg Comprehensive Plan 2006-2046 (2009) details the existing conditions of bicycle lanes, greenways, and sidewalks as well as planning objectives and action strategies for these parts of the transportation network. The town's objectives include:

- Coordinate Blacksburg's greenways internally and regionally;
- Increase access to the greenway network to increase the effectiveness of the greenway network as alternative transportation;
- Establish methods, including funding, for greenway acquisition and construction;
- Provide management and maintenance of the greenway system;
- Incorporate citizen involvement in the process of planning sidewalk facilities;
- Provide a network of sidewalks that serves the entire community and enables pedestrian access to all potential destinations in town;
- Provide a sidewalk network that is safe and convenient for all users;
- Improve the aesthetic quality of the pedestrian environment;
- Provide a bicycle network that enables bicycles to be used as a primary means of transportation, as well as for recreational purposes;
- Provide a bicycle network and associated facilities that are safe and convenient for all users; and
- Plan locally and regionally for bicycle connections and facilities.

The Town of Christiansburg Comprehensive Plan (2003) also details the existing conditions of bicycle lanes, greenways, and sidewalks within the Town. Planning objectives and action strategies for these facilities are included in the transportation and parks and recreation portions of the plan. The town's strategies include:

- Provide adequate signage for and study routing of the US Route 76 Bicycle Trail;
- Provide interconnected walking and bicycle trails within and around the Town, including the extension of the Huckleberry Trail;
- Provide bicycle lock posts/racks at the Recreation Center, planned aquatic center, and other appropriate locations around the Town;
- Support creation and maintenance of recreational trails (including regional projects) and encourage their use for commuting;
- Explore the establishment of a Town Bikeway Committee;
- Continue to encourage new development to provide for trails and recreational areas and continue staff plan review for

interconnectivity opportunities;

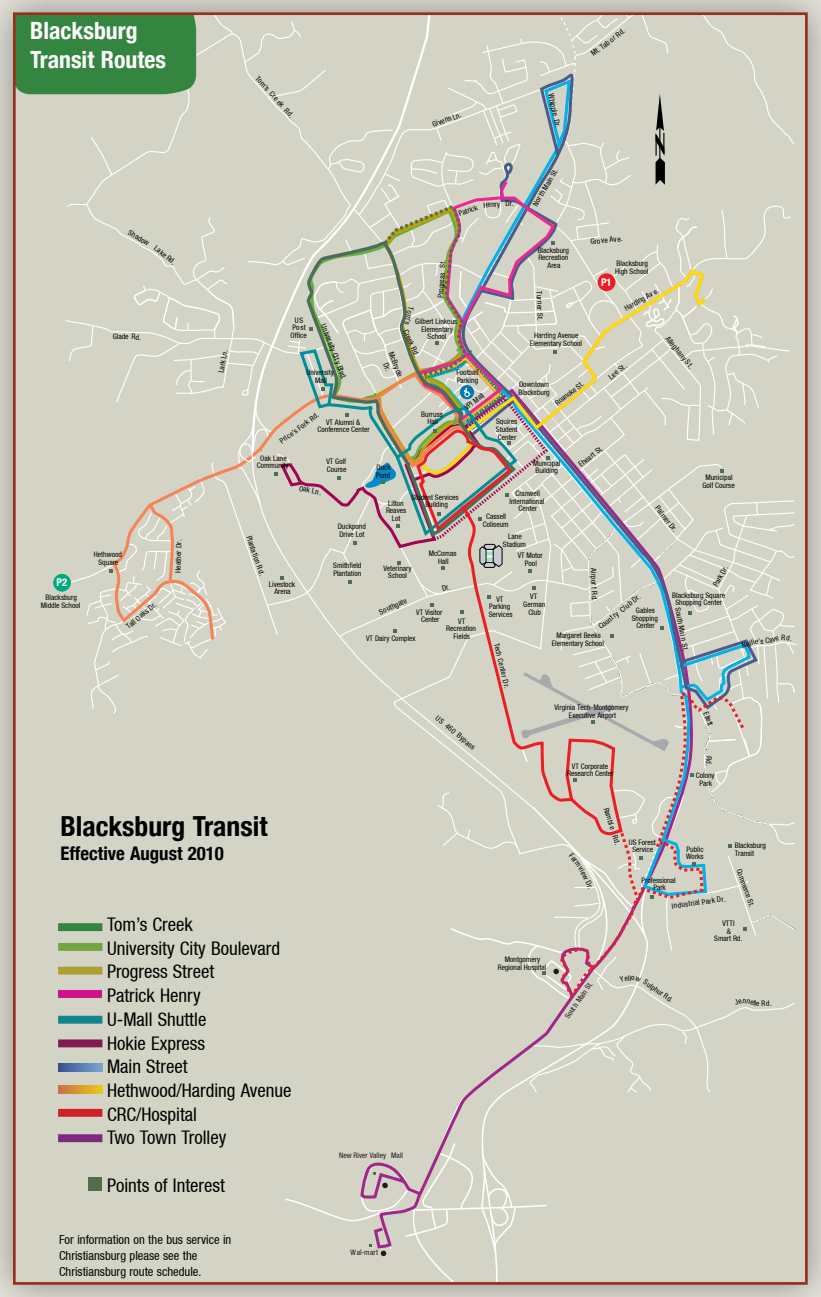
- Explore the creation of a fund that would allow developers to make contributions in lieu of building a sidewalk in front of properties that do not provide connectivity. This fund could then be used to rehabilitate existing sidewalks or extend existing sidewalks into appropriate areas;
- Consider requiring walking paths as part of new residential development within the Town;
- Assess the need for crosswalks and lights within the commercial districts of the Town;
- Assess the need for walkovers and/or tunnels within the commercial districts on US 460, Peppers Ferry Road, and Main Street;
- Develop an interconnected trail network within and around the Town;
- Continue to promote the Huckleberry Trail and coordinate future extension of the Trail;
- Connect greenspace throughout the Town; and
- Build sidewalks or multi-use paths to public sites including parks and recreation centers.

The *Montgomery County Comprehensive Plan* (2004) contains two key goals to address bicycle and pedestrian facilities. The land use and transportation section contains a goal to "Require the provision of pedestrian facilities (sidewalks, walkways, trails, etc.) in new developments in the Village, Village Expansion, Residential Transition, and Urban Expansion Areas" (Montgomery County, 2004). One of the main goals of the transportation portion of the plan is to "Support viable alternative modes of transportation (walking/ biking trails) and provide connectivity to existing transportation networks. Walking and biking trails are an important alternative mode of transportation that can reduce congestion from the use of private cars. By managing the existing trails network and providing connectivity to other modes of transportation, the County can develop a comprehensive transportation network that balances safety, mobility, cost, and environmental impact. When walkway and bikeways interconnect, people are more likely to use them to get to and from work, shopping, etc. The Huckleberry Trail, Mid-County Park Market Place Connection, and New River Trails are walkways/ bikeways that should be linked with other local and regional walkway/ bikeway systems."

2.3 Transit Service

Blacksburg Transit (BT) is the primary fixed-route transit agency in the BCM-MPO. It is managed by the Town of Blacksburg and supported by Virginia Tech. The service offers eleven fixed routes, including the Two Town Trolley to Christiansburg and the New River Valley Mall (Exhibit 5). Current annual ridership is over 3.4 million passengers. BT also provides BT Access, a door-through-door accessible van service throughout Blacksburg. Within Christiansburg, BT offers both deviated fixed-route and demand-response service, as well as a daily commuter route between Christiansburg and Blacksburg. Demand-responsive transit is also available in the BCM-MPO and throughout the New River Valley by the New River Valley Senior Services (NRVSS). NRVSS is a non-profit agency and the primary provider responsible for the administration of demand-responsive transit in the entire region. NRVSS has agreements with multiple government agencies and private partners to provide transportation throughout the region to their respective clients for nutrition, medical, and disability services, and even shopping. Clients include those of the individual agencies, the general public 60 years of age or older who have no transportation available, and disabled people under 60 on a space available basis (Center, 2006).

Exhibit 5:
Blacksburg Transit Route Map



Source: Blacksburg Transit

2.4 Park-and-Ride and Rideshare

RIDE Solutions offers alternative transportation information and assistance in the New River Valley and Roanoke Valley-Alleghany regions. It provides commuter matching, a guaranteed ride home program, vanpool assistance, and bicycle information and resources. The commuter matching includes an online interactive map with posts of potential carpools. There are two main clusters of commuters, in the BCM-MPO and in Roanoke. The commuter service has riders from the surrounding regions as well.

The SmartWay bus is operated by Valley Metro (Greater Roanoke Transit Company) in Roanoke and operates between Roanoke and the Towns of Blacksburg and Christiansburg, with stops within the jurisdictions and at park-and-ride lots on I-81, including the Falling Branch lot within the MPO. The service also cooperates with Blacksburg Transit, RIDE Solution's Guaranteed Ride Home program, and Roanoke Airport Transportation Services. The current Smart Way bus stops with intermodal connections are at the Falling Branch lot and the Christiansburg K-Mart. The K-Mart lot also connects to the BT route, the Shopper Express. The Smart Way bus operates Monday to Saturday; fare is $3 one-way.

There is an official VDOT-maintained park-and-ride lot in the BCM-MPO at Exit 118 off of I-81. RIDE Solutions has recently completed a study of the park-and-ride lots in both the New River Valley and the Roanoke Valley (RIDE Solutions, 2009). There are three unofficial or informal lots that were identified within the MPO. There are an additional four lots north of the MPO in Giles County along US 460 that facilitate carpooling into the MPO, one is official, the others are unofficial. A survey of all lots identified specific needs (Exhibit 6). General needs and deficiencies that applied to all the lots are better signs for wayfinding and information kiosks.

Exhibit 6:
Park-and-ride Lot Conditions

Lot	Status	Lot Condition	Pavement Condition	Lighting	Security/ Visibility	Activity
Falling Branch Lot, I-81 Exit 118	Official	Excellent	Good	Excellent	Excellent	High
I-81 Exit 114	Unofficial	Good	Poor	Bad	Excellent	High
Deli Mart	Unofficial	Good	Poor	Bad	Excellent	High
Christiansburg K-Mart	Unofficial	Good	Good	Excellent	Good	High
Marathon Mart	Unofficial	Good	Poor	Poor	Fair	High

Source: RIDE Solutions, 2009.

2.5 Intercity Rail, Bus, and Air Service

There is currently no intercity rail or commuter rail service within the region. The nearest Amtrak services are provided in Danville or Lynchburg on the Crescent service (New York to New Orleans) and at Clifton Forge on the Cardinal/Hoosier State line (New York to Chicago). The TransDominion Express (TDX) is a proposed rail service that would connect Bristol to Lynchburg and then divide with a line to Washington, DC and a line to Richmond. Christiansburg is proposed as a stop on the mainline. The Northeast Regional Service operated by Amtrak between Washington, DC and Boston was expanded to Lynchburg in October 2009. This service implements part of the full service planned by TDX.

Intercity bus service was reinstituted in the BCM-MPO with the introduction of Megabus service on December 15, 2010. This service offers three daily departures to Knoxville and three daily departures to Washington from its arrival and departure location at the Falling Branch Park & Ride Lot (I-81 Exit 118). In addition, consideration is being given to bus service that would provide connections from Roanoke and/or Christiansburg to the Amtrak intercity rail service in Lynchburg (with service to Washington DC as well as other destinations on routes to New Orleans and Boston). The Virginia Department of Rail and Public Transportation (DRPT) prepared an assessment of anticipated ridership and funding for this service (Assessment of the Anticipated Ridership and Funding for Amtrak Connector Bus Service in the Roanoke Valley-Lynchburg Corridor, December 2010), and decisions on implementing the service are pending. Additional intercity bus service is available from Greyhound Bus lines, which has stops in Roanoke 30 miles to the northeast or in Wytheville 56 miles to the southwest (there is currently no Greyhound bus service in either Blacksburg or Christiansburg).

There is one airport located within the BCM-MPO, the Virginia Tech-Montgomery Executive Airport in Blacksburg. It is classified as a general aviation community airport. The New River Valley Airport west of the MPO is classified as a general aviation regional airport (DOAV, 2003). The Virginia Air Transportation System Plan Update of 2003 showed 0.6% average annual growth at the Virginia Tech Airport (DOAV, 2003). The Virginia Tech-Montgomery Executive Airport

Authority recently completed a master plan update that had average annual growth of based aircraft of 1.6% (Virginia Tech, 2008). Tech Center Drive and the Huckleberry Trail are both slated to be shifted in order to lengthen the main runway. The cost of this was estimated in 2007 as $2.5 million. It is being funded 95% by the Federal Aviation Administration, 3% by the Virginia Department of Aviation (DOAV), and 2% by third party. Other improvements include terminal rehabilitation, apron improvements, and hangar construction and improvements. Appendix B shows the full range of improvements included in the Airport Master Plan.

2.6 Travel Demand Management and Land Use

The Blacksburg/ Christiansburg/ Montgomery Area 2035 Transportation Plan (the Plan) supports land use concepts that support a walkable, bicycle and transit friendly community; following smart growth principles and transit oriented development (TOD) concepts. These principles support efficient travel that promotes a high quality of life, sustainability, and reduced impacts on the environment; and are particularly applicable to the bicycle lanes, greenways, and sidewalks. The Blacksburg Comprehensive Plan 2006-2046 (2009) details a number of planning objectives and action strategies for these parts of the transportation network.

CHAPTER 3: EXISTING AND FUTURE TRANSPORTATION NEEDS

Transportation needs in the BCM-MPO were identified based on input from transportation providers, local governments, the general public, and transportation planning and traffic engineering analysis. Because this Plan is an update of the BCM-MPO's 2030 Plan, previous needs analysis served as the starting point for the current analysis process. Transportation needs were identified for both existing conditions (2008) and for the Plan's horizon year of 2035.

3.1 Existing and Future Travel Demands

Developing estimates of travel demands is the key first step in the process of identifying transportation needs. Existing traffic demands were determined based on an extensive set of data collected and maintained by VDOT, as supplemented by count data from other sources such as local governments, and counts performed for transportation studies including traffic impact studies performed for new development. For analysis purposes, all count data is adjusted, based on historic traffic trend data, to a common base year. As noted earlier, the base year for the Plan update is 2008. Exhibit 4 in Chapter 2 summarizes base year daily traffic on major regional roadways.

3.2 Travel Demand Forecasting

In order to determine roadway capacity needs for the 2035 horizon year for this Plan, the region's computerized regional travel demand model (developed for previous regional transportation plans and maintained by VDOT) was updated and validated to the base year of 2008, and then used to forecast traffic to the year 2035. The transportation model, developed using industry-standard TP+ modeling software, includes all of the roadways in the region's thoroughfare system as well as some limited amount of coverage outside of the BCM-MPO area (Exhibit 7).

Traffic forecasts are primarily a function of expected increases in population and employment, and the particular areas where traffic grows at the highest levels is based on where this anticipated growth is expected to occur. Base year population and employment data was determined for geographic areas in the region called transportation analysis zones (TAZs). In consultation with local planners, future growth in population and employment for each TAZ was also determined, with overall growth estimates guided by regional control totals. Exhibits 8 and 9 show the expected growth in population and employment by TAZ between 2008 and 2035. Note that both the computerized model network and TAZ boundaries extend beyond the BCM-MPO boundary.

Forecast traffic volumes in 2035 that are anticipated based on the expected growth in population and employment are shown in Exhibit 10. These are the year 2035 volumes on BCM-MPO "No-Build" network. The "No-Build" network assumes that only those roadway projects that currently have funding allocated for construction would be built. Generally, these are projects that have construction funding in the current Virginia Department of Transportation Six-Year Improvement Program (Fiscal Years 2011 to 2016). Key projects in the No-Build network include extending Progress Street to Givens Lane in the Town of Blacksburg and widening Peppers Ferry Road to four lanes from 460 to just west of the Christiansburg Town limits. Exhibit 11 highlights roadways with major differences in traffic volumes between 2008 and 2035.

3.3 Traffic Operations and Capacity Needs

Traffic operations analysis provides a primary method for identifying transportation needs. Traffic engineers quantify the operations of a roadway using a measure called Level of Service. Level of Service provides a comparative measure of the traffic performance of roads and intersections through a grading system of A to F. Level of Service A represents excellent traffic operations with minimal delays, while Level of Service F represents breakdown conditions and substantial delays. Roadways and intersections in the region were analyzed using planning-level methodologies based on estimating the ratio of traffic volume to overall capacity (volume to capacity, or v/c ratios). These techniques are described more fully in Appendix D.

The traffic operations analysis was used in the development of the 2035 Transportation Plan to identify existing and future capacity deficiencies on the roadway system. VDOT has developed Level of Service criteria to be used in the analysis of roadway and intersection operations for areas such as the Blacksburg-Christiansburg-Montgomery region. Intersections or roadway segments operating

Exhibit 7:
Regional Transportation Network Coverage

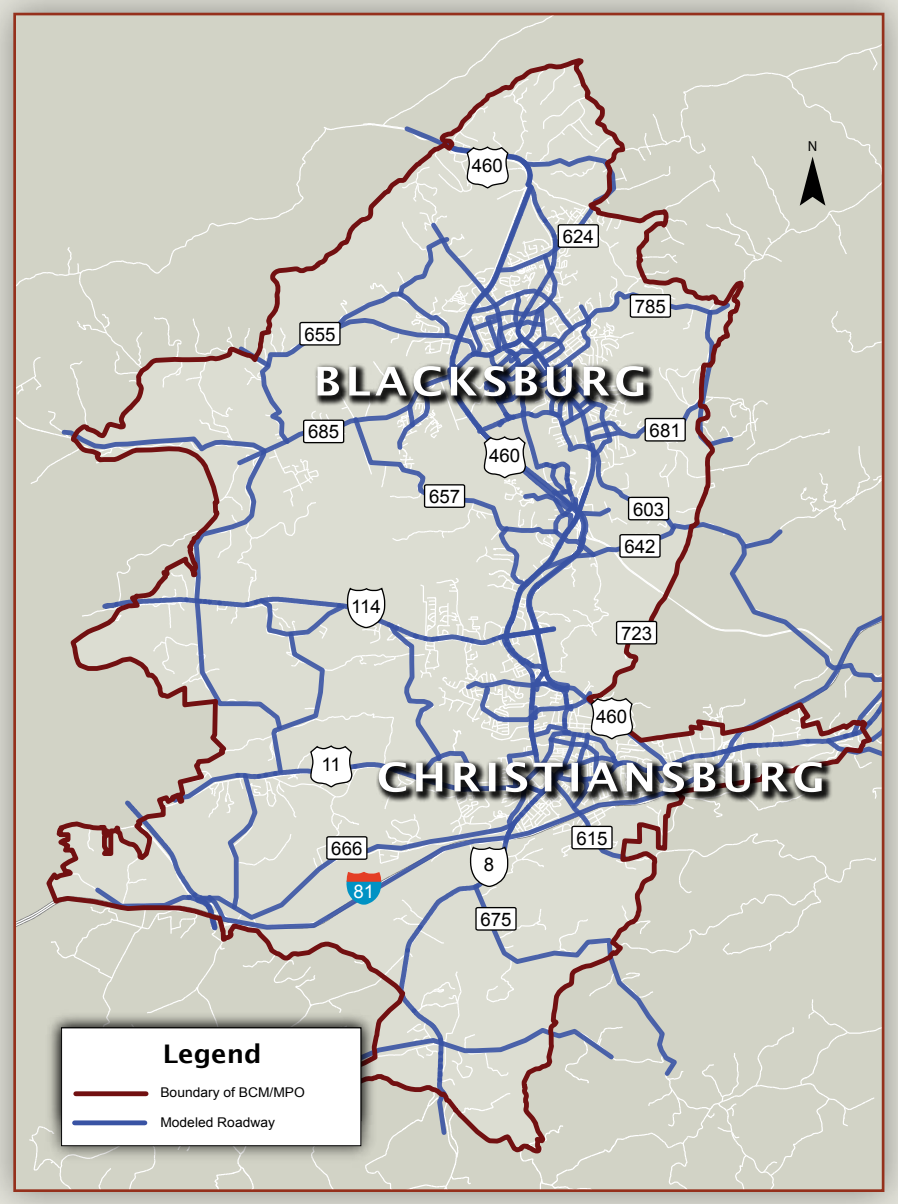


Exhibit 8:
Anticipated Growth in Population (2008 to 2035)

