



Interstate 81 Multistate Corridor Study

Final Report, 2012



prepared for

Virginia Department of Transportation
Tennessee Department of Transportation
West Virginia Department of Transportation
Maryland Department of Transportation
Pennsylvania Department of Transportation
New York State Department of Transportation

prepared by

Cambridge Systematics, Inc.

report

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1.0 Introduction

The I-81 corridor is an economic engine for the six states it traverses -- Tennessee, Virginia, West Virginia, Maryland, Pennsylvania, and New York -- as well as for the rest of the country. It provides direct freight services to these states, and also functions as a leading through-freight corridor for the eastern U.S. I-81 is a key freight alternative to I-95, the Nation's most congested freight corridor. It is also the most direct connection between southeastern and south central U.S. states and the population centers of the northeast.

Trucks constitute a high percentage of total traffic on much of I-81. This is in part due to the sheer number of trucks accumulating on the corridor, and partly due to the rural nature of the corridor. Lower population density generates less background automobile traffic and, when coupled with the high volume of freight traffic, results in relatively high truck percentages. With residential population and non-truck activity expected to increase in many counties surrounding I-81, there will be greater competition for available roadway capacity and a need to develop viable solutions to accommodate increased freight demand. I-81 is directly paralleled by the Norfolk Southern Crescent Corridor with many key origin-destination pairs also served by the CSX National Gateway, so truck to rail diversion in the I-81 corridor is an important opportunity.

The six states through which I-81 traverses share a common interest and are working together to "share and coordinate operating and capital plans" and "coordinate freight, truck, and rail study planning" to improve the safety and performance of the I-81 Regional Commerce Corridor.¹ Each state recognizes that efficient goods movement through the I-81 Regional Commerce Corridor (referred to hereafter as the I-81 corridor) is critically important to its own economic competitiveness as well as to that of the region and the nation. The highway and rail infrastructure of the I-81 corridor requires significant investment to maintain existing levels of service and safety. Substantial additional resources are required to increase capacity at key locations.

Understanding that the economic forces driving freight demand over the I-81 corridor transcend individual state boundaries, the I-81 partner states are formally cooperating to promote efficient goods movement through the corridor, improve the safety of the traveling public and encourage economic development.

¹ A Memorandum of Understanding (MOU) among the six I-81 states was signed in the fall of 2008. The I-81 Regional Commerce Corridor was defined in this MOU as "comprised of I-81 and highways intersecting with or running parallel to I-81 and the rail network serving the corridor"

Because rail is a particularly important component of the I-81 corridor and has the potential to attract increased volumes of freight traffic, these cooperative efforts will include the formation of priorities for both rail and highway modes. Important areas of collaboration also include Intelligent Transportation Systems (ITS) strategies, truck parking, and truck size and weight enforcement. In many cases, participation in the I-81 Corridor Coalition can help the collaborative effort, especially with regard to maintaining a data depository, and providing a forum for cooperative efforts.

This profile is an initial step in the collaborative process. It is a collection and summary of existing data and studies affecting the I-81 corridor. Each of the I-81 states has provided studies and data to support this effort. Public data sources such as the U.S. Census Bureau and Bureau of Labor Statistics (BLS) as well as the Federal Highway Administration's (FHWA) Freight Analysis Framework 3 (FAF³) and Highway Performance Monitoring System (HPMS) data have also been collected. Where feasible, these data are summarized in maps and tables within this report. The much more extensive raw data is available to the participating states on CD-ROM. Certain gaps in the data are evident and these are identified and discussed in section 3.

This report presents a snapshot of compiled data rather than a detailed analysis. However, FAF³ data were analyzed in depth for two counties along the I-81 corridor (Botetourt, VA and Schuylkill, PA) to provide an example of the type of analysis that is possible with the data.

1.1 SUMMARY OF DATA COLLECTED

Similar data were collected from the I-81 states, including traffic volumes, employment data by county, crash data, and location data for major distribution centers. States also provided studies and plans relevant to the corridor. All states provided traffic volume and truck percentage data in a shape file format. 2011 data were provided for five of the states and 2010 data were provided by West Virginia. Most states also provided historical traffic volumes for at least the past several years. New York State provides an interactive tool for viewing traffic volumes, but as of this report date GIS shapefile downloads for traffic volumes were unavailable on the New York GIS Clearinghouse web site.

Employment data were provided at a similar level of detail for most states, but in differing formats. Major distribution center data were provided by Virginia, West Virginia, Maryland, and New York. Some were already geolocated and others were geolocated as part of this study. Some distributions center data files included square footage, others did not. Web searches were made to obtain additional square footage information.