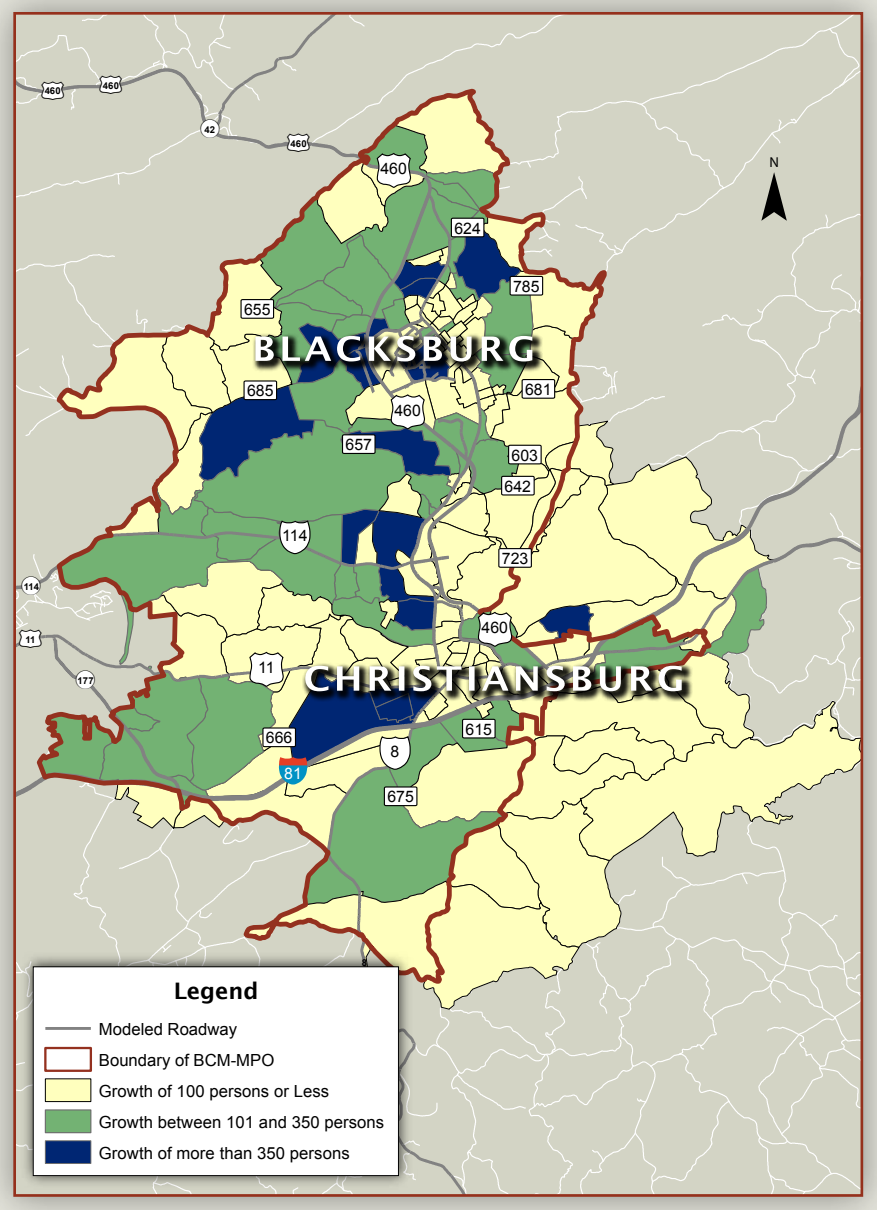


Exhibit 9:
Anticipated Growth in Employment (2008 to 2035)

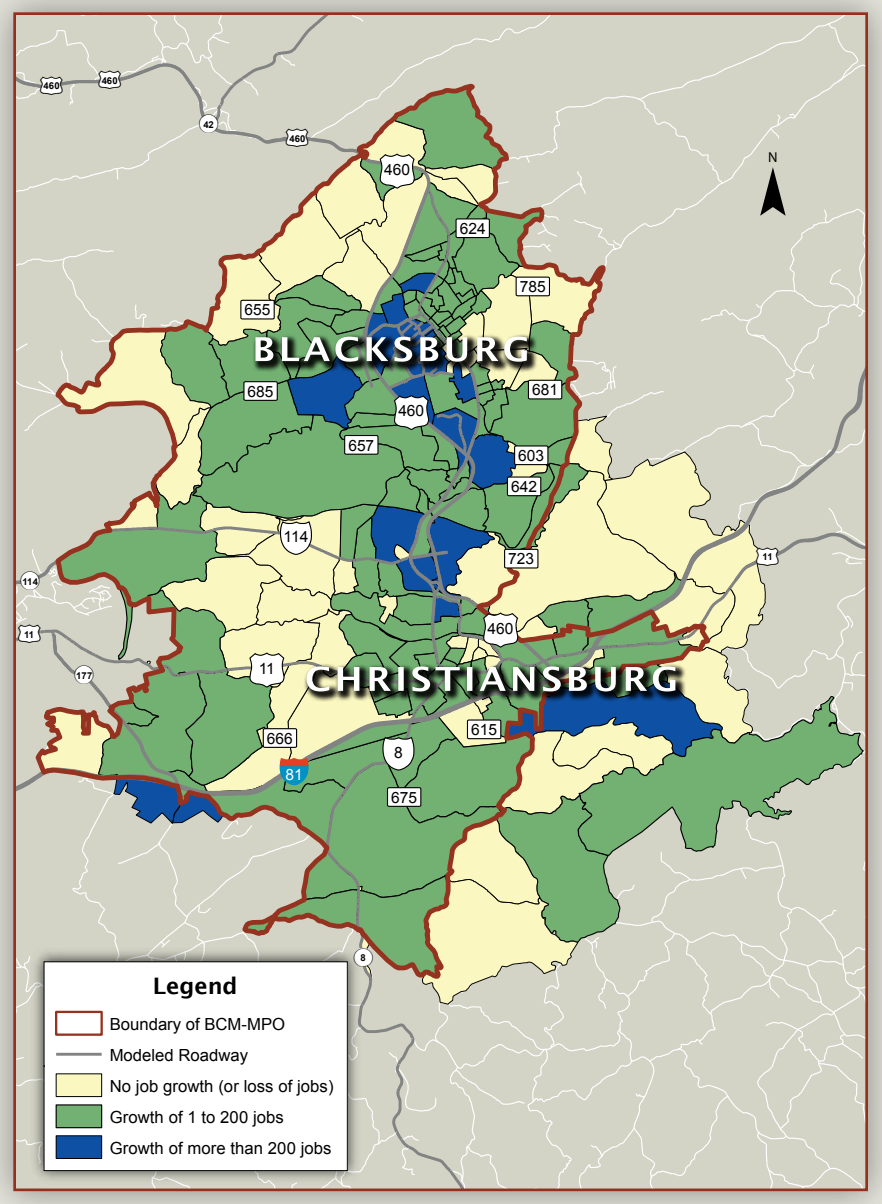
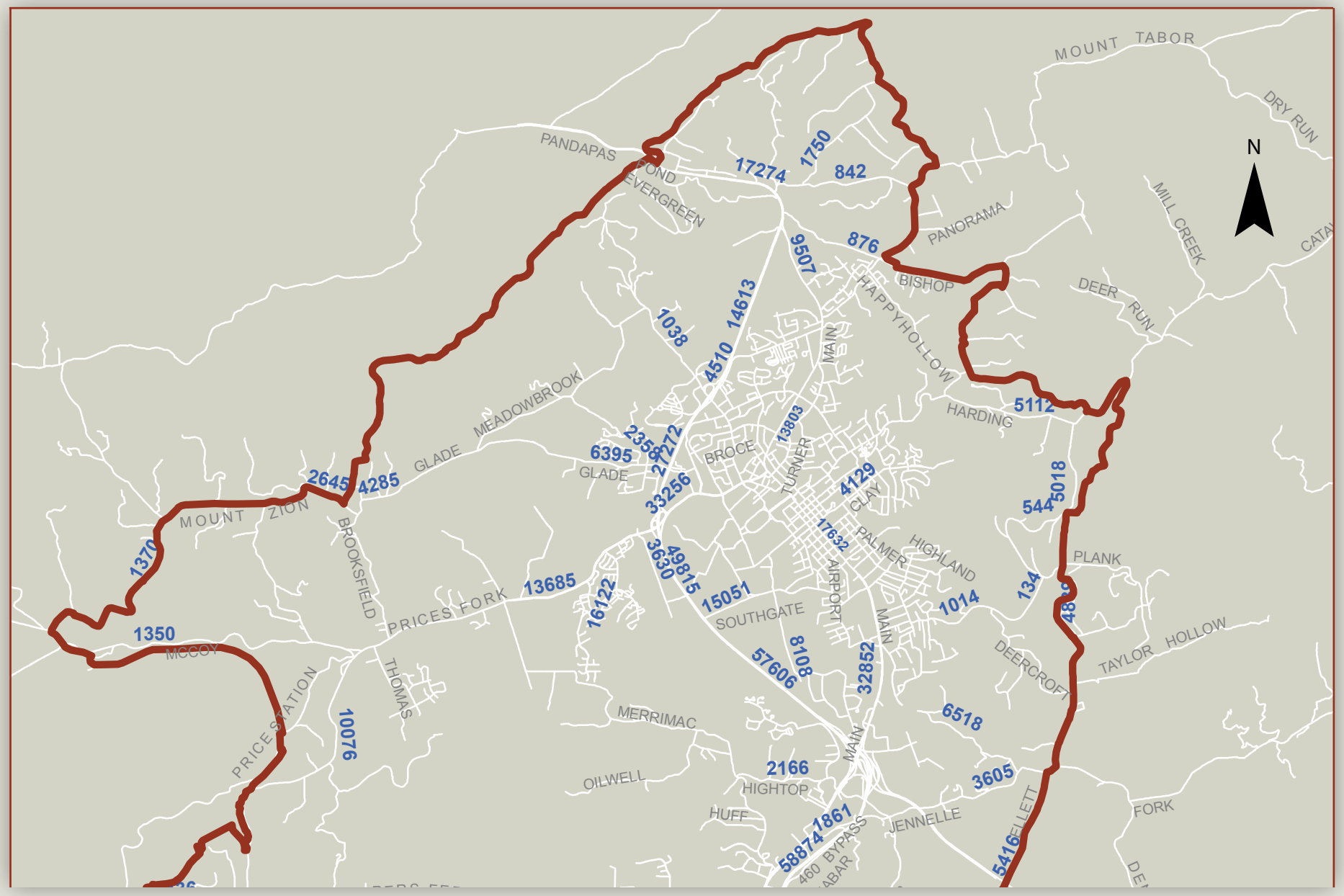
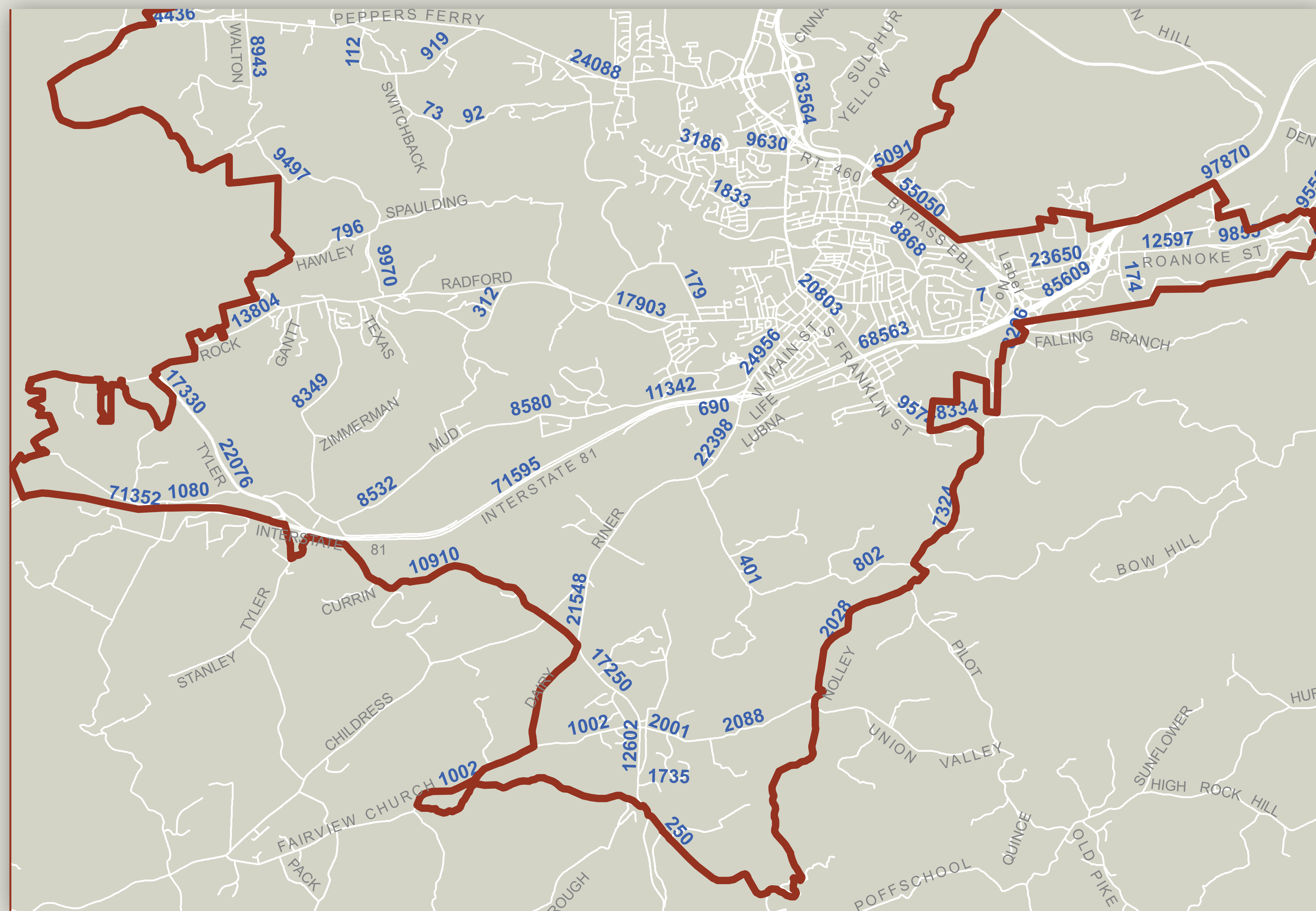


Exhibit 10:

Year 2035 Traffic Volumes




PEPPERS FERRY
WALTON
8943
112
919
24088
63564
SULPHUR
YELLOW
SWITCHBACK
73
92
3186
9630
RT 460
5091
9497
1833
55050
HILL
97870
SPAULDING
796
HAWLEY
9970
BYPASS EBL
8868
12597
23650
ROANOKE ST
85609
174
RADFORD
312
17903
179
20803
7
13804
ROCK
GANTT
TEXAS
FALLING
BRANCH
68563
24956
W MAIN ST
S FRANKLIN ST
17330
8349
ZIMMERMAN
8580
11342
690
LIFE
LUBNA
8334
MUD
22398
TYLER
22076
71352
1080
8532
71595
INTERSTATE 81
7324
INTERSTATE
81
10910
RINER
401
802
BOW HILL
CURRIN
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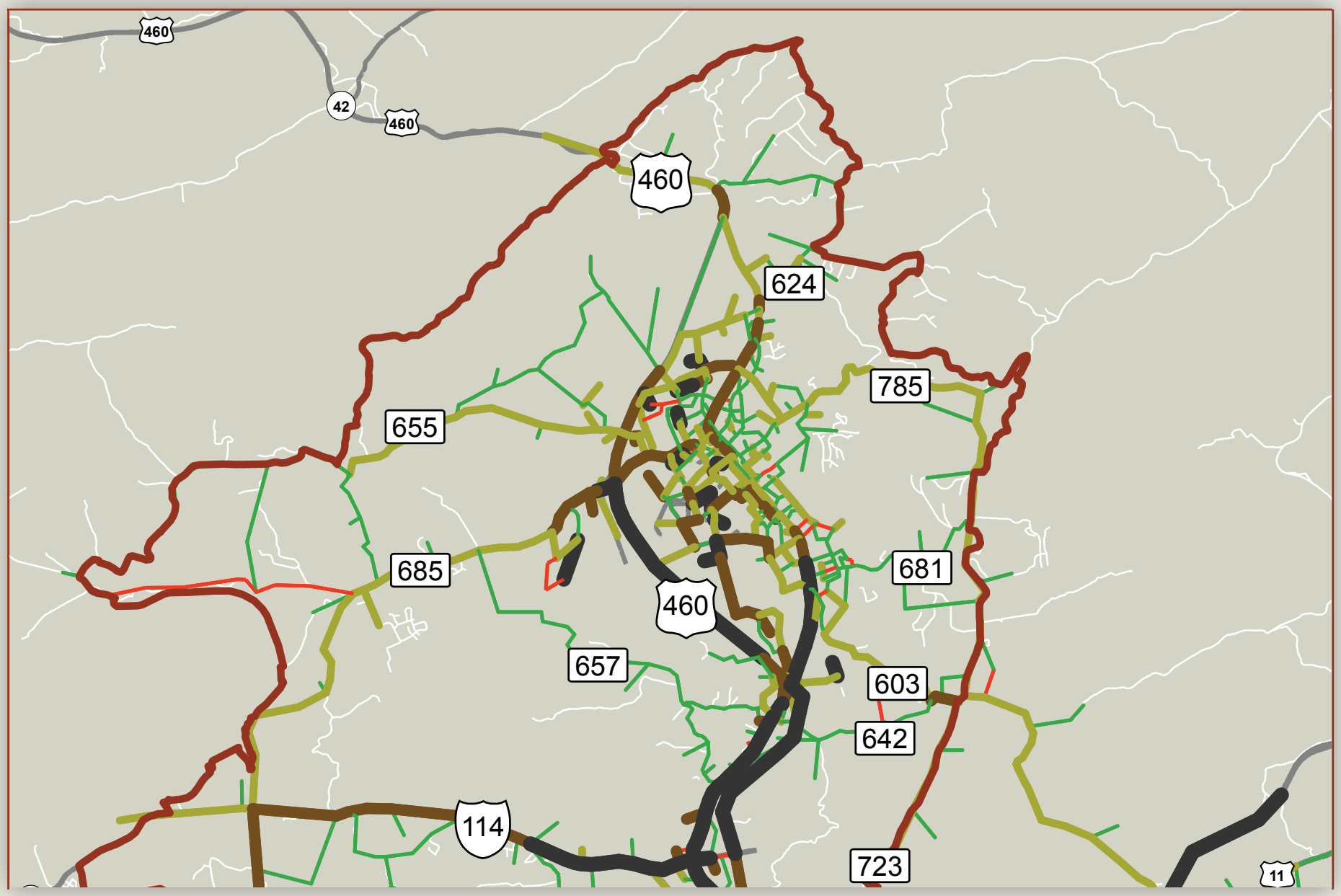
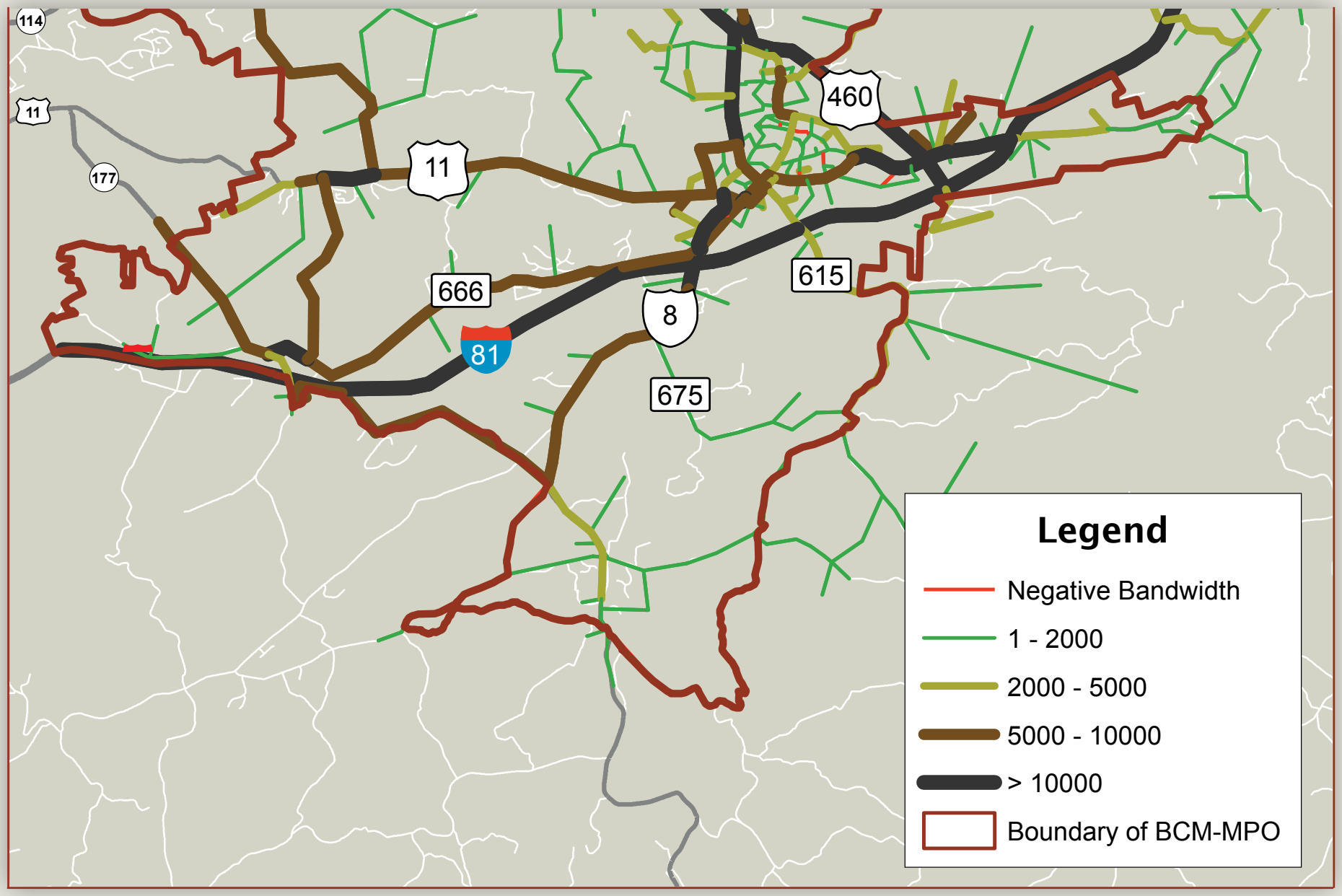
CHILDRESS
1002
2001
2088
12602
UNION
VALLEY
SUNFLOWER
HIGH ROCK HILL
1002
1735
FAIRVIEW CHURCH
250
QUINCE
PACK
ROUGH
POFFSCHOOL
OLD PIKE

Exhibit 11:

Anticipated Growth in Traffic Between 2008 and 2035 in Vehicles per Day (VPD)




114
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675
Legend
Negative Bandwidth
1 - 2000
2000 - 5000
5000 - 10000
> 10000
Boundary of BCM-MPO

at Level of Service C or better as determined by the planning methodology are defined as operating at under-capacity, or acceptable operations. Intersections or roadway segments operating at Levels of Service D, E, or F are defined as operating at over-capacity, or unacceptable operations.