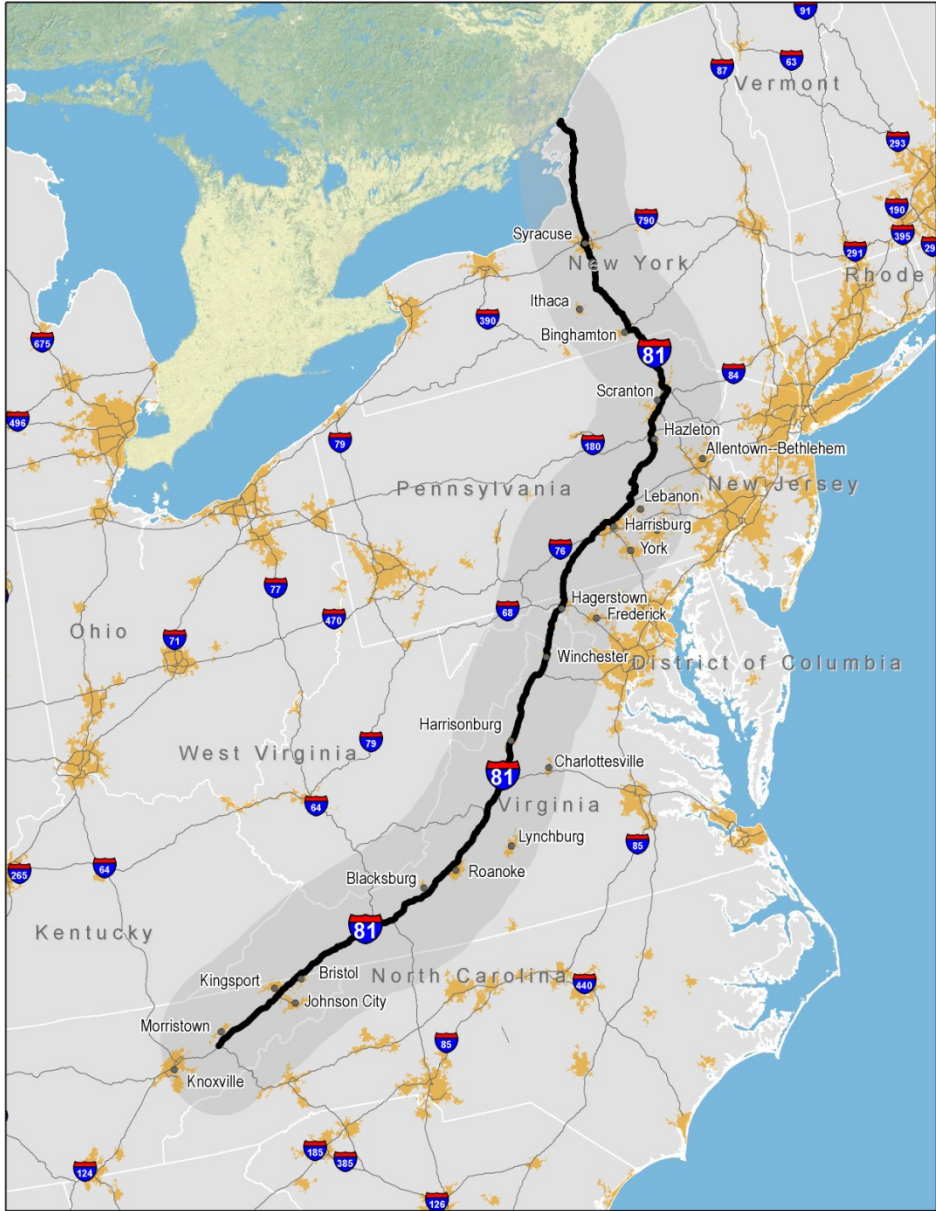
1.2 ORGANIZATION OF THE REPORT

This report is divided into five sections as follows:

1. Introduction;
2. Summary of Existing Data;
3. Data Gaps;
4. Example FAF³ Analysis; and
5. Conclusion and Recommended Next Steps.

Figure 1.1 shows the location of the I-81 corridor in the eastern United States.

Figure 1.1 The I-81 Corridor



Source: Cambridge Systematics

2.0 Summary of Existing Data

This section provides thematic maps and summary tables of the I-81 data collected. It also includes brief descriptions of the reports and plans provided by the I-81 states.

2.1 DESCRIPTION OF CORRIDOR

I-81 begins at Interstate 40 in Dandridge, Tennessee and extends for 855 miles to the Canadian border near Fishers Landing, New York. It provides service to many cities and towns including:

- Bristol, TN
- Bristol, VA
- Blacksburg, VA
- Roanoke, VA
- Lexington, VA
- Staunton, VA
- Harrisonburg, VA
- Winchester, VA
- Martinsburg, WV
- Hagerstown, MD
- Chambersburg, PA
- Harrisburg, PA
- Wilkes-Barre, PA
- Scranton, PA
- Binghamton, NY
- Syracuse, NY
- Watertown, NY

I-81 traverses the following counties:

- Jefferson, TN
- Hamblen, TN
- Greene, TN
- Washington, TN
- Sullivan, TN
- Washington, VA
- Smyth, VA
- Wythe, VA
- Pulaski, VA
- Montgomery, VA
- Roanoke, VA
- Botetourt, VA
- Rockbridge, VA
- Augusta, VA
- Rockingham, VA
- Shenandoah, VA
- Warren, VA
- Frederick, VA
- Berkeley, WV
- Washington, MD
- Franklin, PA
- Cumberland, PA

- Dauphin, PA
- Lebanon, PA
- Schuylkill, PA
- Luzerne, PA
- Lackawanna, PA
- Susquehanna, PA
- Broome, NY
- Cortland, NY
- Onondaga, NY
- Oswego, NY
- Jefferson, NY

I-81 traverses the following Metropolitan Planning Organizations:

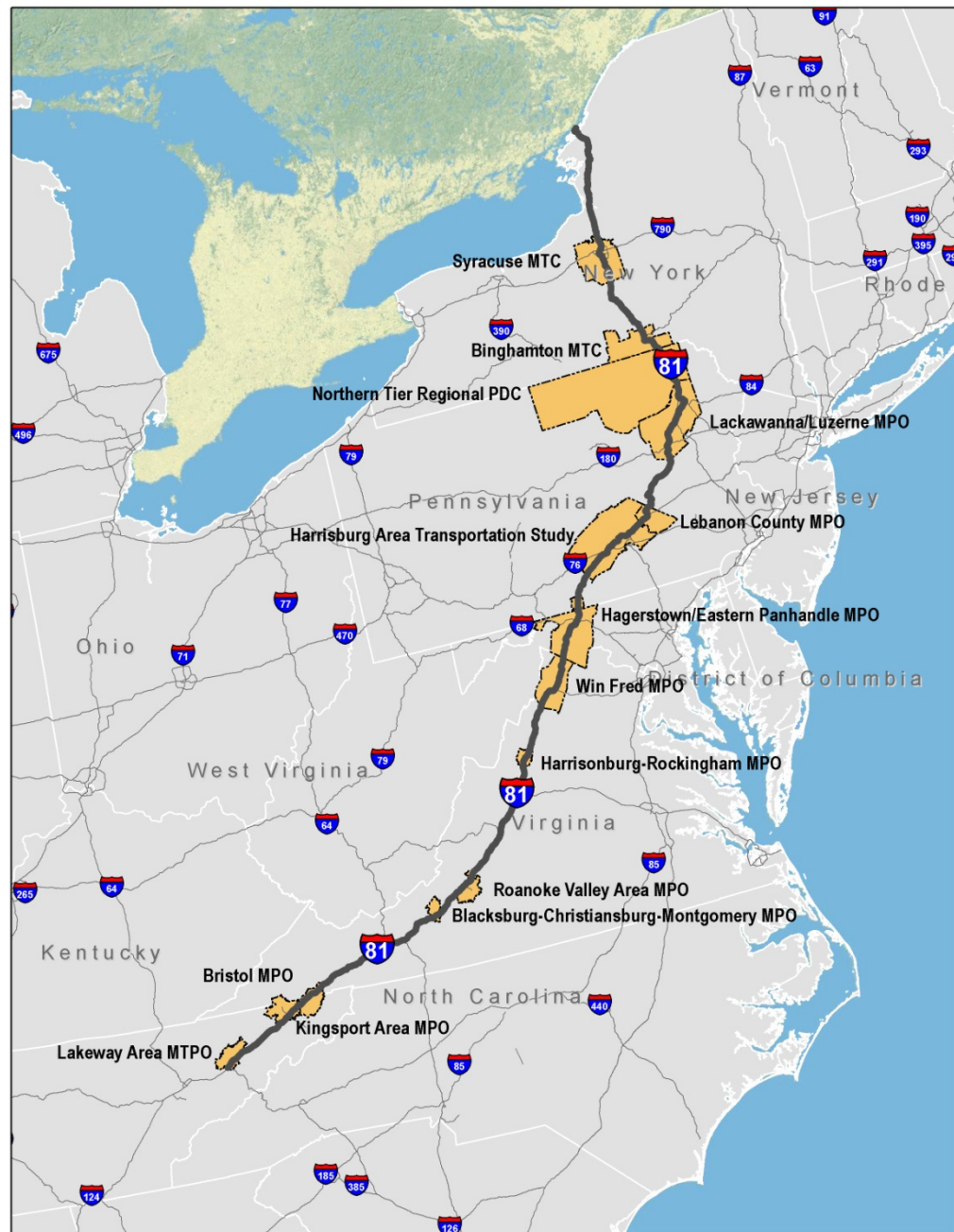
- Lakeway Area MTPO
- Bristol MPO
- Kingsport Area MPO
- Blacksburg-Christiansburg-Montgomery MPO
- Roanoke Valley Area MPO
- Harrisonburg-Rockingham MPO
- Win Fred MPO
- Hagerstown/Eastern Panhandle MPO
- Harrisburg Area Transportation Study
- Lebanon County MPO
- Lackawanna/Luzerne MPO
- Northern Tier Regional PDC
- Binghamton MPC
- Syracuse MTC

I-81 has major network connections to the following interstate highways:

- I-40 in TN
- I-77 in VA
- I-581 in VA
- I-64 in VA
- I-66 in VA
- I-70 in MD
- I-76 in PA
- I-83 in PA
- I-78 in PA
- I-80 in PA
- I-476 in PA
- I-380 / I-84 in PA
- I-88 in NY
- I-90 in NY
- Highway 401 in ON

Figure 2.1 on the next page shows the location of the various metropolitan planning organizations (MPO) and regional planning organizations (RPO) along the I-81 corridor.

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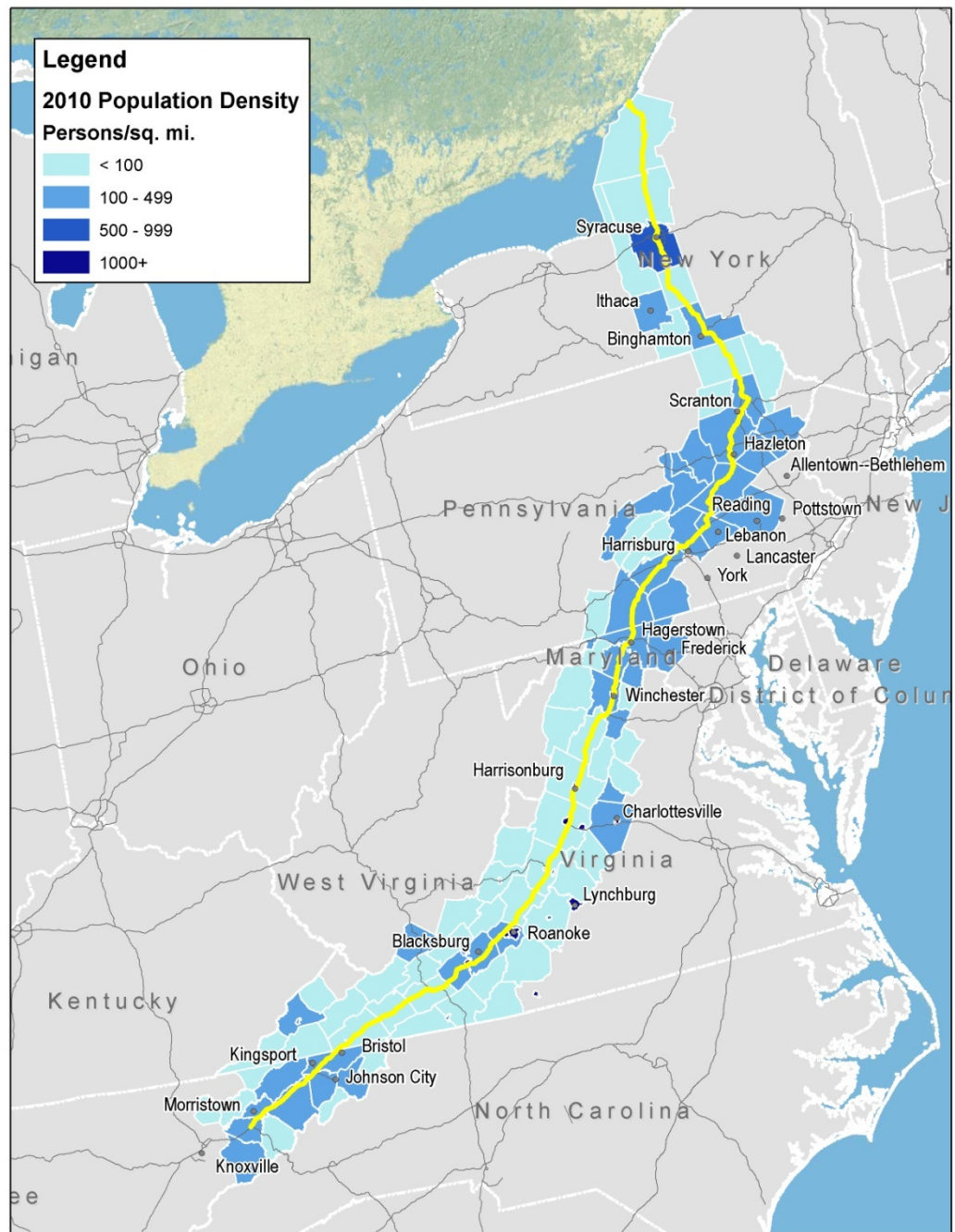


2.2 DEMOGRAPHY, EMPLOYMENT, AND DISTRIBUTION CENTERS

Population and employment levels affect transportation demand for people as well as freight. To help visualize the population and employment data readily available from the Census Bureau and the Bureau of Labor Statistics (BLS), county-level data were mapped in terms of density along the I-81 corridor (see Figures 2.2 and 2.3).

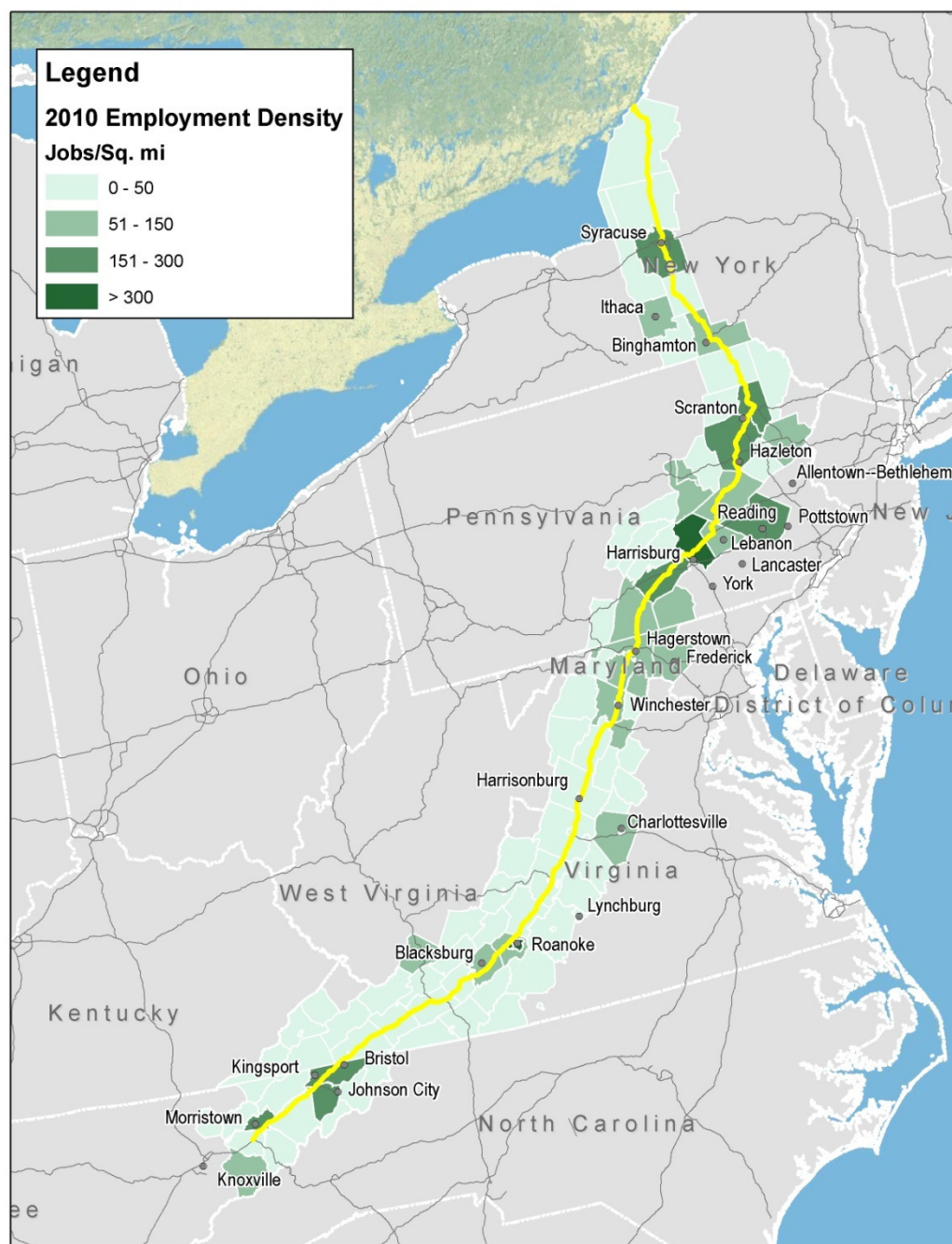
Large distribution centers (DC) have important impacts on transportation system demand because of the large volumes of freight required to support their operations. The geographical locations of major distribution centers along the I-81 corridor were readily available for Virginia, Maryland, and New York (see Figures 2.4 and 2.5).