Exhibit 12 summarizes the operations at major intersections within the MPO region based on the methodologies described in Appendix D. Operations are indicated as either under capacity or over capacity. For unsignalized intersections, Exhibit 12 also shows the Level of Service that could be expected if the intersection were to be signalized. It is important to note that deficient Level of Service does not provide sufficient warrants to install a traffic signal; this information is provided to assess the potential benefits of installing a traffic signal should such an installation be supported based on an in-depth warrant study.

Exhibit 13 depicts the locations of those intersections that are anticipated to operate at over-capacity conditions by the year 2035. As shown, all but 8 of the 29 intersections analyzed are expected to operate at over-capacity conditions by the year 2035. This finding is typical when assessing intersection operations 20 or more years in the future when traffic volumes on the overall network are generally expected to increase by 40 to 60 percent. Most of these intersection deficiencies can be corrected by providing additional turn lanes at the intersection itself without the need for major roadway widening to increase capacity. Broader, long-term corridor-level needs that can pinpoint the need for additional capacity and/or travel demand management were identified through the use of the regional model. Exhibit X depicts the corridors within the region that could be operating at either near- or over-capacity conditions by the year 2030.

3.4 Roadway Safety Needs

Roadway safety needs were determined based on reviews of Virginia Department of Transportation crash databases covering the years 2006 through 2008. Locations with 9 or more crashes over this time period were tabulated. Exhibits 14 and 15 show these locations in both tabular and map form. As with the data shown above, the crash data was presented for review and additional input at a public meeting in August 2010. Public input corroborated that the intersection of US 460 (North Franklin Street) and VA Route 114 (Peppers Ferry Road) is an intersection of particular concern with respect to safety for both motor vehicles and pedestrians.

3.5 Bicycle, Pedestrian, Transit, Rideshare, Intercity Rail and Bus, and Air Travel Needs

Sections 2.2 through 2.5 include discussions relative to needed improvements for bicycle, pedestrian, transit, rideshare, and intercity rail, bus, and air travel. Expanding options for travel by non-auto modes is a key goal for the region, and specific projects to support this goal are included in Chapters 4 and 5.

3.6 Public Involvement

The 2035 Plan builds on the previous 2030 Plan public involvement efforts as well as the ongoing outreach efforts of the MPO and local governments. All draft materials, including public meeting displays, comment forms, and draft reports are included on the MPO's website in advance of all meeting dates. For the 2035 Plan, a public information meeting was held on August 18, 2010. The primary goals of this meeting were to:

- Provide data and analysis relative to both existing and future conditions for all modes of transportation within the MPO area

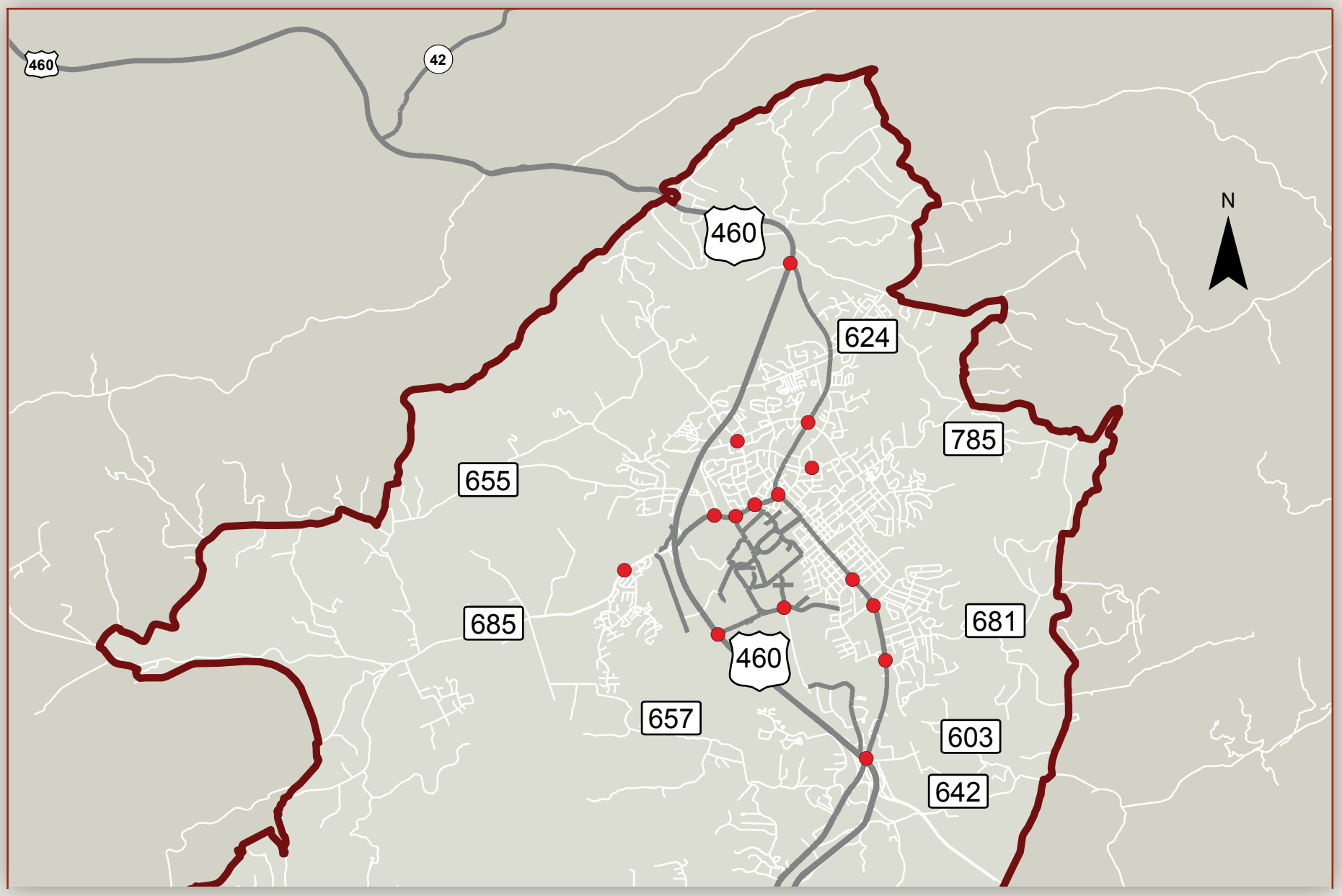
- Allow for public input for the study team to when developing recommendations to address existing and future transportation needs

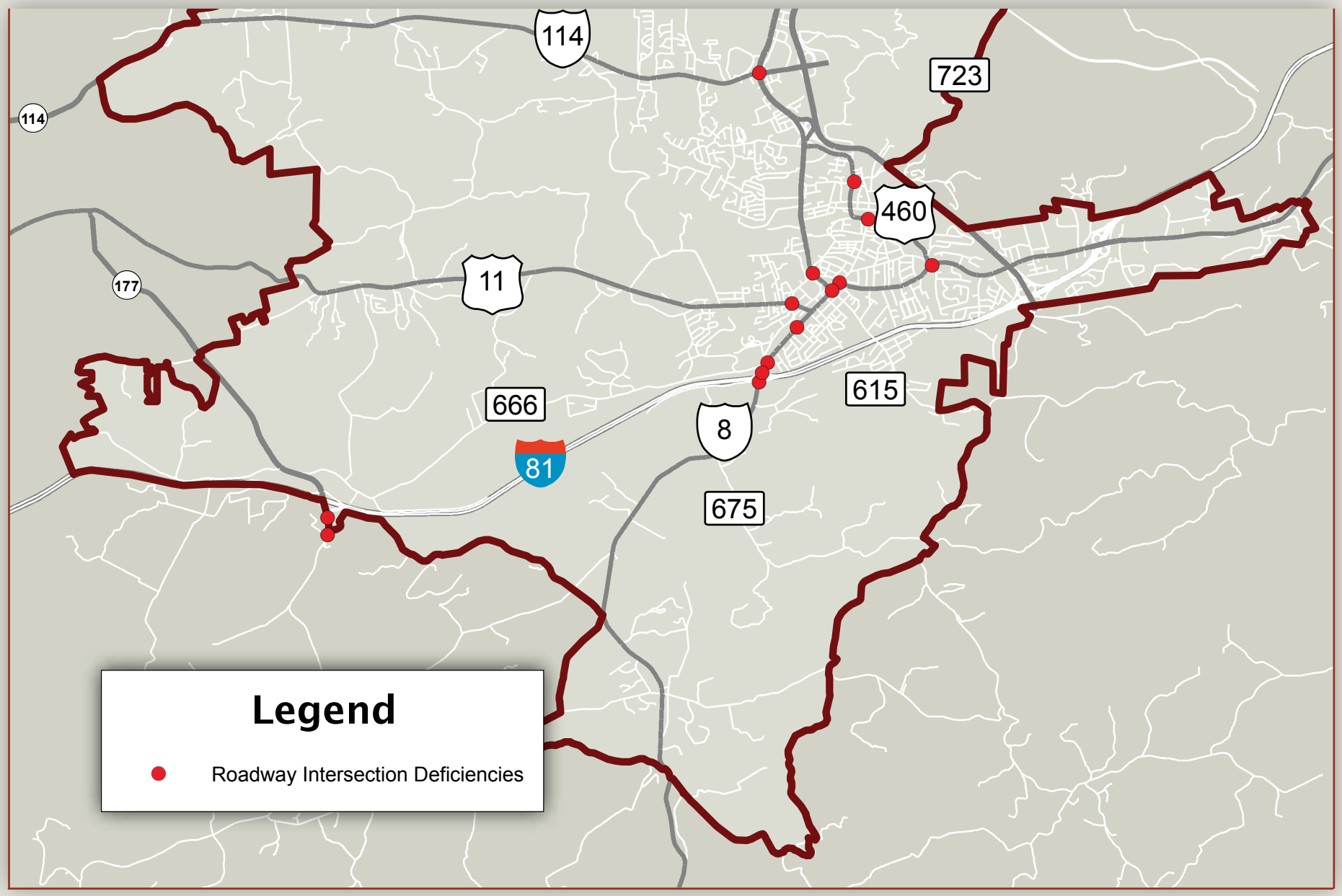
The major comments received at the public meeting related to the lack of lack of connectivity with respect to paratransit between Blacksburg and Christiansburg, as well as the lack of service to Radford. Specific comments related to the concern that administrative and legal impediments to providing service across jurisdictions greatly reduced the viability and value of paratransit, and that the region should consider providing service across jurisdictions, perhaps including service to Radford and Dublin. Additional comments suggested that the region might consider coorperative agreements with local taxicab companies so that those who need the service can use taxis (either paid for entirely or subsidized). It was suggested that this might be a cost-effective approach. This enhances the service at a relatively low cost (contracting taxi services can be cheaper than providing such services outright) and also provides more customers for taxis thereby allowing taxis to play a greater role in the overall mix of regional transportation services. Several areas with pedestrian concerns were also noted at the meeting. These include Prices Fork and Main Street in Blacksburg, along Main Street near the Virginia Tech Mall, and Peppers Ferry Road and North Franklin Street in the New River Valley Mall area. It was suggested that consideration might be given to providing either pedestrian tunnels or overpasses at some locations.

A public hearing to allow the public to review draft recommendations for inclusion in the Plan was held on September 29, 2010. Meeting attendees were supportive of the recommendations and did not provide any specific comments to the study team.

Exhibit 12:

Summary of Base Year and Year 2035 Intersection Operations




114
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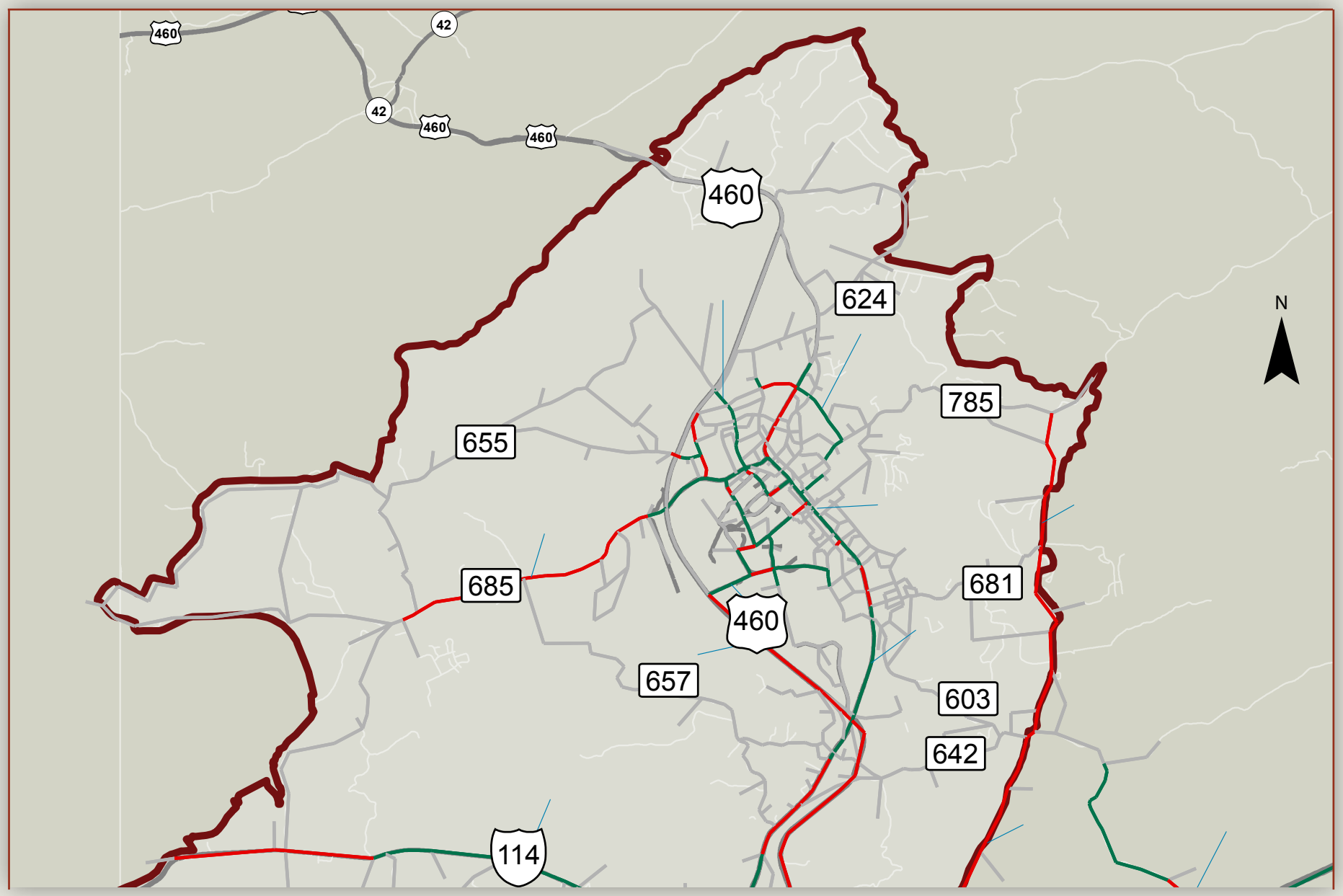
Roadway Intersection Deficiencies

Exhibit 13:

Potential Year 2035 Roadway Corridor Deficiencies




723
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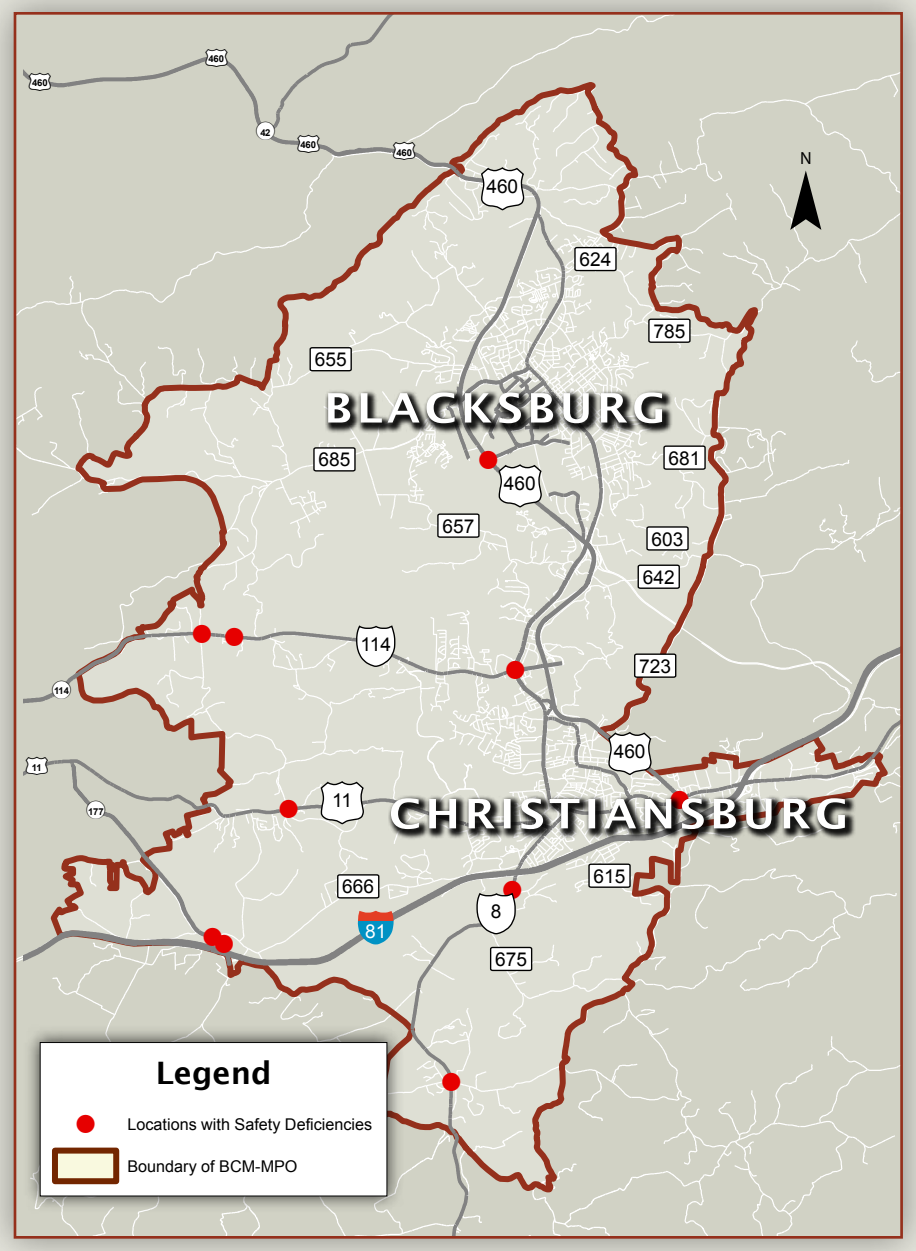
675
Legend
Under-capacity roadway
Over-capacity roadway
Near-capacity roadway

Exhibit 14:
Table of High-Crash Locations (2006 to 2008)

Location	Jurisdiction	Total
US 460 (North Franklin Street) at VA Route 114 (Peppers Ferry Road)	Christiansburg	36
US 11 (Roanoke Street) at US 460 (Christiansburg Bypass)	Christiansburg	27
Route 669 (Union Valley Road) at Route 8 (Riner Road)	Montgomery County	20
Route 1295 (Life Drive) at Route 8 (Riner Road)	Montgomery County	19
US 11 (Radford Road) at Route 663 (Walton Road)	Montgomery County	18
US 460 at Route 314 (Southgate Drive)	Blacksburg	17
Route 663 (Walton Drive) at Route 114 (Peppers Ferry Road)	Montgomery County	16
US 81 (Exit 109 A) at Route 177	Montgomery County	11
Route 800 (Onyx Drive) at Route 114 (Peppers Ferry Road)	Montgomery County	11
Route 600 (Mud Pike Road) at Route 177 (Tyler Road)	Montgomery County	9

Exhibit 15:
Map of High-Crash Locations (2006 to 2008)



CHAPTER 4: FINANCIALLY CONSTRAINED TRANSPORTATION PLAN IMPROVEMENTS

Federal regulations that guide the development of transportation plans for metropolitan planning areas require that the plans demonstrate that funds will be available to implement the projects based on reasonably expected public and private funding sources. For metropolitan areas in Virginia, the Virginia Department of Transportation (VDOT) provides estimates of transportation funding levels to the year 2035. Those projects that can be funded based on these estimates comprise the Financially Constrained Long-Range Transportation Plan which is described in this chapter. Regulations also allow Transportation Plans to include additional projects that would be included in the long-range plan if additional resources were to become available. These projects comprise the Vision Plan, which is described in the next chapter.

4.1 Funding Constraints

The complete set of transportation projects that was developed as part of the transportation planning process exceeded the estimates of available transportation funding to the year 2035. The bulk of the projects are roadway or roadway-related, therefore, the focus of the financial constraint process is on the roadway system. VDOT estimates that are used to financially constrain the Plan are provided by roadway programming category: National Highway System (NHS) interstate highways, non-interstate NHS roads, other primary roads, urban roads in each of the two towns, and secondary roads in Montgomery County. Additional transportation funds in the MPO are anticipated from the Federal Aviation Administration and the Federal Transit Administration; funds from each of these sources are anticipated for expenditure on specific projects. The current VDOT Six-Year Improvement Program covers the years 2012 through 2017, and the Plan assumes that these projects and associated funding will remain as they currently stand. Estimated funding for projects beyond the timeframe of the current Six-Year Program are for 2018 through 2035, and are shown in the Exhibit 19.

Transit funding, beyond that for the specific project as shown in Exhibit 16, comes from a variety of federal, state, and local sources. Detailed transit planning is included the region's Transit Development Plan (TDP) which is regularly updated by Blacksburg Transit (BT). The 2017 Transit Development Plan (TDP), required and funded by the Virginia Department of Rail and Public Transportation, is anticipated to be completed in 2011. It will outline a six-year plan for service expansion, and will also include integrated, constrained and unconstrained planning suggestions for both transportation and land-use.

Additional anticipated funding for transportation projects in the region include funds for extending the runway at the Virginia Tech/Montgomery Executive Airport. These costs are being developed as part of the airport's Master Plan update; however, funding for both the runway extension, and the relocation of Tech Center Drive to support this extension, are anticipated to be provided by the Federal Aviation Administration. These projects are included in the 2035 Transportation Plan based on the expectation that such funding is forthcoming.

Exhibit 16:
Anticipated Funding Stream for the Financially Constrained Plan

Funding Category	Anticipated Funding (2018 to 2035)
Federal Bridge	$947,031
Non-Federal Bridge	$6,740,265
Safety	$4,254,384
Interstate System	$14,895,060
Primary System	$29,568,876
Secondary System	$1,100,892
Urban System	$0
Federal Aviation[1]	$4,069,000
Federal Transit[2]	$10,000,000
SUBTOTAL	$71,575,508
Six-Year Program Funds[3]	$78,722,000
TOTAL	$150,297,508

1 – This represents funding for the relocation of Southgate and Tech Center Drive. Funds will be from the Federal Aviation Administration as the roadway relocations are part of the runway extension project for the Virginia Tech/ Montgomery Executive Airport.

2 – This represents funding for the proposed Multi-Modal Transfer Facility on Perry Street (Virginia Tech Campus). Funds are anticipated to be obtained from the Federal Transit Administration.

3 – Funding included in the FY 2012 to 2017 Six-Year Improvement Program (SYIP).

4.2 Financially Constrained Plan Projects

The Financially Constrained Plan includes projects from two sources: 1) projects currently programmed for funding in the Virginia Department of Transportation (VDOT) Six-Year Improvement Program (SYIP), which covers fiscal years 2012 through 2017; and 2) projects that could be implemented based on anticipated funding streams between 2018 and 2035. It is important to note that the Six-Year Improvement Program is a capital funding plan: it serves to allocate funds to projects on a year-by-year basis. Construction on some projects begins prior to allocation of full funding; in these instances, funding continues to be allocated to projects even if they have been completed.

Recommendations included in the Financially Constrained Plan that are not in the VDOT Six-Year Improvement Program are those that were judged by the study team and local government officials, with public input considered, to be a relatively high priority. Projects that were judged to be of a lesser priority, as well as those that may have an implementation timetable beyond the 2030 horizon, are included in the region's "Transportation Vision Plan." Vision Plan projects are those that could be constructed should additional funding become available. Vision Plan projects are described in Chapter 5 of this document.

Projects in the Financially Constrained Plan are shown in Exhibit 17. Several projects, as shown in Exhibit 17, would be partially funded from the Six-Year Improvement Program, with the remainder being funded with anticipated funding streams from 2018 through 2035. In addition, some projects would not be able to be fully funded from these two sources; these projects are also included in the Vision Plan for funding beyond the year 2035. Planning-level cost estimates for all projects are included in Appendix B.

Exhibit 17:
Projects in the Financially Constrained Plan

Map Key	Jurisdiction	Route	Project Location	Description	SYIP[1]	FCLRP[2]	Vision Plan[3]
108	Blacksburg		Huckleberry Trail	Repave and widen first mile of trail	X		
13	Blacksburg	314	Duck Pond Road over Stroubles Creek (South)	Upgrade bridge		X	
41	Blacksburg	460	Route 460 Bypass at Southgate Drive	Relocate Southgate Drive to intersect with the US 460 Bypass by constructing a new interchange approximately 2,200 feet south of the current intersection	X		
14	Blacksburg	314	Duck Pond Road over Stroubles Creek (North)	Upgrade bridge		X	
39	Blacksburg	314	Tech Center Drive (Route 314) and Southgate Drive	Relocate Southgate Drive to intersect with the US 460 Bypass at approximately 2,200 feet south of the current intersection. Realign Tech Center Drive to intersect with the relocated Southgate Drive approximately 1,500 feet from the US 460 Bypass. [Part of airport runway extension project]		X	
64	Blacksburg	460	Route 460 Bypass at North Main Street (Route 460 Business)	Install rumble strips, flashing beacons and warning signs	X		
40	Blacksburg	460	North Main Street (Route 460 Bus) at Red Maple Drive	Improve sight distance	X		
1	Blacksburg		Progress Street and Givens Lane	Widens Givens Lane to include bike lanes and sidewalks from Main Street to Chickahominy Drive. Extend Progress Street to Givens Lane.	X		X
15	Blacksburg		Ramble Road at Industrial Park Drive	Upgrade intersection	X		
11	Blacksburg		College Avenue from North Main Street to Otey Street	Construct streetscaping	X		
4	Blacksburg		Prices Fork Road	Upgrade traffic signals and add ADA controls along Prices Fork Road to Plantation Road	X		
76	Blacksburg		Pratt Drive	Add curb and gutter to Kraft Drive	X		
*	Blacksburg		Various Locations	Curb and gutter, sidewalk, traffic signal emergency systems	X		
29	Blacksburg	460	Route 460 Bypass at Route 460 Business (South Main Street)	Add ramp for southbound Route 460 to westbound Route 460 Business		X	
16	Christiansburg	8	Route 8 (West Main Street) from Route 11 (Radford Street) to I-81	Widen to four lanes		X	X
17	Christiansburg	11	Roanoke Street (Route 11/460 Bus) at US 460 (Christiansburg Bypass)	Perform study to identify specific safety concerns.		X	

Exhibit 17:
Projects in the Financially Constrained Plan (Continued)

Map Key	Jurisdiction	Route	Project Location	Description	SYIP[1]	FCLRP[2]	Vision Plan[3]
5	Christiansburg	81	I-81 southbound lanes over West Main Street (Route 8)	Replace bridge	X		
9	Christiansburg	81	I-81 northbound lanes over Route 8	Replace bridge	X		
18	Christiansburg	111	Depot Street (Route 111) over Walnut Branch	Upgrade bridge		X	
2	Christiansburg	114	Peppers Ferry Road (Route 114) from Route 460 to 0.126 kilometer west of west corporate limits	Widen to 4 lanes	X		
3	Christiansburg	114	Peppers Ferry Road (Route 114) Connector	Construct connector to Route 460 (preliminary engineering only)		X	
19	Christiansburg	460	North Franklin Street (Route 460 Business) at Cambria Street (Route 111)	Reconfigure intersection to provide for increased capacity and safety		X	
20	Christiansburg	460 Bus	North Franklin Street (Route 460 Business) at Peppers Ferry Road (Route 114)	Improve intersection for operations and safety; add additional approach lanes on Peppers Ferry Road to improve capacity.		X	
21	Christiansburg/ Montgomery	81	I-81 at West Main Street (Route 8)	Improve interchange for operations		X	
22	Christiansburg/ Montgomery	81	I-81 from west boundary of MPO to east of South Franklin Street (Milepost 116)	Widen to six lanes		X	X
7	Montgomery		Smart Road from Route 460 Bypass to West Route 642	Smart Road management of research - PE only		X	
23	Montgomery	8	Riner Road (Route 8) at Life Drive (Route 1295)	Add warning signs on Route 8		X	
24	Montgomery	11	Radford Road (US 11) at Walton Road (Route 663)	Add stop sign on Walton Road. Clear the vegetation on Walton Road at the intersection. Add warning signs on Route 11		X	
25	Montgomery	81	I-81 at Tyler Road (Route 177) -- Exit 109A	Consider installing signal at this intersection (pending warrant)		X	
10	Montgomery	114	Peppers Ferry Road (Route 114) at westbound lanes bridge over the New River	Replace bridge	X		
26	Montgomery	114	Peppers Ferry Road (Route 114) at Walton Road (Route 663) and Prices Fork Road (Route 659)	Implement access management near intersection.		X	
8	Montgomery	8	Riner Road (Route 8) at Union Valley Road (Route 669)	Add left-turn lanes at intersection	X		

Exhibit 17:
Projects in the Financially Constrained Plan (Continued)

Map Key	Jurisdiction	Route	Project Location	Description	SYIP[1]	FCLRP[2]	Vision Plan[3]
27	Montgomery	114	Peppers Ferry Road (Route 114) at Onyx Drive (Route 800)	Add warning signs on Route 114		X	
28	Montgomery	177	Route 177 (Tyler Road) at Route 600 (Mud Pike Road)	Implement access management near intersection		X	
32	Montgomery	643	Yellow Sulphur Road (Route 643) over Wilson Creek	Upgrade bridge		X	
33	Montgomery	649	Coal Bank Hollow (Route 649) over Toms Creek	Upgrade bridge		X	
30	Montgomery	655	Mount Zion Road (Route 655) over Toms Creek	Upgrade bridge		X	
38	Montgomery	657	Merrimac Road (Route 657) at Hightop Road (Route 808)	Improve intersection		X	
34	Montgomery	658	Meadow Creek Road (Route 658) over Meadow Creek	Upgrade bridge		X	
35	Montgomery	679	Nolley Road (Route 679) over Elliott Creek (South)	Upgrade bridge		X	
36	Montgomery	679	Nolley Road (Route 679) over Elliott Creek (North)	Upgrade bridge		X	
12	Montgomery	719	Route 719 Bridge	Replace bridge over Crab Creek	X		
31	Montgomery	785	Catawba Road (Route 785) over Indian Run	Upgrade bridge		X	
37	Montgomery	808	Hightop Road (Route 808) over Slate Branch	Upgrade bridge		X	
6	Montgomery		Smart Road -- new roadway from 0.671 kilometer east of Route 723 to Route I-81	Preliminary engineering and right-of-way for Smart Road (2 lanes roadway on 4 lanes of right-of-way)		X	X

1 – Anticipated to be funded as part of the Virginia Department of Transportation (VDOT) Six-Year Improvement Program (SYIP) covering fiscal years 2012 through 2017

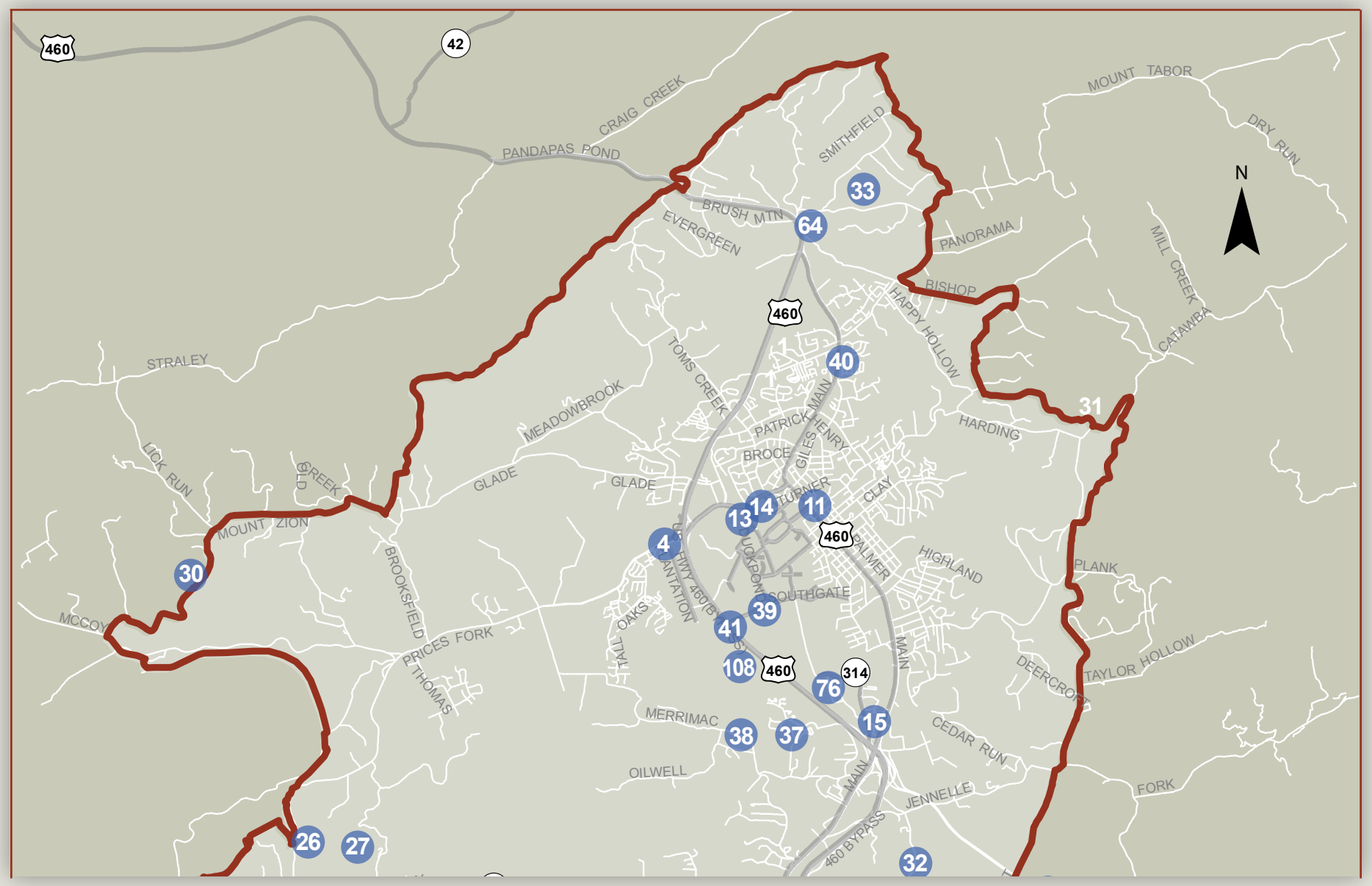
2 – Anticipated to be funded as part of the Financially Constrained Long Range Plan funding covering fiscal years 2018 through 2035.

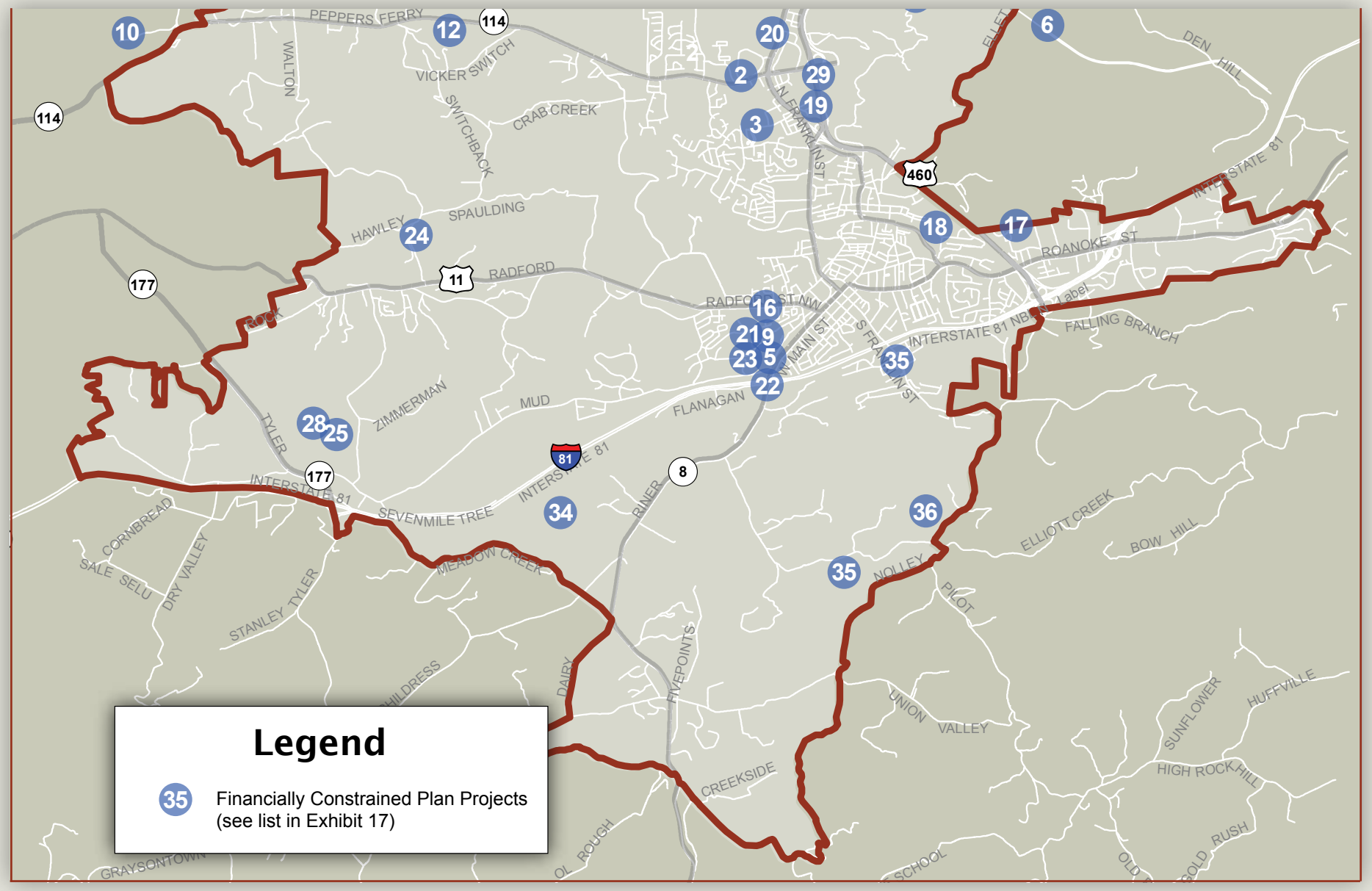
3 – Anticipated to be funded with funds beyond fiscal year 2035 (in the Tier 1 Vision Plan).

Note: Map key refers to the project maps included in Exhibit 18

* - Various locations, not shown on map in Exhibit 18.

Exhibit 18:
Map of Roadway Projects




PEPPERS FERRY
WALTON
VICKER SWITCH
SWITCHBACK
CRAB CREEK
HAWLEY
SPAULDING
RADFORD
MUD
ZIMMERMAN
TYLER
FLANAGAN
INTERSTATE 81
SEVENMILE TREE
MEADOW CREEK
CORNBREAD
SALE SELU
DRY VALLEY
STANLEY TYLER
DAIRY
RIVER
FIVEPOINTS
CREEKSIDE
GRAYSONTOWN
OL ROUGH
N FRANKLIN ST
S FRANKLIN ST
MAIN ST
ROANOKE ST
INTERSTATE 81 NB
FALLING BRANCH
DEN HILL
ELLIOTT CREEK
BOW HILL
NOLLEY
PILOT
UNION VALLEY
SUNFLOWER
HUFFVILLE
HIGH ROCK HILL
GOLD RUSH
SCHOOL
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Legend
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Financially Constrained Plan Projects
(see list in Exhibit 17)

4.3 Other Recommendations

In addition to the specific projects described in the previous section, the BCM-MPO Plan includes recommendations related to studies and overall planning goals, as well as implementation of policies to enhance travel choices throughout the region. These are described below.