Figure 2.2 Population Density



Source: U. S. Census Bureau, 2010 data - mapped by Cambridge Systematics

Figure 2.3 Employment Density



Source: U. S. Bureau of Labor Statistics, 2010 data - mapped by Cambridge Systematics

Figure 2.4 Distribution Centers – Virginia and Maryland



Source: Virginia Department of Transportation data and Maryland Department of Transportation data - mapped by Cambridge Systematics

Figure 2.5 Distribution Centers – New York



Source: New York State Department of Transportation data - mapped by Cambridge Systematics

2.3 MULTIMODAL FREIGHT SYSTEM – I-81 CORRIDOR

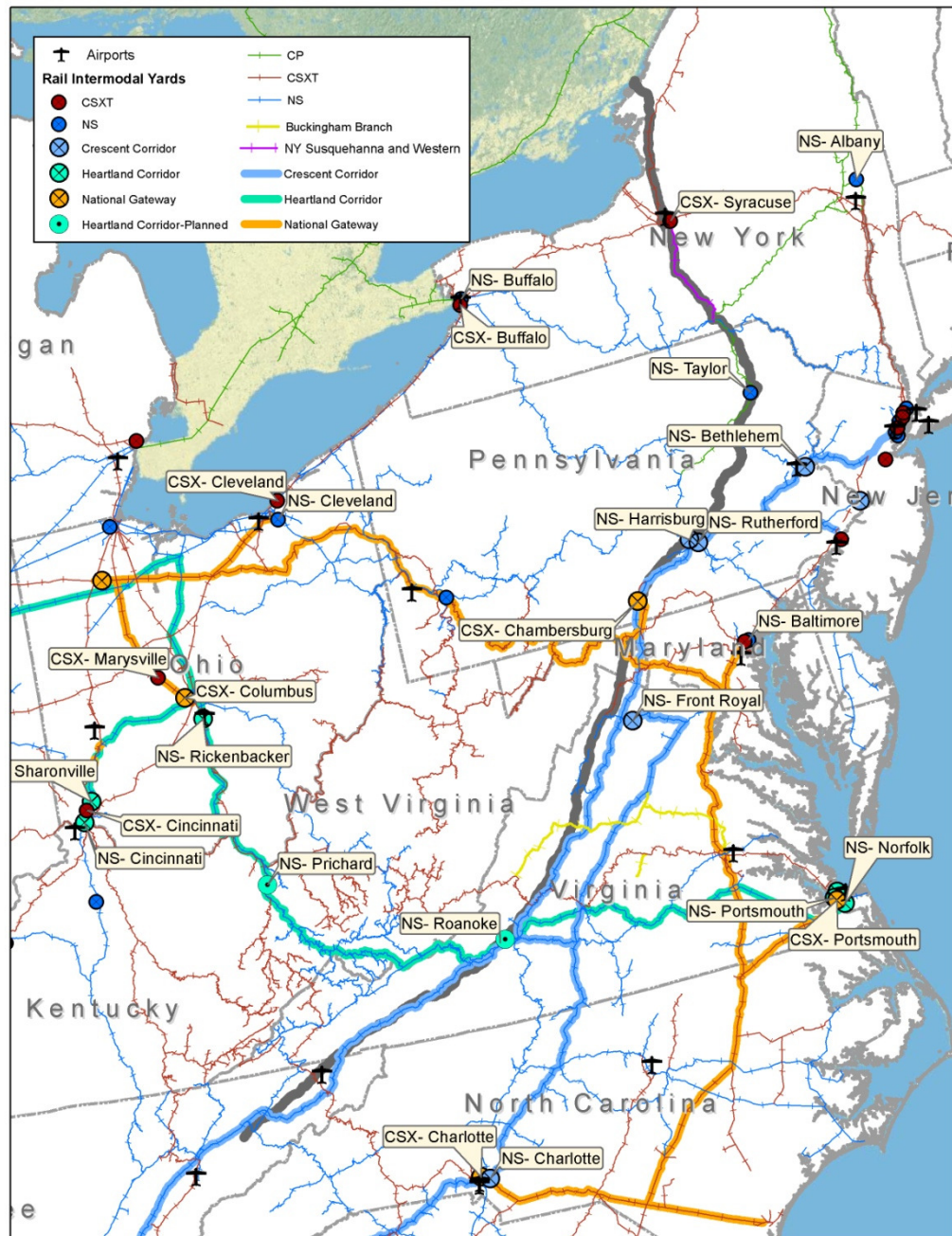
This section displays data collected about the I-81 facility itself (number of through lanes), as well as the location and ownership of rail facilities and the location of major airports within and near to the I-81 corridor. Figure 2.6 shows the number of through lanes on I-81 and Figure 2.7 shows the extent of Class 1 rail lines and the location of major rail-truck intermodal terminals in the eastern United States.