Intercity Passenger Train Service

The region should continue to support the implementation of the proposed TransDominion train service which would extend from Bristol through the MPO and then to Lynchburg, with service beyond to either Richmond or Washington DC. Concurrent with the implementation of this service would be the redevelopment of the Christiansburg train station and rail infrastructure to accommodate a stop for the new rail service, as well as the development of transit service from the BCM-MPO area and adjacent jurisdictions to the Christiansburg train station to accommodate riders of proposed rail service.

Intercity Bus Service

The region should continue to support and promote intercity bus service. This service was recently re-established with Megabus service going to/from Washington DC and Knoxville at the Falling Branch Park-and-ride Lot at Exit 118A on I-81.

Regional Park-and-Ride and Shuttle Services

The region should continue to improve existing regional park-and-ride lots through enhanced wayfinding signs and information kiosks. Park-and-ride lot locations should be integrated into transit route planning, and shuttle connections between one of more of these lots and the proposed Multi-Modal Transfer Facility in Blacksburg should be considered.

With funding provided partially through a recently awarded Sustainable Communities Grant, the New River Planning District Commission will be identifying exact locations and developing design details for additional regional park-and-ride lots to serve Radford, Roanoke, and Giles County commuters, along with shuttle service and/or a rideshare program. Preliminary candidate locations for the park-and-ride lots include:

- Prices Fork Road in the vicinity of the Prices Fork community
- In or near Christiansburg (potential locations include Route 11 or Radford Road) west of Christiansburg)
- In or near the community of Riner
- Near I-81 Exit 109 (VA Route 177)
- Near I-81 Exit 118 (US Route 460) – expansion/modification to existing park-and-ride lot
- Near the Route 460/Route 460 Business interchange at the south end of the Town of Blacksburg (South Interchange Park)

Other potential long-range locations that have been identified include the Route 460 Bypass interchanges at Peppers Ferry Road, Southgate Drive, Prices Fork Road Toms Creek Road, and North Main Street.

Bicycle Network Improvements

The region should continue to plan for a bicycle network that enables bicycles to be used as a primary means of transportation, as well as for recreational purposes. These efforts will include identifying and addressing any connectivity issues for bicycles and pedestrians to key public sites including parks, recreation centers, libraries, shopping centers, and other appropriate locations around the region. Amenities such as bicycle lock posts/racks and lockers should be provided at these key destinations. A key focus should continue to be providing needed connections between existing

facilities in order to provide a complete and viable network for bicycle travel in the region.

Individual jurisdictions within the region should continue to encourage new development to provide for trails and recreational areas. In addition, the region should support the implementation of the priority elements of the Town of Blacksburg and the Town of Christiansburg bikeway and greenway plans.

Pedestrian Network Improvements

Key projects to be addressed by the region in order to support enhanced travel for safe pedestrian travel include:

- Assess the need for pedestrian overpasses and/or tunnels within the commercial districts on US Route 460, Peppers Ferry Road, and Main Street. Key pedestrian safety locations include Prices Fork and Main Street in Blacksburg, along Main Street near the Virginia Tech Mall, and Peppers Ferry Road and North Franklin Street in the New River Valley Mall area.
- Widen sidewalks, as appropriate, within the downtowns of Christiansburg and Blacksburg.
- Construct bikeways and walkways in the communities of Prices Fork, Riner, Plum Creek, and Belview.

Expanded Regional Transit

The region should study and consider alternative approaches to expanding transit services to currently underserved portions of the Blacksburg/Christiansburg/Montgomery MPO area and adjacent jurisdictions. These could include providing service that runs almost exclusively on major arterial streets, making a limited number of stops primarily at large commercial areas, at local and county facilities, and central downtown locations (this is similar to the current BT Commuter service). In addition, consideration should be given to the feasibility and cost-effectiveness of expanding and/or supplementing paratransit service through contracting with private taxi services.

4.4 Environmental Overview

The environmental overview of projects included a review of existing mapping and databases, aerial photographs, and, in some cases, field reviews, to identify the presence of features near a project area that could be affected by the project. The overview included the following aspects:

- Potential residential and business displacements;
- Environmental justice group (low-income and minority) impacts;
- Community disruptions;
- Community service impacts;
- Land use/zoning conflicts;
- Hazardous materials sites;
- Impacts on historic sites and districts;
- Impacts to wildlife refuges, critical habitats, and known locations of threatened and endangered species;
- Proximity to wild and scenic rivers;
- Encroachment on critical soil types (prime farmlands, erosive soils);
- Proximity to managed forest lands, scenic routes, and parks/recreation areas;
- Air quality impacts; impacts to noise sensitive receptors; and
- Impacts to water quality, floodplains, and wetlands.

The overview of potential environmental impacts for projects in the Financially Constrained Plan focused on those projects not included in the current VDOT Six-Year Improvement Program (SYIP). This is because the SYIP projects have largely moved beyond the planning stage to the programming stage. Other similar projects that have

moved beyond the conceptual stage include the proposed Multi-Modal Transfer Facility on Perry Street on the Virginia Tech Campus. The majority of the other projects in the Financially Constrained Plan consist of studies; or of spot improvements that are not expected to only minimal environmental effects. Five recommendations were determined to have the potential for more than minimal environmental effects; they are described below.

- Realignment of Tech Center Drive (Route 314) and Southgate Drive (Blacksburg): This project is part of the airport runway extension project. Independent studies, including reviews of potential environmental effects, have been performed for this project. Potential impacts include minimal wetlands as well as farmlands.
- Widen West Main Street (Route 8) from Radford Street (Route 11) to I-81 (Christiansburg): Potential impacts include minimal displacements (estimate up to 3 to 5 structures).
- Upgrade interchange at I-81 and West Main Street (Route 8) to improve operations (Christiansburg and Montgomery County): Depending on the extent of improvements and final designs, up to 20 structures may be affected by this improvement. There are potential wetland impacts in the southeast quadrant of the interchange.
- Widen I-81 from the west boundary of the MPO to South Franklin Street (Christiansburg and Montgomery County): Potential impacts include wetlands, agricultural/forestal districts, floodplains, as well as residential and commercial displacements. Designs that include widening to the inside could minimize impacts.
- Add ramp at interchange of Route 460 Bypass and South Main Street (Route 460 Business) (Montgomery County): No significant environmental concerns exist at this location.

It is important to note that this analysis and discussion identifies potential impacts for general planning purposes; determination of actual impacts would be based on follow-on, detailed environmental analyses. The reader should also be aware that, as projects were identified and considered for the 2035 Transportation Plan, potential environmental impacts were considered and may have affected the type and/or location of the recommendation. The final recommendations are expected to result in various levels of impact on the natural and man-made environment. As these projects proceed in the project development process, refinements in design will seek to further minimize and/or mitigate these impacts. Overall, this environmental overview did not identify any impacts that would categorically preclude the implementation of any of the recommendations.

4.5 Other Considerations

Other considerations for the 2035 Transportation Plan, including specific considerations for environmental justice populations as well as policies implementing increased operations management, Intelligent Transportation Systems (ITS), and freight planning are described in Appendix A.




The recommended transportation improvements that were identified as part of the Plan development process, but exceeded the estimated funding to the year 2035, are included the region's Transportation Vision Plan. The Vision Plan also includes projects that could only be partially funded within the constraints of the Financially Constrained Plan. Vision Plan projects are included in Exhibit 19. Planning-level cost estimates for all projects are included in Appendix B.

Exhibit 19:
Projects in the Vision Plan

Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
46	Blacksburg		Huckleberry Trail	Extend Huckleberry Trail from existing US Route 460 Bypass tunnel to Stroubles Creek.	X	
47	Blacksburg		Huckleberry Trail	Extend Huckleberry Trail from Stroubles Creek to Meadowbrook Drive		X
48	Blacksburg		Toms Creek Road at Patrick Henry Drive	Upgrade intersection.	X	
49	Blacksburg		Toms Creek Road from Meadowbrook Drive to Route 460 Bypass	Reconstruct as two-lane roadway with bicycle lanes and sidewalks		X
50	Blacksburg		Shadow Lake Road from Glade Road to Meadowbrook Drive	Reconstruct to current 2-lane standards including bicycle lanes and sidewalks		X

Exhibit 19:
Projects in the Vision Plan (Continued)

Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
51	Blacksburg		Heather Drive Extension from Prices Fork Road to Glade Road	Construct as two-lane roadway with bicycle lanes and sidewalks	X	
52	Blacksburg		Hubbard Street Extension from Airport Road to Southgate Drive	Construct extension of Hubbard Street as two-lane roadway; includes bicycle lanes and grade-separated crossing for the Huckleberry Trail	X	
53	Blacksburg		Glade Road from Boxwood Drive to Linwood Lane	Reconstruct as 2-lane roadway with bicycle lanes, trail, and sidewalks		X
54	Blacksburg		Meadowbrook Road from Glade Road to Toms Creek Road	Reconstruct as 2-lane roadway with bicycle lanes, trail, and sidewalks		X
55	Blacksburg		Ramble Road from Industrial Park Drive to the Corporate Research Center	Reconstruct as 2-lane urban roadway plus transit pull-offs and bicycle lanes	X	
56	Blacksburg		Turner Street from Prices Fork Road (Route 412) to North Main Street (Route 460 Business)	Reconstruct as 2-lane urban roadway including turn lanes at the Creative Arts Center and a bicycle lane		X
57	Blacksburg		Giles Road Extension from North Main Street (Route 460 Business) to Turner Street	Construct/reconstruct as 2-lane roadway to improve access in the Barger Street area		X
58	Blacksburg		Progress Street Extension from Givens Lane to North Main Street (Route 460 Business)	Extension from Givens Lane through Northside Park to North Main Street	X	
59	Blacksburg		Farmview Drive/Mabry Lane from Hightop Road to Huckleberry Lane	Reconstruct as 2-lane roadway with bicycle lanes and sidewalks	X	
60	Blacksburg		Old Glade Road from Prices Fork Road (Route 412) to Glade Road	Construct 2-lane roadway with bicycle lanes and sidewalk		X
61	Blacksburg		Mount Tabor Road from North Main Street (Route 460 Business) to Bishop Road	Reconstruct road to current 2-lane standards with sidewalks and bicycle lanes, and bus pull-offs; align with Givens Lane at North Main Street	X	
62	Blacksburg		Commerce Street from Trade Street to Jennelle Road	Construct extension of Commerce Street as two-lane roadway	X	
63	Blacksburg		Connector from 460 Bypass to Toms Creek Road	Construct as 2-lane road		X

Exhibit 19:
Projects in the Vision Plan (continued)

Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
42	Blacksburg	460 Bus	North Main Street (Route 460 Business) at Progress Street	Traffic signal upgrade to current equipment and standards		X
43	Blacksburg	460 Bus	South Main Street (Route 460 Business) at Country Club Road	Improve intersection for operations and safety		X
45	Blacksburg	460 Bus	North Main Street (Route 460 Business) at Patrick Henry Drive	Add right turn bay on the southbound approach (Main Street)		X
96	Blacksburg	460 Bus	South Main Street (Route 460 Business) from Roanoke Street to Country Club Drive	Upgrade traffic operations and streetscape		X
97	Blacksburg		Draper Road from Miller Street to College Avenue	Upgrade streetscape		X
99	Blacksburg	460 Bus	North Main Street (Route 460 Business) from Mount Tabor Road to Route 460 Bypass	Widen to four lanes divided with bicyle lanes, sidewalk, and trail		X
107	Blacksburg		Patrick Henry Drive from Toms Creek Road to North Main Street	Improve operations and pedestrian safety by replacing second through lane in each dirction with median and turn lanes		X
44	Blacksburg		Ramble Road Extension from Ramble Road at airport property line to Ellett Road in the vicinity of Cedar Hill Drive	Construct new 2-lane roadway		X
98	Blacksburg		Ellett Road from Cedar Hill Drive to South Main Street	Widen to four lanes with bicycle lanes or separate multi-use trail		X
100	Blacksburg		Construct Multi-Modal Transfer Facility on Perry Street (Virginia Tech Campus)	Construct new facility		X
64	Blacksburg/ Montgomery	460	Route 460 Bypass at North Main Street	Construct interchange		X
106	Blacksburg/ Montgomery		Park-and-ride in the vicinity of the US Route 460/US Route 460 Business interchange (south end of Town of Blacksburg)	Construct new park-and-ride lot	X	
67	Blacksburg/ Montgomery		Route 460 Connector from existing Route 460 Bypass to Prices Fork Road south of the community of Prices Fork (vicinity of Coal Hollow Road)	Construct new road with four-lane or two lane with sufficient right-of-way to allow for widening to four lanes.		X

Exhibit 19:
Projects in the Vision Plan (continued)

Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
68	Blacksburg/ Montgomery		Harding Avenue and Harding Road from Progress Street to Lusters Gate Road	Reconstruct road to current 2-lane standards; sidewalks and bicycle lanes, and bus pull-offs in Town portion		X
66	Blacksburg/ Montgomery	603	Ellett Road/Cedar Run Road (Route 603) from Cedar Hill Drive to Ellett Road/Lusters Gate Road (Route 723)	Upgrade road to current 2-lane standards; sidewalks and bicycle lanes or trail in Town portion	X	
69	Christiansburg	8	West Main Street (Route 8) at Phlegar Street/Radford Street	Improve intersection for operations and safety: shift Phlegar Street to align with Radford Street and create single intersection	X	
70	Christiansburg	8	West Main Street (Route 8) at Mud Pike/Moose Drive (Route 666)	Widen approaches to intersection to include two through lanes in the northbound and southbound directions. Consider long term relocation of Mud Pike and/or Moose Drive to provide additional spacing to between this inter-section and the I-81 ramps (pending detailed study)	X	
71	Christiansburg	11	East Main Street (Route 11/460 Bus) at Roanoke Street (Route 11/460 Bus)	Change the westbound approach to a left and left-right configuration. Disallow access from this intersection to/ from Pepper Street SE to improve long-term safety and reduce conflict points.	X	
72	Christiansburg	11	Radford Street (Route 11) at Depot Street	Add right turn bay for all approaches except northbound; convert the current through-right lanes into through-only lane.	X	
73	Christiansburg	111	Cambria Street (Route 111) at Ellet Road	Improve intersection for operations; install signal pending warrants	X	
77	Christiansburg		Huckleberry Trail	Extend southern terminus of Huckleberry Trail to Downtown Christiansburg (route to be determined)	X	
74	Christiansburg	460 Bus	Franklin Street (Route 460 Business) at Main Street (Route 11)	Improvements recently made at this intersection; continue to monitor for congestion.	X	
75	Christiansburg	460 Bus	North Franklin Street (Route 460 Business) at Depot Street	Add turn lanes on both eastbound and westbound directions (North Franklin Street)	X	
78	Christiansburg/ Montgomery		Parkway Drive Extension from existing Parkway Drive (Route 1416) at Technology Drive to South Franklin Street	Extend road as 2-lane roadway on 4-lanes of right-of-way		X

Exhibit 19:
Projects in the Vision Plan (continued)

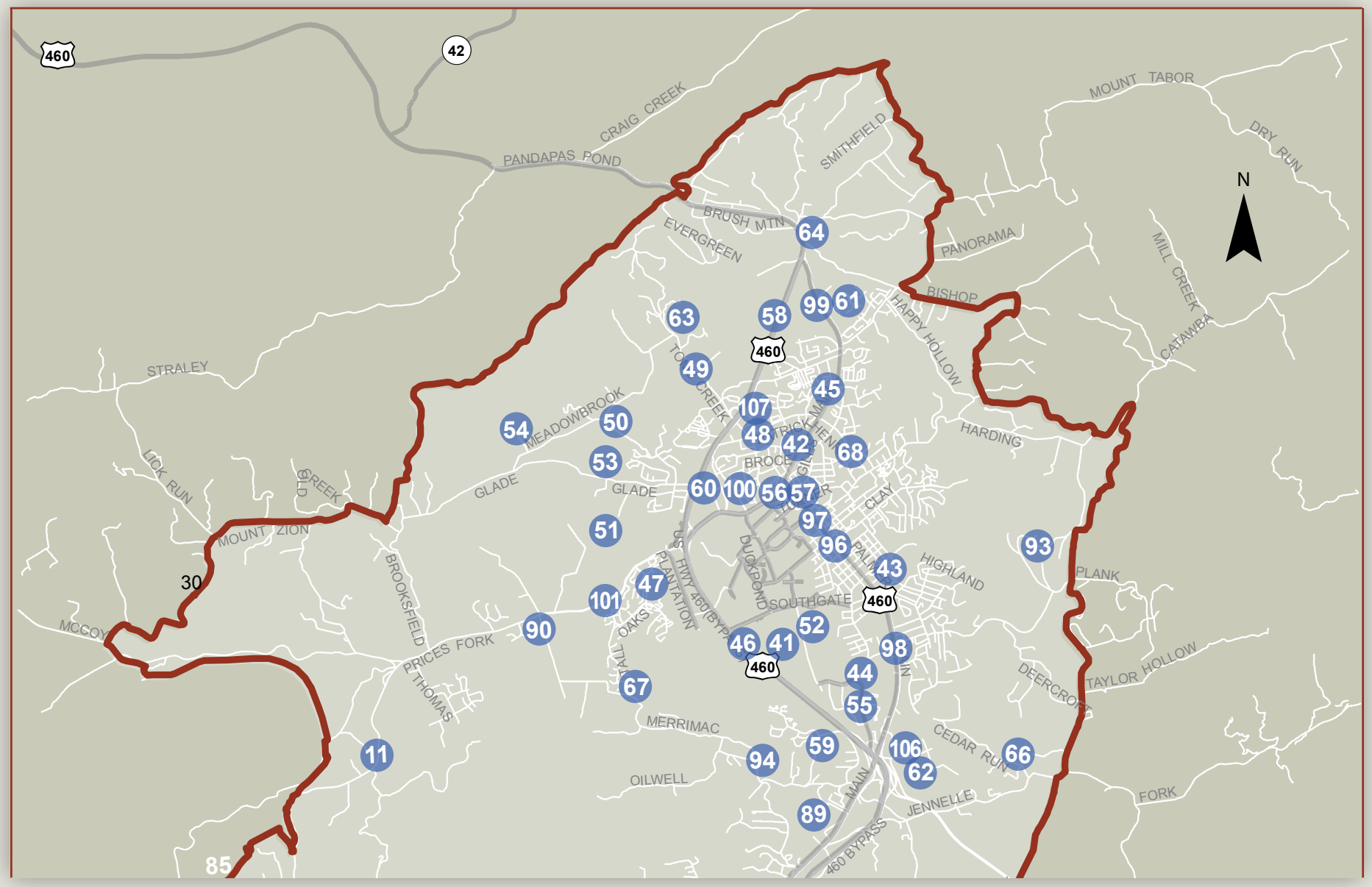
Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
102	Christiansburg/ Montgomery		Park-and-ride lot in or near Town of Christiansburg	Construct new park-and-ride lot (potential locations include Route 11 or Radford Road west of Christiansburg)	X	
105	Christiansburg/ Montgomery		Park-and-ride in the vicinity of I-81 Exit 118 (US Route 460)	Expand existing park-and-ride lot	X	
79	Christiansburg/ Montgomery	11	Radford Road and Radford Street (Route 11) from Silver Lake Road western intersection (Route 662) to West Main Street (Route 8)	Widen road to four lanes with a center bi-directional turn lane, bicycle lanes, and sidewalks	X	
80	Christiansburg/ Montgomery		Parkway Drive Extension from Radford Road (Route 11) to South Franklin Street	Extend Parkway Drive as a 2-lane facility		X
81	Montgomery	8	Riner Road (Route 8) from Union Valley Road (Route 669) to Christiansburg South Corporate limits	Widen road; improve intersections at Smith Creek Road (Route 675), Childress Rd. (Route 693), and Meadow Creek Rd. (Route 658/Dairy Road (Route 670)	X	
82	Montgomery	8	Riner Road (Route 8) from South Study Area Boundary to Union Valley Road (Route 669)	Reconstruct to current 2-lane standards with 4 lanes of right-of way	X	
83	Montgomery	8	Riner Road (Route 8) and Smith Creek Road (Route 675)	Add turn lanes at intersection	X	
84	Montgomery	11	Radford Road (Route 11) from West Study Area Boundary to western intersection of Silver Lake Road (Route 662)	Widen to 4-lanes with median (rural cross-section); 5-lane cross-section in Plum Creek area	X	
85	Montgomery	114	Peppers Ferry Road (Route 114) from RAAP main entrance to 0.789 km east of Christiansburg WCL	Widen road to 4-lanes divided with bicycle lanes	X	
86	Montgomery	114	Peppers Ferry Road Extension from Route 460 Bypass to Ellett Road (Route 723)	Construct 2-lane roadway	X	
87	Montgomery	114	Peppers Ferry Road (Route 114) and Rolling Hills Road (Route 1286)	Add turn lanes at intersection	X	