Figure 2.6 Number of Through Lanes



Source: Highway Performance Monitoring System, 2008 – mapped by Cambridge Systematics

Figure 2.7 Rail and Intermodal Facilities

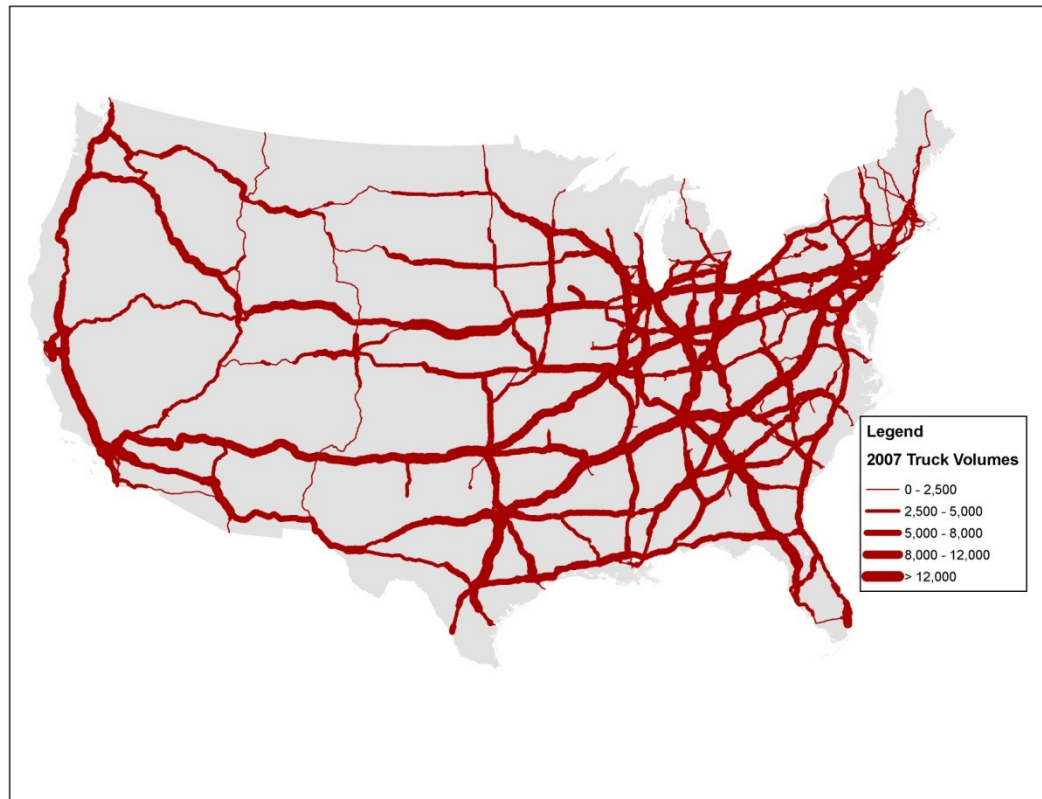


Source: Bureau of Transportation Statistics (BTS), Norfolk Southern, and CSX – mapped by Cambridge Systematics

2.4 FREIGHT DEMAND

This section shows the freight demand data collected along the I-81 multimodal corridor. FHWA's Freight Analysis Framework (FAF) database estimates commodity movements and volume of long distance trucks on the Nation's highways. Figure 2.8 provides a national overview of FAF³ truck volumes on the interstate highway system.