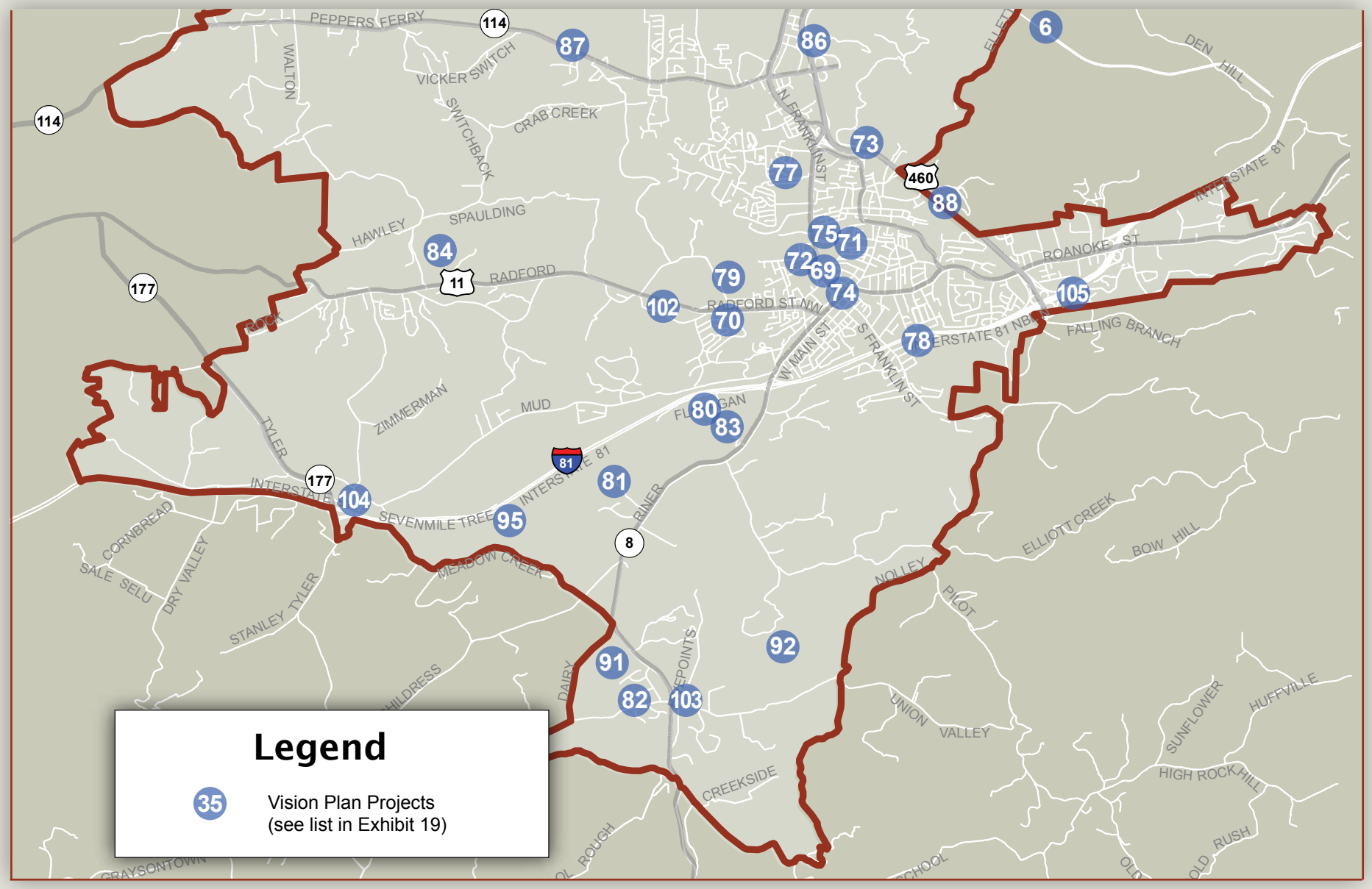
Exhibit 19:
Projects in the Vision Plan (continued)

Map Key	Jurisdiction	Route	Project Location	Description	Tier 1 Vision Plan	Tier 2 Vision Plan
88	Montgomery	460	Route 460 Bypass from Route 460 Business (South Main Street) to I-81	Widen to six lanes		X
89	Montgomery	642	Jenelle Road (Route 642) from Route 460 Business to Route 603	Reconstruct road to current 2-lane standards	X	
90	Montgomery	657	Merrimac Road (Route 657) from North Franklin Street (Route 460) to Prices Fork Road (Route 685)	Reconstruct road to current 2-lane standards	X	
91	Montgomery	669	Fairview Church Road (Route 669) from West Study Area Boundary to Riner Road (Route 8)	Reconstruct road to current 2-lane standards		X
92	Montgomery	669	Union Valley Road (Route 669) from Riner Road (Route 8) to East Study Area Boundary	Reconstruct road to current 2-lane standards	X	
93	Montgomery	723	Ellett Road/Lusters Gate Road (Route 723) from Christiansburg Corporate Limits to Route 603	Reconstruct road to current 2-lane standards		X
94	Montgomery	808	Hightop Road (Route 808) from Merrimac Road (Route 657) to South Main Street (Route 460)	Reconstruct road to current 2-lane standards	X	
95	Montgomery	658/627	Meadow Creek/Barn Road (Route 658) from Riner Road (Route 8) to Tyler Road (Route 600)	Reconstruct road to current 2-lane standards		X
6	Montgomery		Smart Road -- new roadway from 0.671 kilometer east Route 723 to Route I-81	Construct new 4-lane roadway		X
101	Montgomery		Park-and-ride lot near the community of Prices Fork	Construct new park-and-ride lot	X	
103	Montgomery		Park-and-ride lot in or near the community of Riner	Construct new park-and-ride lot	X	
104	Montgomery		Park-and-ride in the vicinity of I-81 Exit 109 (VA Route 177)	Construct new park-and-ride lot	X	

Note: Map key refers to the project map included in Exhibit 20.

Exhibit 20:
Map of Vision Plan Transportation Recommendations




PEPPERS FERRY
114
87
86
6
WALTON
VICKER SWITCH
SWITCHBACK
CRAB CREEK
DEN HILL
N FRANKLIN ST
73
77
460
88
INTERSTATE 81
HAWLEY
SPAULDING
84
11
RADFORD
75
71
72
69
74
ROANOKE ST
177
79
102
70
RADFORD ST NW
105
FALLING BRANCH
W MAIN ST
S FRANKLIN ST
78
ERSTATE 81 NB
ROCK
ZIMMERMAN
MUD
80
83
TYLER
81
177
INTERSTATE 81
104
SEVENMILE TREE
95
RIVER
8
CORNBREAD
SALE SELU
DRY VALLEY
STANLEY TYLER
MEADOW CREEK
ELLIOTT CREEK
BOW HILL
NOLLEY
PILOT
92
91
DAIRY
POINTS
82
103
UNION
VALLEY
SUNFLOWER
HUFFVILLE
HILDRESS
CREEKSIDE
HIGH ROCK HILL
OLD ROUGH
SCHOOL
OLD RUSH
CRAYSONTOWN
Legend
35
Vision Plan Projects
(see list in Exhibit 19)

APPENDIX A: FEDERAL PLANNING REQUIREMENTS




The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), signed into law by the President in August of 2005 describes transportation issues that metropolitan area transportation plans should address. One key requirement is that eight specific planning factors be considered in the development of the Plan. The discussion below describes how each factor was considered in the development of the recommendation of the 2030 Transportation Plan.

A.1 Support the Economic Vitality of the Metropolitan Area, Especially by Enabling Global Competitiveness, Productivity, and Efficiency

Recommendations in the Plan seek to address the economic vitality of the Blacksburg/Christiansburg/Montgomery region by enhancing mobility and improving access to Interstate 81 as well as other modes. Some of the specific improvements that address economic vitality include:

- Supporting the implementation of the Dominion Express Railway service which will enhance accessibility by non-roadway modes to the region.
- Widening Peppers Ferry Road to enhance accessibility between the MPO and areas to the west.
- Lengthen the runway at the Virginia Tech/Montgomery Executive Airport to provide improved service to corporate jets and general aviation traffic.
- Constructing a new interchange on the Route 460 Bypass at relocated Southgate Drive (Vision Plan) to enhance accessibility to, and promote employment and innovation at, Virginia Tech and the Corporate Research Center.

A.2 Increase the Safety of the Transportation System for Motorized and Non-Motorized Users

Projects in the 2035 Transportation Plan will improve the overall safety of motorists, bicyclists, and pedestrians. Specific projects and policies that will enhance safety include the following.

- The Plan includes upgrading the intersection of North Franklin Street and Cambria Street and will also fund detailed studies at the Route 460 Bypass and North Main Street – these two locations are noteworthy as high-crash locations within the region.
- Long-term policies, including those developed by the South

Blacksburg Transportation Task Force, seek to implement programs to pair improvements to traffic flow on existing major arterials and/or new arterials with traffic calming on neighborhood streets in order to enhance the safety of motorists, bicyclists, and pedestrians. Ongoing enhancements to transit, commuter services, and intercity bus also seek to encourage travel by alternative modes and reduce overall single-occupant vehicle travel.

- The Plan includes upgrades or replacements for 14 bridges in the region that do not meet current sufficiency standards.
- The proposed new interchange at the Route 460 Bypass and relocated Southgate Drive (Vision Plan) will improve safety at one of the region's highest crash location. It will also improve safety for pedestrians and bicyclists using the Huckleberry Trail.

A.3 Increase the Security of the Transportation System for Motorized and Non-Motorized Users

Key elements of transportation security applicable to the BCM-MPO area include sufficient capacity to allow for evacuation during emergencies, sufficient lighting and visibility on pedestrian and bicycle facilities, and safety on transit systems in the region. Plan elements that address sufficient capacity for evacuation include the development of the Smart Road, widening I-81 and Peppers Ferry Road, and improvements at key congested intersections.

A.4 Increase the Accessibility and Mobility of People and Freight

Accessibility and mobility options will be increased by the multi-modal elements of the Plan. Improved roadway access serves cars, buses, social service transportation, and trucks. Substantial increases in accessibility are provided by several road projects in this Plan, including the widening of Peppers Ferry Road, the Smart Road, and widening Interstate 81. Intercity mobility will be enhanced by the proposed TransDominion Rail service and improvements to the Virginia Tech/Montgomery Executive Airport. Sidewalk and bikeway improvements, as well as the expansion of transit service, will also serve to enhance the overall mobility of the region's residents.

A.5 Protect and Enhance the Environment, Promote Energy Conservation, Improve the Quality of Life, and Promote Consistency between Transportation Improvements and State and Local Planned Growth and Economic Development Patterns

By alleviating congestion and improving multi-modal transportation service and connections, the Plan will promote energy conservation and improve the quality of life in the BCM-MPO region. Upgraded roadways will reduce congestion, enhance travel safety, and improve access to and use of non-automotive modes of travel. Reduced congestion, along with upgrades to transit service, will reduce fuel consumption and improve air quality.

All of the Transportation Plan projects have been subjected to a planning-level review of social, economic, energy, and environmental impacts. In addition, as part of the development of both the vision and constrained plans, those projects that were judged to have unacceptably high environmental or community impacts were removed from consideration. Prior to construction, all projects will be subjected to more detailed studies with respect to their impacts on the natural and man-made environment.

A.6 Enhance the Integration and Connectivity of the Transportation System, Across and Between Modes, for People and Freight

Recommended improvements in the Plan will enhance the integration and connectivity of the various travel modes in the

BCM-MPO region. As discussed previously, many projects will enhance regional connectivity by providing new and/or improved connections such as Smart Road, new interchanges on Route 460, and widened roadways for key connections. Many of the projects also incorporate bicycle and pedestrian facilities. Transit expansion and the construction of a multi Multi-Modal Transfer Facility will provide for significant increases in regional connectivity for those who cannot or choose not to drive.

A.7 Promote Efficient System Management and Operation

System management in the Plan is addressed through enhancements to the operations of key intersections, provision of enhanced interface between roadway and transit through the Multi-Modal Transfer Facility, and the construction of additional regional park-and-ride facilities to assist in managing overall travel demand. Blacksburg Transit is developing a detailed Transit Development Plan (TDP) that will seek to improve the operations of the existing system by assessing both routes and overall operations.

A.8 Emphasize the Preservation of the Existing Transportation System

A key feature of the Plan, as well as VDOT funding priorities, is the preservation of the existing transportation system. The number of projects in the Financially Constrained Plan is limited by the need to divert currently limited financial resources to ensure that the existing system is well-maintained. Many of the projects in the Plan also focus on preservation of the existing system as well as safety by reconstructing existing roadways without adding more travel lanes. In addition, both transit and air transportation improvements include funds to both preserve the existing service as well as to enhance its efficiency.

A.9 Environmental Justice

In addition to considering the eight planning factors, this Plan included an emphasis on several other factors, including consideration of disproportionate impacts on minority communities. The Plan was developed as part of a process that takes into account the requirements of Presidential Executive Order 12898 on Environmental Justice. This order was signed in 1994 and augments Title VI of the Civil Rights Act of 1964 by providing additional specifics on prohibiting discrimination based on race, color, and national origin. The Executive Order applies to persons belonging to Black, Hispanic, Asian American, American Indian, Alaskan Native, as well as low-income groups. Environmental justice principles require that all potentially affected communities participate in the decision-making process; minority and low-income populations are not prevented from receiving the benefits of transportation improvements; and disproportionately high and adverse impacts on minority and low-income populations are avoided, minimized, or mitigated.

Throughout the development of the Plan, efforts were made to reach out to minority and low-income groups by holding meetings at locations that were accessible to all citizens by transit, walking, or car.

Executive Order 12898 also requires that transportation planning efforts avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations. Many projects in this Plan, including those suggested by the general public early in the study, were developed to increase accessibility to minority and low-income areas while being sensitive to the potential impacts of these projects. Such projects include those that increase accessibility to the region's downtowns (in both Blacksburg

and Christiansburg), as well as proposals to expand transit service. These projects will serve to increase mobility options for low-income and transit-dependent populations.

To the maximum extent possible, projects that were judged, at a planning level, to have disproportionately high impacts on minority and low-income neighborhoods were dropped from consideration, thus avoiding the impacts. As part of the environmental overview process for all Transportation Plan recommendations, the potential impacts of transportation projects were identified. As these projects are implemented, Environmental Justice principles will be applied throughout the project development and design process to minimize and/or mitigate disproportionately high impacts on minority and low-income groups.

Demographic analysis was performed as part of the development of the Plan to identify the geographic distribution of environmental justice populations, and to guide in the development of projects that will minimize adverse impacts of transportation projects on these populations, as well as identify areas where additional transportation services are needed. Exhibits A-1 through A-3 show the geographic distribution of environmental justice populations.

A.10 Freight Planning/Goods Movement

The most recent surveys with companies that move goods into and out the MPO area (performed as part of the development of the region's draft 2025 Transportation Plan) indicate that these companies report a generally smooth-flowing system for moving goods within and into/out of the region. Reported concerns about the Route 460 corridor between Blacksburg and Christiansburg have been addressed, to a large extent, by the recently completed bypass. Surveyed companies reported little use of rail freight, but some did report using air freight to ship goods out of the Roanoke Regional Airport.

Planning for efficient goods movement is an ongoing effort of the BCM-MPO, with this Plan representing the latest effort. The BCM-MPO, along with the New River Planning District Commission, developed the *MPO Freight Study* (November 2008) which includes recommendations for enhancing goods movement through increased capacity on Interstate 81, enhanced rail capacity and intermodal transfer facilities, improved railroad grade crossings, and increased use of air travel for high value goods.

A.11 Operations Management and Intelligent Transportation Systems

Intelligent transportation systems (ITS) is the coordination of new technologies, improvements in information and communications systems, and conventional surface transportation infrastructure. ITS improvements have the potential to improve the efficiency and safety of the regional transportation system, sometimes at significantly less cost and/or with fewer negative impacts. ITS recommendations for roadways in the Blacksburg/Christiansburg/Montgomery region include continued implementation of traffic signal improvements such as video-based signal actuation and provision of traffic information to motorists through variable message signing at key locations. Over the medium to long-term, Blacksburg Transit's Transit Development Plan will continue to consider the addition of ITS to transit service. Measures that could be considered include real-time tracking of bus movements to be provided to patrons via information kiosks, cell phones, bus stop signs, and/or through the Internet.