Figure 2.8 FAF Truck Volumes – United States, 2007

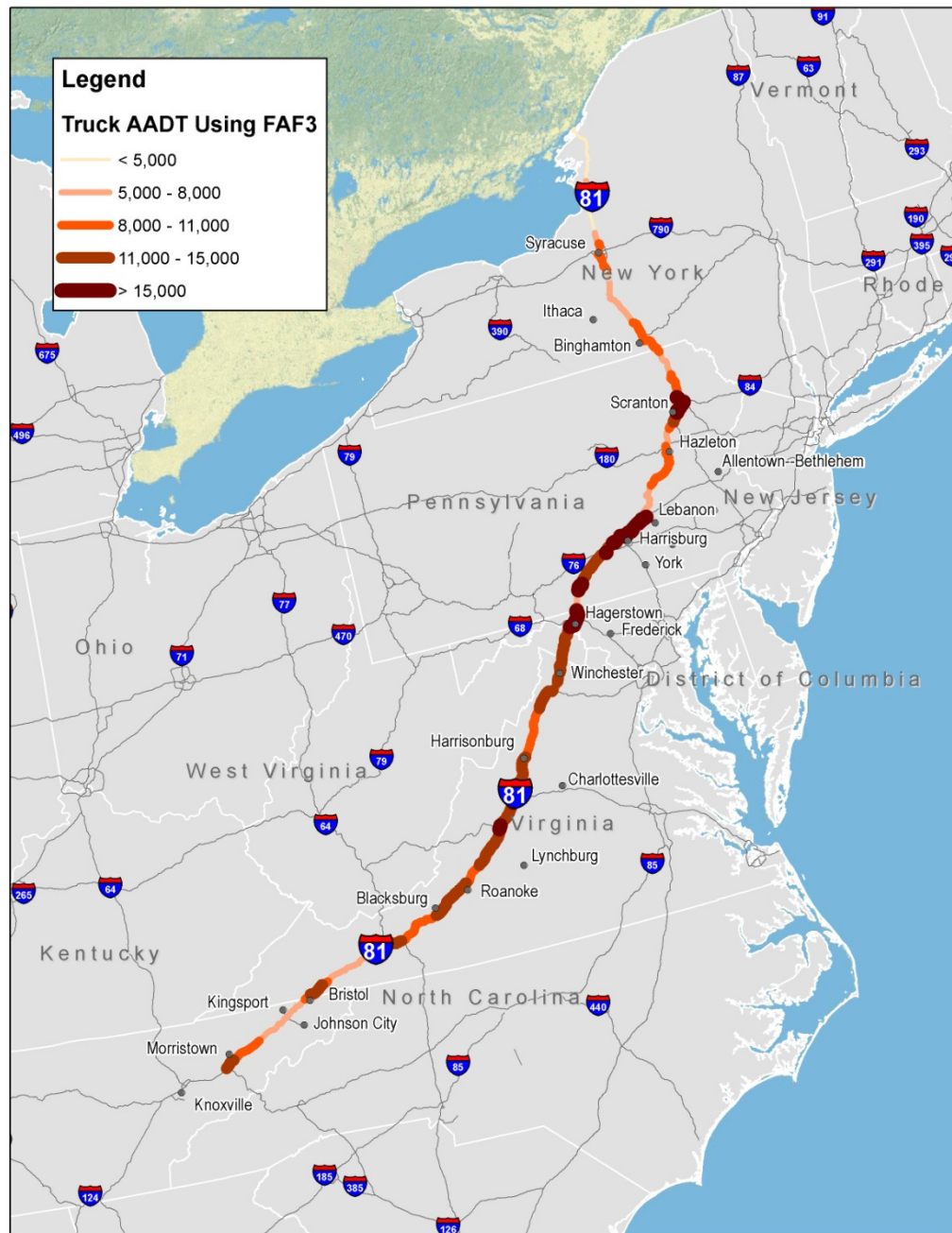


Source: FHWA FAF³ data, 2007 – mapped by Cambridge Systematics

Figure 2.9 shows FAF³ truck volumes and Figure 2.10 shows the FAF³ truck percentage on I-81.² Figure 2.11 shows Average Annual Daily Traffic (AADT) and Average Annual Daily Truck Traffic (AADTT) on I-81. Rail volumes are shown in Figure 2.12.

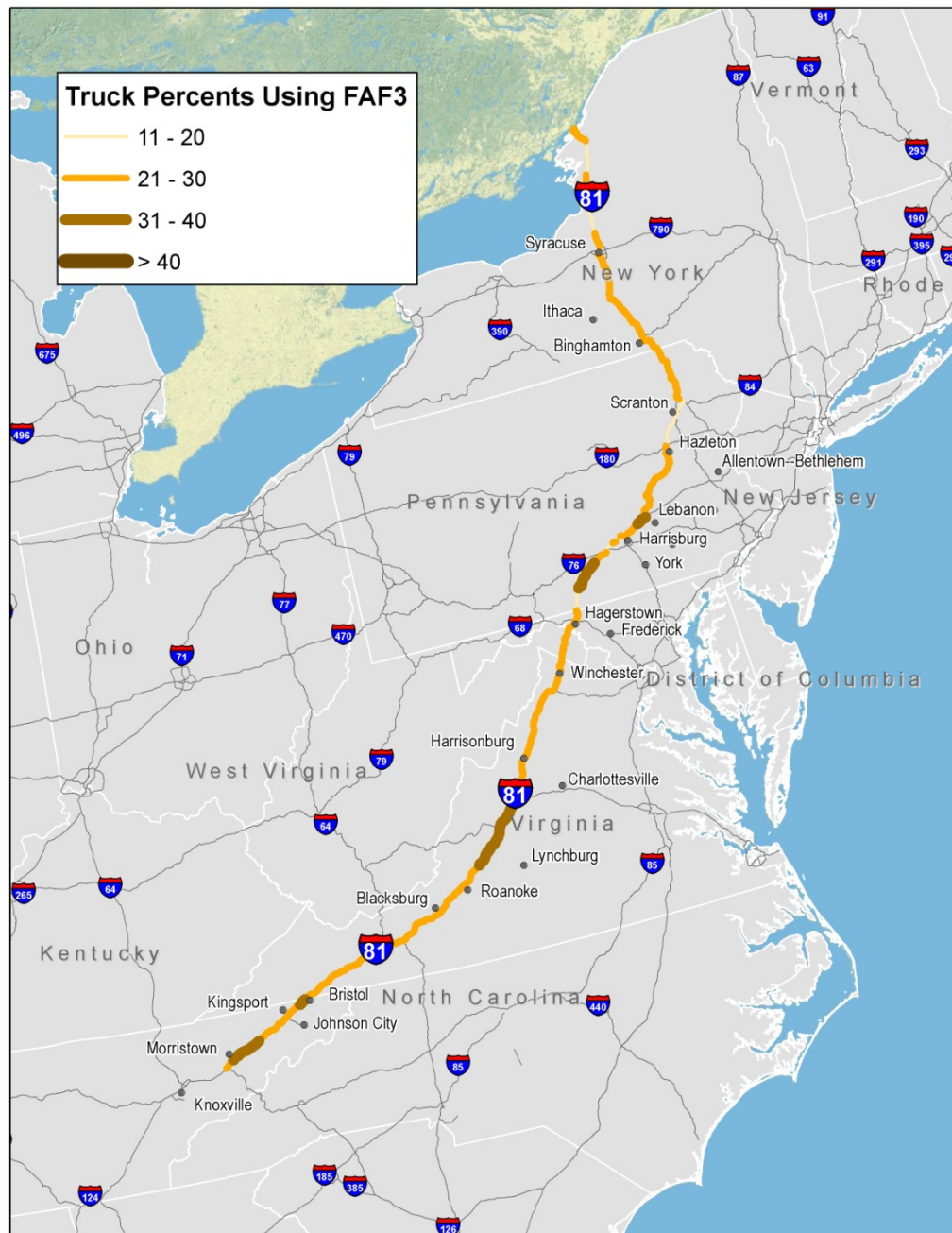
² FAF³ truck volumes are modeled based on geographic distributions of economic activity and are not based on knowledge of local conditions. Nevertheless, they provide a good corridor-wide overview of truck volumes.