Exhibit A-1:
Percent Minority Populations

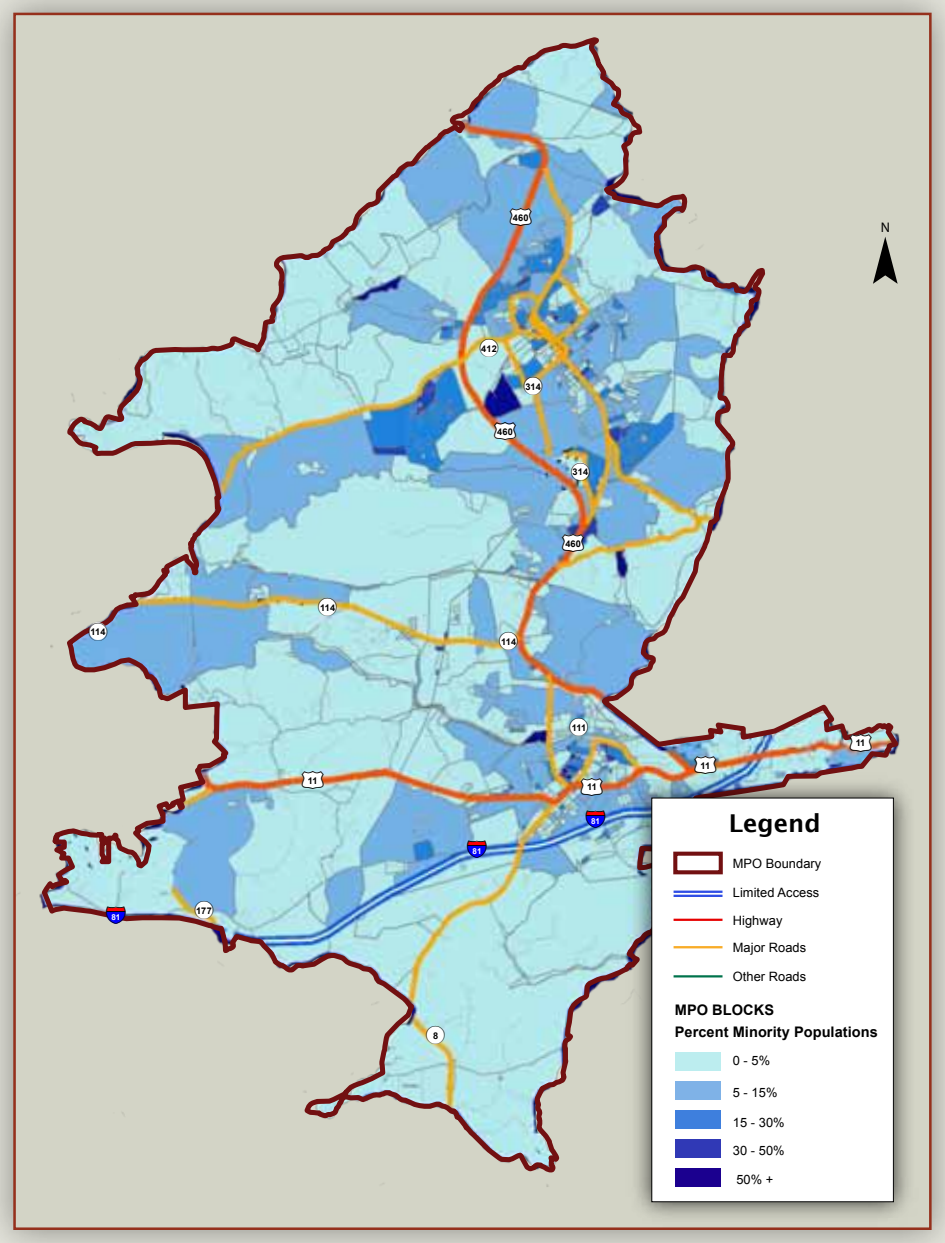


Exhibit A-2:
Percent Hispanic Populations

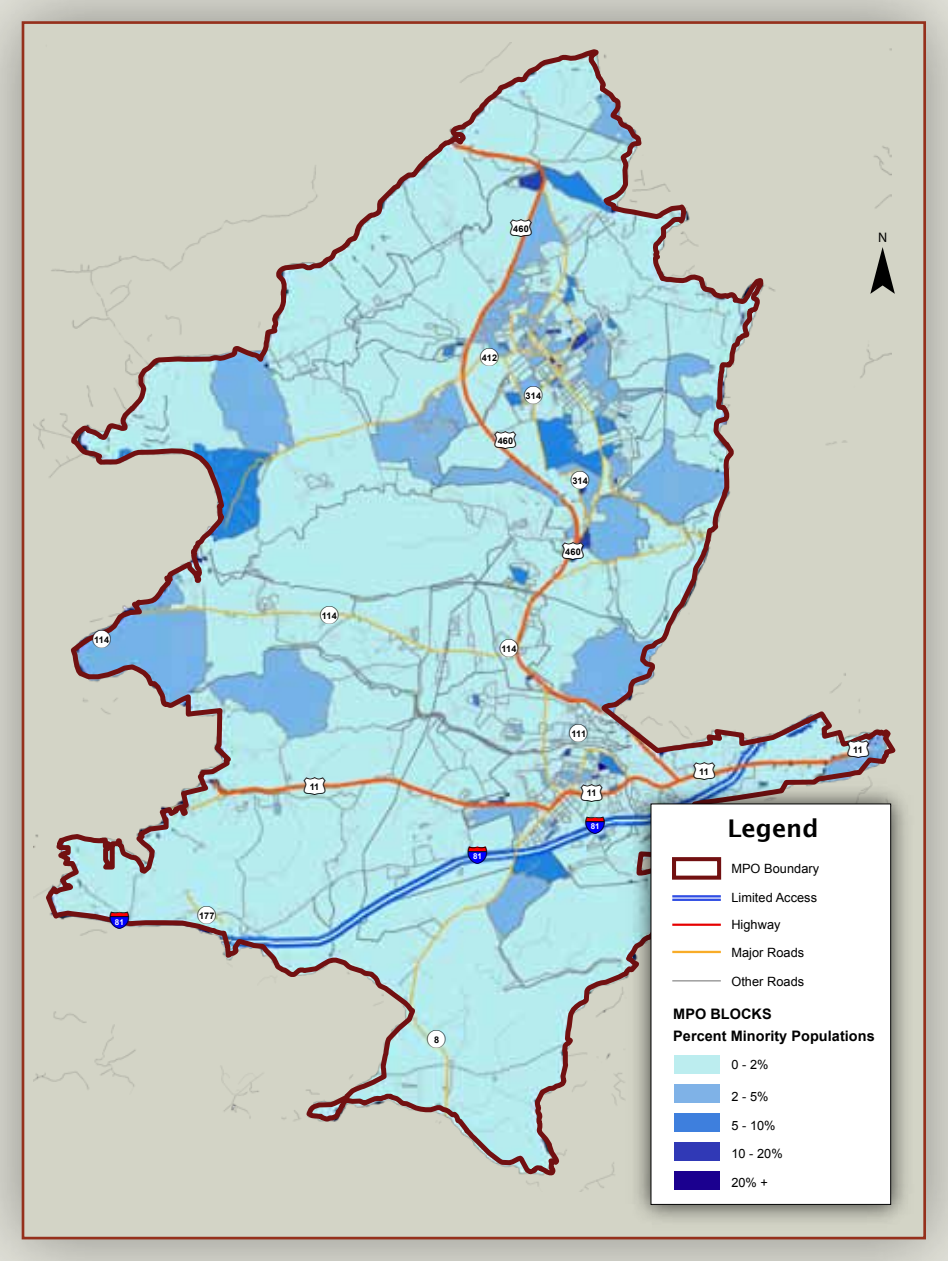
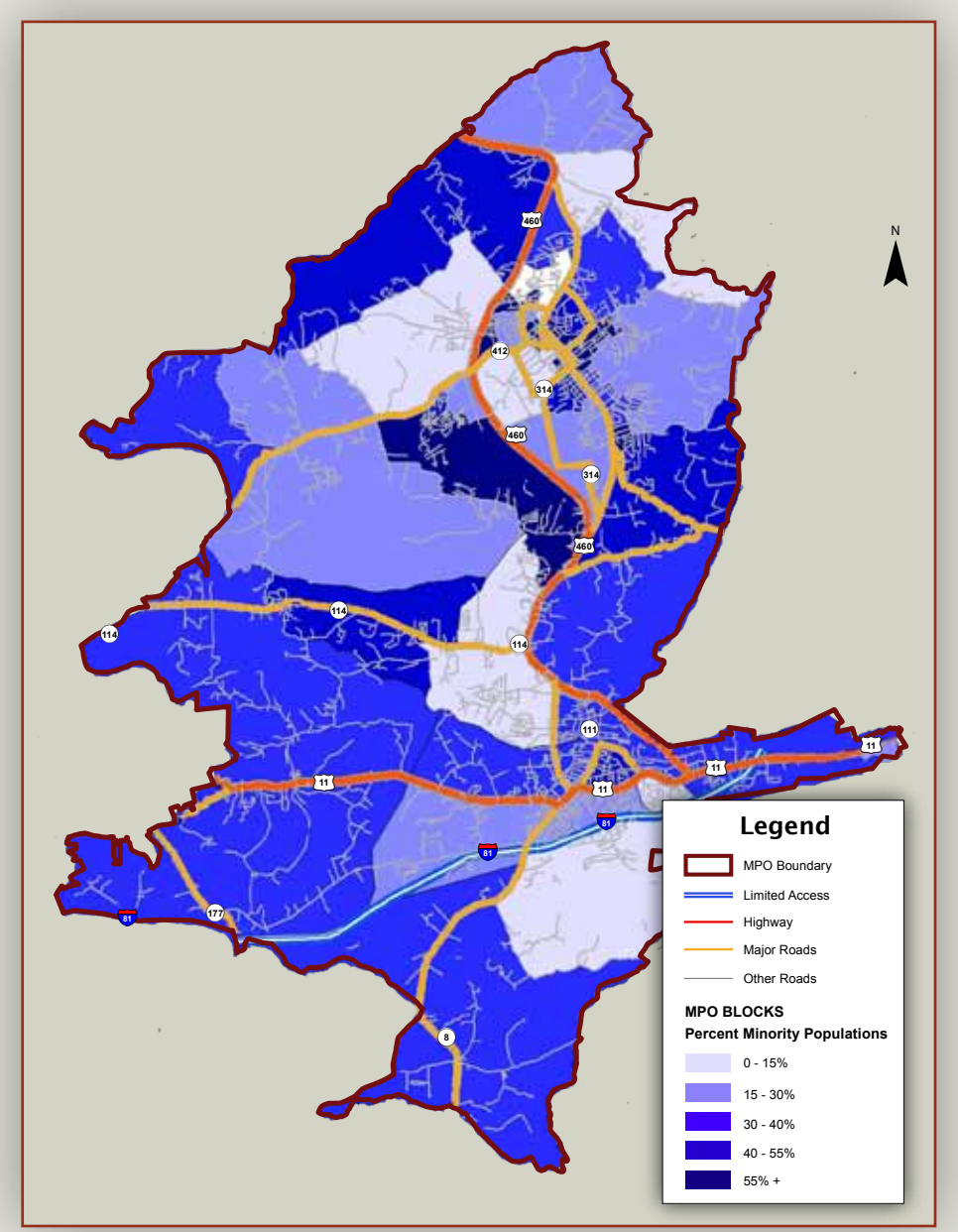


Exhibit A-3:
Percent Low-Income Households



APPENDIX B: COST ESTIMATES AND FUNDING FOR CONSTRAINED AND VISION PLAN PROJECTS




Map Key	Jurisdiction	Route	Project Location	Description	Estimated Cost[1]	Previous Funding	Constrained Plan		Vision Plan	
							Funding in 2012-2017 SYIP[2]	Funding in CLRP 2018 to 2035	Tier 1	Tier 2
--	Blacksburg	--	Center for Excellence in Surface Transportation Safety	Virginia Tech Transportation Institute Studies	$937,000	$799,000	--	--	$138,000	--
--	Blacksburg	--	Various Locations	Curb and gutter, sidewalk, traffic signal emergemcy systems	$179,000	--	$179,000	--	--	--
108	Blacksburg	--	Huckleberry Trail	Repave and widen first mile of trail	$100,000	--	$100,000	--	--	--
13	Blacksburg	314	Duck Pond Road over Stroubles Creek (South)	Upgrade bridge	$500,000	--	--	$500,000	--	--
41	Blacksburg	460	Route 460 Bypass at Southgate Drive	Relocate Southgate Drive to intersect with the US 460 Bypass by constructing a new interchange approximately 2,200 feet south of the current intersection	$46,700,000	--	$46,700,000	--	--	--
14	Blacksburg	314	Duck Pond Road over Stroubles Creek (North)	Upgrade bridge	$500,000	--	--	$500,000	--	--
39	Blacksburg	314	Tech Center Drive (Route 314) and Southgate Drive	Relocate Southgate Drive to intersect with the US 460 Bypass at approximately 2,200 feet south of the current intersection. Realign Tech Center Drive to intersect with the relocated Southgate Drive approximately 1,500 feet from the US 460 Bypass. [Part of airport runway extension project]	$4,069,000	--	--	$4,069,000	--	--

Map Key	Jurisdiction	Route	Project Location	Description	Estimated Cost[1]	Previous Funding	Constrained Plan		Vision Plan	
							Funding in 2012-2017 SYIP[2]	Funding in CLRP 2018 to 2035	Tier 1	Tier 2
64	Blacksburg	460	Route 460 Bypass at North Main Street (Route 460 Business)	Install rumble strips, flashing beacons and warning signs	$80,000	--	$80,000	--	--	--
40	Blacksburg	460	North Main Street (Route 460 Bus) at Red Maple Drive	Improve sight distance	$149,000	--	$149,000	--	--	--
1	Blacksburg	--	Progress Street and Givens Lane	Widens Givens Lane to include bike lanes and sidewalks from Main Street to Chickahominy Drive. Extend Progress Street to Givens Lane.	$16,614,000	$10,590,000	--	--	$6,024,000	--
15	Blacksburg	460	Ramble Road at Industrial Park Drive	Upgrade intersection	$1,089,000	--	$1,089,000	--	--	--
11	Blacksburg	--	College Avenue from North Main Street to Otey Street	Construct streetscaping	$4,782,000	$782,000	$4,000,000	--	--	--
4	Blacksburg	685	Prices Fork Road	Upgrade traffic signals and add ADA controls along Prices Fork Road to Plantation Road	$251,000	--	$251,000	--	--	--
76	Blacksburg	--	Pratt Drive	Add curb and gutter to Kraft Drive	$200,000	--	$200,000	--	--	--
29	Blacksburg	460	Route 460 Bypass at Route 460 Business (South Main Street)	Add ramp for southbound Route 460 to westbound Route 460 Business	$340,000	--	--	$340,000	--	--
16	Christiansburg	8	Route 8 (West Main Street) from Route 11 (Radford Street) to I-81	Widen to four lanes	$14,541,624	--	--	$766,376	$13,775,248	--
17	Christiansburg	11	Roanoke Street (Route 11/460 Bus) at US 460 (Christiansburg Bypass)	Perform study to identify specific safety concerns.	$100,000	--	--	$100,000	--	--
5	Christiansburg	81	I-81 southbound lanes over West Main Street (Route 8)	Replace bridge	$5,325,000	$1,050,000	$4,275,000	--	--	--
9	Christiansburg	81	I-81 northbound lanes over Route 8	Replace bridge	$4,072,000	$781,000	$3,291,000	--	--	--
18	Christiansburg	111	Depot Street (Route 111) over Walnut Branch	Upgrade bridge	$1,000,000	--	--	$1,000,000	--	--
2	Christiansburg	114	Peppers Ferry Road (Route 114) from Route 460 to 0.126 kilometer west of west corporate limits	Widen to 4 lanes	$23,689,000	$6,479,000	$17,210,000	--	--	--

Map Key	Jurisdiction	Route	Project Location	Description	Estimated Cost[1]	Previous Funding	Constrained Plan		Vision Plan	
							Funding in 2012-2017 SYIP[2]	Funding in CLRP 2018 to 2035	Tier 1	Tier 2
3	Christiansburg	114	Peppers Ferry Road (Route 114) Connector	Construct connector to Route 460 - Preliminary Engineering only	$100,000	$26,000	--	$74,000	--	--
19	Christiansburg	460	North Franklin Street (Route 460 Business) at Cambria Street (Route 111)	Reconfigure intersection to provide for increased capacity and safety	$982,500	--	--	$982,500	--	--
20	Christiansburg	460 Bus	North Franklin Street (Route 460 Business) at Peppers Ferry Road (Route 114)	Improve intersection for operations and safety; add additional approach lanes on Peppers Ferry Road to improve capacity.	$2,315,000	--	--	$2,315,000	--	--
21	Christiansburg/ Montgomery	81	I-81 at West Main Street (Route 8)	Improve interchange for operations	$5,000,000	--	--	$5,000,000	--	--
22	Christiansburg/ Montgomery	81	I-81 from west boundary of MPO to South Franklin Street (Milepost 116)	Widen to six lanes	$97,084,940	--	--	$9,624,000	--	$87,460,940
7	Montgomery	--	Smart Road from Route 460 Bypass to West Route 642	Smart Road management of research - PE only	$6,196,000	$6,084,000	--	$112,000	--	--
23	Montgomery	8	Riner Road (Route 8) at Life Drive (Route 1295)	Add warning signs on Route 8.	$40,000	--	--	$40,000	--	--
24	Montgomery	11	Radford Road (US 11) at Walton Road (Route 663)	Add stop sign on Walton Road. Clear the vegetation on Walton Road at the intersection. Add warning signs on Route 11.	$40,000	--	--	$40,000	--	--
25	Montgomery	81	I-81 at Tyler Road (Route 177) -- Exit 109 A	Consider installing signal at this intersection (pending warrant)	$271,000	--	--	$271,000	--	--
10	Montgomery	114	Peppers Ferry Road (Route 114) at westbound lanes bridge over the New River	Replace bridge	$22,522,000	$26,445,000	$398,000	--	--	--
26	Montgomery	114	Peppers Ferry Road (Route 114) at Walton Road (Route 663) and Prices Fork Road (Route 659)	Implement access management near intersection.	$819,384	--	--	$819,384	--	--
8	Montgomery	8	Riner Road (Route 8) at Union Valley Road (Route 669)	Add left-turn lanes at intersection	$920,000	$897,000	$23,000	--	--	--
27	Montgomery	114	Peppers Ferry Road (Route 114) at Onyx Drive (Route 800)	Add warning signs on Route 114.	$40,000	--	--	$40,000	--	--
28	Montgomery	177	Route 177 (Tyler Road) at Route 600 (Mud Pike Road)	Implement access management near intersection.	$800,000	--	--	$800,000	--	--

Map Key	Jurisdiction	Route	Project Location	Description	Estimated Cost[1]	Previous Funding	Constrained Plan		Vision Plan	
							Funding in 2012-2017 SYIP[2]	Funding in CLRP 2018 to 2035	Tier 1	Tier 2
32	Montgomery	643	Yellow Sulphur Road over Wilson Creek	Upgrade bridge	$500,000	--	--	$500,000	--	--
33	Montgomery	649	Coal Bank Hollow over Toms Creek	Upgrade bridge	$990,265	--	--	$990,265	--	--
30	Montgomery	655	Mount Zion Road over Toms Creek	Upgrade bridge	$400,000	--	--	$400,000	--	--
38	Montgomery	657	Merrimac Road (Route 657) at Hightop Road (Route 808)	Improve intersection	$1,100,892	--	--	$1,100,892	--	--
34	Montgomery	658	Meadow Creek Road over Meadow Creek	Upgrade bridge	$750,000	--	--	$750,000	--	--
35	Montgomery	679	Nolley Road over Elliott Creek (South)	Upgrade bridge	$1,000,000	--	--	$1,000,000	--	--
36	Montgomery	679	Nolley Road over Elliott Creek (North)	Upgrade bridge	$1,000,000	--	--	$1,000,000	--	--
12	Montgomery	719	Route 719 Bridge	Replace bridge over Crab Creek	$1,109,000	$332,000	$777,000	--	--	--
31	Montgomery	785	Catawba Road over Indian Run	Upgrade bridge	$547,031	--	--	$547,031	--	--
37	Montgomery	808	Hightop Road over Slate Branch	Upgrade bridge	$500,000	--	--	$500,000	--	--
6	Montgomery	--	Smart Road -- new roadway from 0.671 kilometer east Route 723 to Route I-81	Construct new 4-lane roadway	$81,657,000	--	--	--	--	$81,657,000
46	Blacksburg	--	Huckleberry Trail	Extend Huckleberry Trail from existing US Route 460 Bypass tunnel to Stroubles Creek.	$1,169,000	--	--	--	$1,169,000	--
47	Blacksburg	--	Huckleberry Trail	Extend Huckleberry Trail from Stroubles Creek to Meadowbrook Drive;	$3,508,000	--	--	--	--	$3,508,000
48	Blacksburg	--	Toms Creek Road at Patrick Henry Drive	Upgrade intersection	$2,765,000	--	--	--	$2,765,000	--
49	Blacksburg	--	Toms Creek Road from Meadowbrook Drive to Route 460 Bypass	Reconstruct as two-lane roadway with bicycle lanes and sidewalks	$8,939,000	--	--	--	--	$8,939,000

Map Key	Jurisdiction	Route	Project Location	Description	Estimated Cost[1]	Previous Funding	Constrained Plan		Vision Plan	
							Funding in 2012-2017 SYIP[2]	Funding in CLRP 2018 to 2035	Tier 1	Tier 2
50	Blacksburg	--	Shadow Lake Road from Glade Road to Meadowbrook Drive	Reconstruct to current 2-lane standards including bicycle lanes and sidewalks	$9,017,000	--	--	--	--	$9,017,000
51	Blacksburg	--	Heather Drive Extension from Prices Fork Road to Glade Road	Construct as two-lane roadway with bicycle lanes and sidewalks	$8,084,000	--	--	--	$8,084,000	--
52	Blacksburg	--	Hubbard Street Extension from Airport Road to Southgate Drive	Construct extension of Hubbard Street as two-lane roadway; includes bicycle lanes and grade-separated crossing for the Huckleberry Trail	$12,994,000	--	--	--	$12,994,000	--
53	Blacksburg	--	Glade Road from Boxwood Drive to Linwood Lane	Reconstruct as 2-lane roadway with bicycle lanes, trail, and sidewalks	$3,576,000	--	--	--	--	$3,576,000
54	Blacksburg	--	Meadowbrook Road from Glade Road to Toms Creek Road	Reconstruct as 2-lane roadway with bicycle lanes, trail, and sidewalks	$19,356,000	--	--	--	--	$19,356,000
55	Blacksburg	--	Ramble Road from Industrial Park Drive to the Corporate Research Center (north of Merrimac Road)	Reconstruct as 2-lane urban roadway plus transit pull-offs and bicycle lanes	$5,797,000	--	--	--	$5,797,000	--
56	Blacksburg	--	Turner Street from Prices Fork Road (Route 412) to North Main Street (Route 460 Business)	Reconstruct as 2-lane urban roadway including turn lanes at the Creative Arts Center and a bicycle lane	$2,954,000	--	--	--	--	$2,954,000
57	Blacksburg	--	Giles Road Extension from North Main Street (Route 460 Business) to Turner Street	Construct/reconstruct as 2-lane roadway to improve access in the Barger Street area	$1,172,000	--	--	--	--	$1,172,000
58	Blacksburg	--	Progress Street Extension from Givens Lane to North Main Street (Route 460 Business)	Extension from Givens Lane through Northside Park to North Main Street	$7,397,000	--	--	--	$7,397,000	--
59	Blacksburg	--	Farmview Drive/Mabry Lane from Hightop Road to Huckleberry Lane	Reconstruct as 2-lane roadway with bicycle lanes and sidewalks	$7,151,000	--	--	--	$7,151,000	--
60	Blacksburg	--	Old Glade Road from Prices Fork Road (Route 412) to Glade Road	Construct 2-lane roadway with bicycle lanes and sidewalk	$2,721,000	--	--	--	--	$2,721,000

Map Key	Jurisdiction	Route	Project Location	Description	Estimated Cost[1]	Previous Funding	Constrained Plan		Vision Plan	
							Funding in 2012-2017 SYIP[2]	Funding in CLRP 2018 to 2035	Tier 1	Tier 2
61	Blacksburg	--	Mount Tabor Road from North Main Street (Route 460 Business) to Bishop Road	Reconstruct road to current 2-lane standards with sidewalks and bicycle lanes, and bus pull-offs; align with Givens Lane at North Main Street	$8,465,000	--	--	--	$8,465,000	--
62	Blacksburg	--	Commerce Street from Trade Street to Jennelle Road	Construct extension of Commerce Street as two-lane roadway	$3,295,000	--	--	--	$3,295,000	--
63	Blacksburg	--	Connector from 460 Bypass to Toms Creek Road	Construct as 2-lane road	$14,259,000	--	--	--	--	$14,259,000
42	Blacksburg	460 Bus	North Main Street (Route 460 Business) at Progress Street	Traffic signal upgrade to current equipment and standards	$210,000	--	--	--	$210,000	--
43	Blacksburg	460 Bus	South Main Street (Route 460 Business) at Country Club Drive	Improve intersection for operations and safety	$500,000	--	--	--	$500,000	--
45	Blacksburg	460 Bus	North Main Street (Route 460 Business) at Patrick Henry Drive	Add right turn bay on the southbound approach (Main Street)	$371,000	--	--	--	$371,000	--
96	Blacksburg	460 Bus	South Main Street (Route 460 Business) from Roanoke Street to Country Club Drive	Upgrade traffic operations and streetscape	$1,500,000	--	--	--	$1,500,000	--
97	Blacksburg	--	Draper Road from Miller Street to College Avenue	Upgrade streetscape	$2,800,000	--	--	--	$2,800,000	--
99	Blacksburg	460 Bus	North Main Street (Route 460 Business) from Mount Tabor Road to Route 460 Bypass	Widen to four lanes divided with bicycle lanes, sidewalk, and trail	$10,559,000	--	--	--	$10,559,000	--
107	Blacksburg	--	Patrick Henry Drive from Toms Creek Road to North Main Street	Improve operations and pedestrian safety by replacing second through lane in each direction with median and turn lanes	$600,000	--	--	--	$600,000	--
44	Blacksburg	--	Ramble Road Extension from Ramble Road at airport property line to Ellett Road in the vicinity of Cedar Hill Drive	Construct new 2-lane roadway	$2,200,000	--	--	--	$2,200,000	--
98	Blacksburg	--	Ellett Road from Cedar Hill Drive to South Main Street	Widen to four lanes with bicycle lanes or separate multi-use trail	$5,923,000	--	--	--	$5,923,000	--

Map Key	Jurisdiction	Route	Project Location	Description	Estimated Cost[1]	Previous Funding	Constrained Plan		Vision Plan	
							Funding in 2012-2017 SYIP[2]	Funding in CLRP 2018 to 2035	Tier 1	Tier 2
100	Blacksburg	--	Multi-Modal Transfer Facility on Perry Street (Virginia Tech Campus)	Construct new facility	$18,000,000	--	--	--	$18,000,000	--
64	Blacksburg / Montgomery	460	Route 460 Bypass at North Main Street	Construct interchange	$22,000,000	--	--	--	$22,000,000	--
106	Blacksburg / Montgomery	--	Park-and-ride lot in the vicinity of the US 460/ US Route 460 Bypass interchange (south end of Town of Blacksburg)	Construct new park and ride lot	$400,000	--	--	--	$400,000	--
67	Blacksburg / Montgomery	0	Route 460 Connector from existing Route 460 Bypass to Prices Fork Road south of the community of Prices Fork (vicinity of Coal Hollow Road)	Construct new road with four-lane or two lane with sufficient right-of-way to allow for widening to four lanes.	$154,903,000	--	--	--	--	$154,903,000
68	Blacksburg / Montgomery	--	Harding Avenue and Harding Road from Progress Street to Lusters Gate Road	Reconstruct road to current 2-lane standards; sidewalks and bicycle lanes, and bus pull-offs in Town portion	$21,264,000	--	--	--	--	$21,264,000
66	Blacksburg / Montgomery	603	Ellett Road/Cedar Run Road (Route 603) from Cedar Hill Drive to Lusters Gate Road (Route 723)	Upgrade road to current 2-lane standards; sidewalks and bicycle lanes or trail in Town portion	$12,002,000	--	--	--	$12,002,000	--
69	Christiansburg	8	West Main Street (Route 8) at Phlegar Street/Radford Street	Improve intersection for operations and safety: shift Phlegar Street to align with Radford Street and create single intersection	$1,232,000	--	--	--	$1,232,000	--
70	Christiansburg	8	West Main Street (Route 8) at Mud Pike/Moose Drive (Route 666)	Widen approaches to intersection to include two through lanes in the northbound and southbound directions. Consider long term relocation of Mud Pike and/or Moose Drive to provide additional spacing to between this intersection and the I-81 ramps (pending detailed study)	$1,872,000	--	--	--	$1,872,000	--

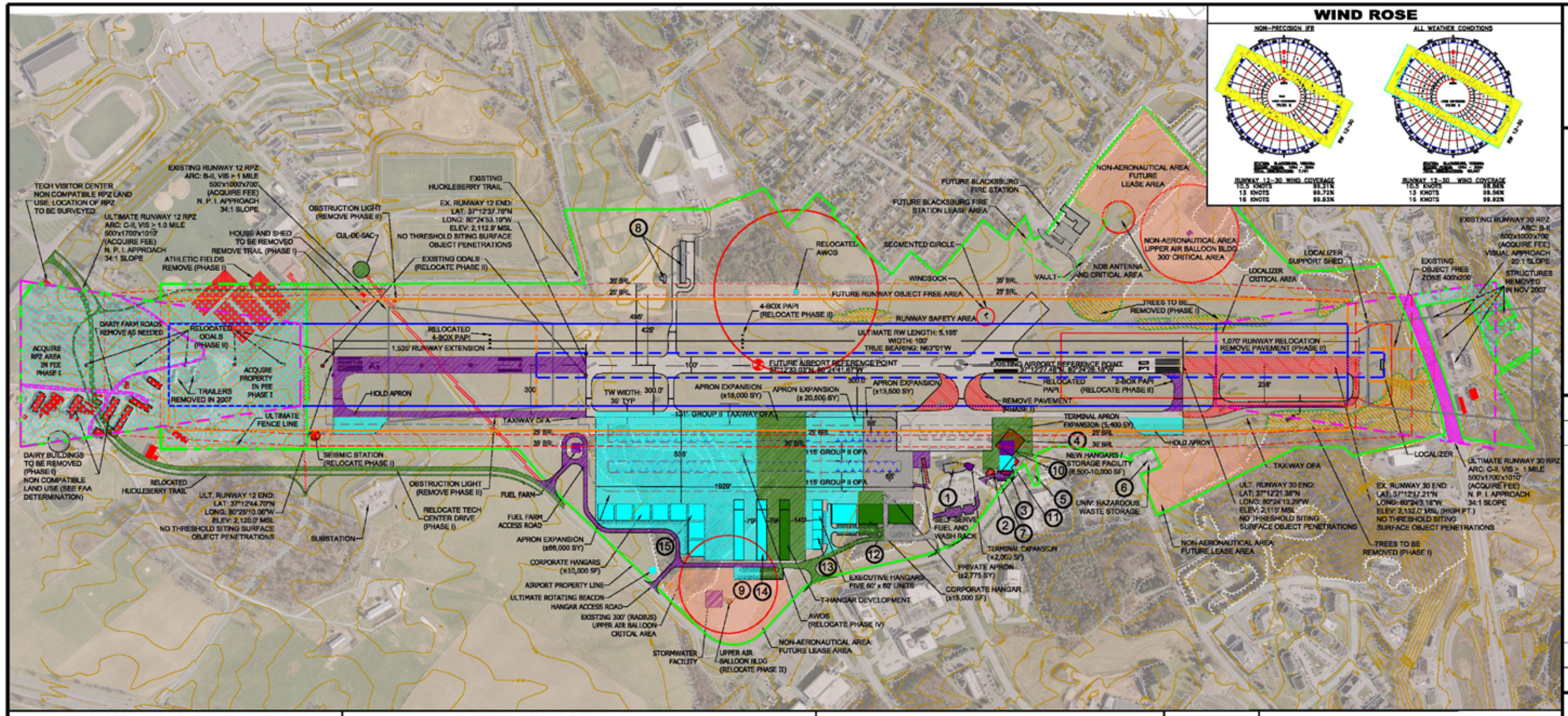
Map Key	Jurisdiction	Route	Project Location	Description	Estimated Cost[1]	Previous Funding	Constrained Plan		Vision Plan	
							Funding in 2012-2017 SYIP[2]	Funding in CLRP 2018 to 2035	Tier 1	Tier 2
71	Christiansburg	11	East Main Street (Route 11/460 Bus) at Roanoke Street (Route 11/460 Bus)	Change the westbound approach to a left and left-right configuration. Disallow access from this intersection to/from Pepper Street SE in order to improve long-term safety and reduce conflict points.	$400,000	--	--	--	$400,000	--
72	Christiansburg	11	Radford Street (Route 11) at Depot Street	Add right turn bay for all approaches except northbound; convert the current through-right lanes into through-only lane.	$1,208,000	--	--	--	$1,208,000	--
73	Christiansburg	111	Cambria Street (Route 111) at Ellet Road	Improve intersection for operations; install signal pending warrants	$170,000	--	--	--	$170,000	--
77	Christiansburg	--	Huckleberry Trail	Extend southern terminus of Huckleberry Trail to Downtown Christiansburg (route to be determined)	$2,338,000	--	--	--	$2,338,000	--
74	Christiansburg	460 Bus	Franklin Street (Route 460 Business) at Main Street (Route 11)	Improvements recently made at this intersection; continue to monitor for congestion.	$50,000	--	--	--	$50,000	--
75	Christiansburg	460 Bus	North Franklin Street (Route 460 Business) at Depot Street	Add turn lanes on both eastbound and westbound directions (North Franklin Street)	$1,616,000	--	--	--	$1,616,000	--
78	Christiansburg/ Montgomery	--	Parkway Drive Extension from existing Parkway Drive (Route 1416) at Technology Drive to South Franklin Street	Extend road as 2-lane roadway on 4-lanes of right-of-way	$12,725,000	--	--	--	--	$12,725,000
102	Christiansburg/ Montgomery	--	Park-and-ride lot in or near Town of Christiansburg	Construct new park-and-ride lot (potential locations include Route 11 or Radford Road west of Christiansburg)	$400,000	--	--	--	$400,000	--
105	Christiansburg/ Montgomery	--	Park-and-ride lot in the vicinity of I-81 Exit 118 (US 460)	Expand existing park-and-ride lot	$400,000	--	--	--	$400,000	--
79	Christiansburg/ Montgomery	11	Radford Road and Radford Street (Route 11) from Silver Lake Road western intersection (Route 662) to West Main Street (Route 8)	Widen road to four lanes with a center bi-directional turn lane, bicycle lanes, and sidewalks	$37,286,000	--	--	--	$37,286,000	--

Map Key	Jurisdiction	Route	Project Location	Description	Estimated Cost[1]	Previous Funding	Constrained Plan		Vision Plan	
							Funding in 2012-2017 SYIP[2]	Funding in CLRP 2018 to 2035	Tier 1	Tier 2
80	Christiansburg/ Montgomery	--	Parkway Drive extension from Radford Road (Route 11) to South Franklin Street	Extend Parkway Drive as a 2-lane facility	$28,561,000	--	--	--	--	$28,561,000
81	Montgomery	8	Riner Road (Route 8) from Union Valley Road (Route 669) to Christiansburg South Corporate limits	Widen road; improve intersections at Smith Creek Road (Route 675), Childress Road (Route 693), and Meadow Creek Road (Route 658/Dairy Road (Route 670)	$50,054,000	--	--	--	$50,054,000	--
82	Montgomery	8	Riner Road (Route 8) from South Study Area Boundary to Union Valley Road (Route 669)	Reconstruct to current 2-lane standards with 4 lanes of right-of way	$9,105,000	--	--	--	$9,105,000	--
83	Montgomery	8	Riner Road (Route 8) and Smith Creek Road (Route 675)	Add turn lanes at intersection	$250,000	--	--	--	$250,000	--
84	Montgomery	11	Radford Road (Route 11) from West Study Area Boundary to western intersection of Silver Lake Road (Route 662)	Widen to 4-lanes with median (rural cross-section); 5-lane cross-section in Plum Creek area	$51,499,000	--	--	--	$51,499,000	--
85	Montgomery	114	Peppers Ferry Road (Route 114) from RAAP main entrance to 0.789 km east of Christiansburg WCL	Widen road to 4-lanes divided with bicycle lanes	$62,711,000	--	--	--	$62,711,000	--
86	Montgomery	114	Peppers Ferry Road Extension from Route 460 Bypass to Ellett Road (Route 723)	Construct 2-lane roadway	$10,822,000	--	--	--	$10,822,000	--
87	Montgomery	114	Peppers Ferry Road (Route 114) and Rolling Hills Road (Route 1286)	Add turn lanes at intersection	$250,000	--	--	--	$250,000	--
88	Montgomery	460	Route 460 Bypass from Route 460 Business (South Main Street) to I-81	Widen to six lanes	$123,327,000	--	--	--	--	$123,327,000
89	Montgomery	642	Jenelle Road (Route 642) from Route 460 Business to Route 603	Reconstruct road to current 2-lane standards	$19,349,000	--	--	--	$19,349,000	--
90	Montgomery	657	Merrimac Road (Route 657) from North Franklin Street (Route 460) to Prices Fork Road (Route 685)	Reconstruct road to current 2-lane standards	$32,806,000	--	--	--	$32,806,000	--

Map Key	Jurisdiction	Route	Project Location	Description	Estimated Cost[1]	Previous Funding	Constrained Plan		Vision Plan	
							Funding in 2012-2017 SYIP[2]	Funding in CLRP 2018 to 2035	Tier 1	Tier 2
91	Montgomery	669	Fairview Church Road (Route 669) from West Study Area Boundary to Riner Road (Route 8)	Reconstruct road to current 2-lane standards	$7,565,000	--	--	--	--	$7,565,000
92	Montgomery	669	Union Valley Road (Route 669) from Riner Road (Route 8) to East Study Area Boundary	Reconstruct road to current 2-lane standards	$12,453,000	--	--	--	$12,453,000	--
93	Montgomery	723	Ellett Road/Lusters Gate Road (Route 723) from Christiansburg Corporate Limits to Route 603	Reconstruct road to current 2-lane standards	$50,213,000	--	--	--	--	$50,213,000
94	Montgomery	808	Hightop Road (Route 808) from Merrimac Road (Route 657) to South Main Street (Route 460)	Reconstruct road to current 2-lane standards	$9,520,000	--	--	--	$9,520,000	--
95	Montgomery	658/ 627	Meadow Creek/Barn Road (Route 658) from Riner Road (Route 8) to Tyler Road (Route 600)	Reconstruct road to current 2-lane standards	$22,535,000	--	--	--	--	$22,535,000
6	Montgomery	--	Smart Road -- new roadway from 0.671 kilometer east of Route 723 to Route I-81	Construct Smart Road as 2 lanes on 4 lane RW - PE & RW only	$9,572,000	$4,726,000	--	$2,993,000	$1,853,000	--
101	Montgomery	--	Park-and-ride lot near the community of Prices Fork	Construct new park-and-ride lot	$400,000	--	--	--	$400,000	--
103	Montgomery	--	Park-and ride lot in or near the community of Riner	Construct new park-and-ride lot	$400,000	--	--	--	$400,000	--
104	Montgomery	--	Park-and-ride lot in the vicinity of I-81 Exit 109 (VA Route 177)	Construct new park-and-ride lot	$400,000	--	--	--	$400,000	--
Estimated Costs and Funding Category Totals					**$1,289,242,636**	**$58,991,000**	**$78,722,000**	**$37,174,448**	**$462,963,248**	**$655,712,940**

1—Estimated costs are planning-level estimates based on average or typical costs for each cross-section type. Costs are for year 2011 and include both construction and rights-of-way. All costs are subject to change as project details are refined in the project development process.

2— VDOT Six-Year Improvement Program, fiscal years 2012 to 2017



AIRPORT DATA TABLE

	EXISTING	ULTIMATE
AIRPORT REFERENCE POINT NAD 83	37°12'27.48"N 80°24'28.18"W	37°12'33.03"N 80°24'41.67"W
MEAN DAILY MAX TEMP	82.4°F	
WIND COVERAGE (VFR/IFR %)	99.92%	
AIRPORT MAG. VARIATION	6°55'30"W - SEPT. 28, 1994	
AIRPORT REFERENCE CODE	B-II	C-II
NPIAS SERVICE LEVEL	GENERAL AVIATION	
STATE SERVICE ROLE	COMMUNITY	
TAXIWAY LIGHTING	MITLS	
RUNWAY 12 LONGITUDE RUNWAY 12 LATITUDE	37°12'37.76"N NAD 83 80°24'53.19"W NAD 83	37°12'44.70"N NAD 83 80°25'10.06"W NAD 83
RUNWAY 30 LONGITUDE RUNWAY 30 LATITUDE	37°12'17.21"N NAD 83 80°24'3.18"W NAD 83	37°12'21.36"N NAD 83 80°24'13.29"W NAD 83
VISUAL APPROACH AIDS	RW 12: PAPI-4, ODAL; RW 30: PAPI-2, REIL; BOTH: WINDCONE, ROTATING BEACON	RW 12: SAME RW 30: PAPI-4 BOTH: SAME
RUNWAY 12 ELEVATION	2,112.9' MSL	2,120.0 MSL
RUNWAY 30 ELEVATION	2,132' MSL	2,115.0' MSL

MOD. OF STANDARDS

RUNWAY DATA TABLE

	EXISTING		ULTIMATE	
	RUNWAY 12	RUNWAY 30	RUNWAY 12	RUNWAY 30
APPROACH VIS. MINIMUMS	RW 12: ≥ 1 MI; RW 30 ≥ 1.25 MI		RW 12: ≥ 1 MI; RW 30 ≥ 1 MI	
FAR PART 77 CAT.	NON PRECISION INSTRUMENT		SAME	
APPROACH SLOPE	RW 12: 34:1; RW 30: 20:1		RW 12: SAME; RW 30: 34:1	
RUNWAY LENGTH / WIDTH	4,548' x 100'		5,165' x 100'	
PAVEMENT TYPE	BITUMINOUS CONCRETE		SAME	
PAVEMENT DESIGN STRENGTH	45,000 LBS (SW) / 64,000 LBS (DW)		45,000 LBS (SW)/70,000 LBS (DW)	
LIGHTING	MIRL		SAME	
MARKING	NON PRECISION		SAME	
PERCENT GRADIENT	0.6%		0.1%	
MAXIMUM RUNWAY GRADE	1.5%		0.75%	
ELECTRONIC NAVAIDS	RW 12: LOC; BOTH: AWOS, NDB		SAME	
CRIT. AIRCRAFT	FALCON 50		GULFSTREAM 350	
RUNWAY SAFETY AREA DIMENSIONS	5,126' x 150'		7,165' x 500'	
OBJECT FREE AREA DIMENSIONS	5,126' x 500'		7,165' x 800'	
OBJECT FREE ZONE DIMENSIONS	4,948' x 400'		5,565' x 400'	
OBJECT FREE ZONE PENETRATIONS	NONE		NONE	
EFFECTIVE RUNWAY LENGTH	4,548 '		5,165 '	
EST. AIRPORT ELEVATION	2,132.0' MSL		2,120.0' MSL	
RUNWAY HIGH/LOW POINTS	H: 2,133.4' MSL, L: 2,102' MSL		H: 2,120.6' MSL, L: 2,102' MSL	

NONSTD. CONDITIONS

RUNWAY END ID	NON STANDARD CONDITION	ACTION
RW 30	RSA AND OFA EXTEND 278' BEYOND RW END	EXTEND RW AND GRADE TO C-II STANDARD TO MEET 1,000' RSA -OFA CONDITION
RW 30	150' RELOCATED THRESHOLD	SHIFT RUNWAY WEST, GRADE AND REMOVE RUNWAY PAVEMENT TO EAST

APPROVAL

VIRGINIA TECH/MONTGOMERY EXECUTIVE AIRPORT
APPR: _____
DATE: _____

VIRGINIA DEPARTMENT OF AVIATION
APPR: _____
DATE: _____

FEDERAL AVIATION ADMINISTRATION
APPR: _____ EASTERN REGION
DATE: _____
APPROVAL SUBJECT TO COMMENTS AND RECOMMENDATIONS IN LETTER DATED:

BUILDING TABLE

NO.	DESCRIPTION/USE
1	TERMINAL
2	BRICK MAINTENANCE BUILDING
3	TURBO LAB
4	OLD GROUP HANGAR
5	ROTATING BEACON
6	UNIV. HAZARDOUS WASTE STORAGE FACILITY
7	FUEL FARM
8	OLD T-HANGARS
9	UPPER AIR BALLOON INFLATION BLDG
10	NEW HANGAR
11	NEW HANGAR / STORAGE FACILITY
12	NEW CORPORATE HANGAR
13	NEW EXECUTIVE HANGARS
14	NEW T-HANGAR
15	NEW GROUP HANGARS

PHASING

PHASE	SYMBOL PVMT	SYMBOL BLDG
TO BE REMOVED		
UNDER CONST.		
I 2008-2013		
II 2013-2018		
III 2018-2028		
IV BEYOND 2028		
NONCOMPATIBLE RPZ LAND USE, PER FAA 2007 DETERMINATION, USES TO BE REMOVED		

True North

GRAPHIC SCALE
300 0 150 300 600 1200
(IN FEET)
1 inch = 300 ft.

LEGEND

DESCRIPTION	EXISTING SYMBOL	FUTURE SYMBOL
RUNWAY SAFETY AREA		
RUNWAY OBJECT FREE AREA		
RUNWAY PROTECTION ZONE		
BUILDING RESTRICTION LINE		SAME
TAXIWAY - TAXILANE OFA		SAME
TAXIWAY - TAXILANE CENTERLINE		SAME
SPOT ELEVATIONS	x 170	SAME
AIRPORT REFERENCE POINT		
AIRPORT PROPERTY LINE		
TREE LINE		SAME
ROADWAYS		
10' CONTOURS		SAME
FENCELINE		
NON-AERONAUTICAL AREAS		
HOLD LINES		SAME
ON AIRPORT BUILDINGS		SEE PHASE
OFF AIRPORT BUILDINGS		SAME
ROADS WITHIN RPZ		SAME
FUTURE PROPERTY INTEREST		
TREES TO BE REMOVED		
ODALS		
REILS		

FAA'S APPROVAL OF THIS AIRPORT LAYOUT PLAN (ALP) REPRESENTS ACCEPTANCE OF THE GENERAL LOCATION OF FUTURE FACILITIES DEPICTED. DURING THE PRELIMINARY DESIGN PHASE, THE AIRPORT OWNER IS REQUIRED TO RESUBMIT FOR APPROVAL THE FINAL LOCATIONS, HEIGHTS, AND EXTERIOR FINISHES OF STRUCTURES. FAA'S CONCERNS ARE OBSTRUCTIONS, IMPACT ON ELECTRONIC AIDS AND ADVERSE EFFECT OF CONTROLLER VIEW OF AIRCRAFT APPROACHES AND GROUND MOVEMENTS WHICH WOULD ADVERSELY AFFECT THE SAFETY, EFFICIENCY OR UTILITY OF THE AIRPORT.