Figure 2.9 FAF Truck Volumes – I-81



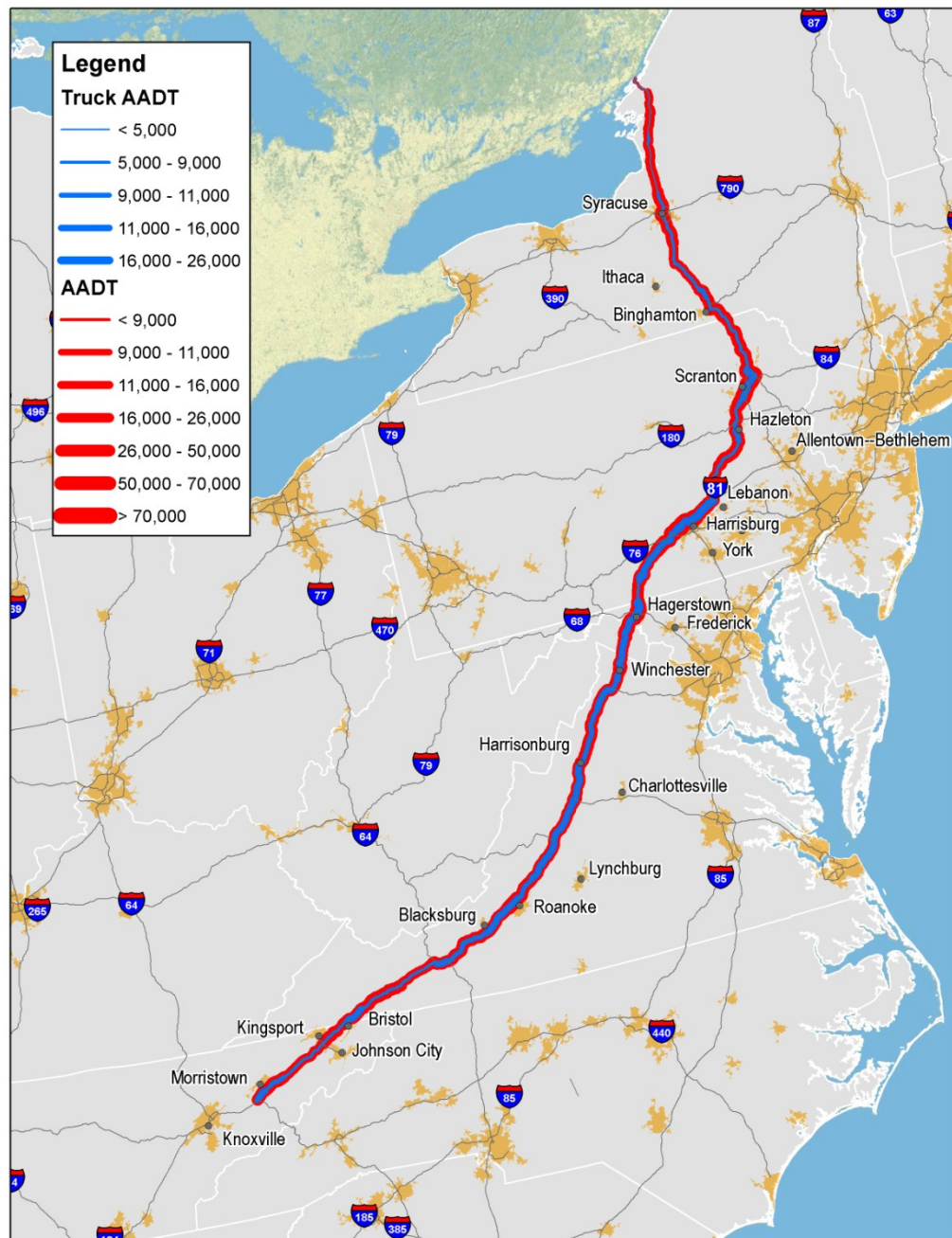
Source: FHWA FAF³ data, 2007 – mapped by Cambridge Systematics

Figure 2.10 FAF Truck Percentages – I-81



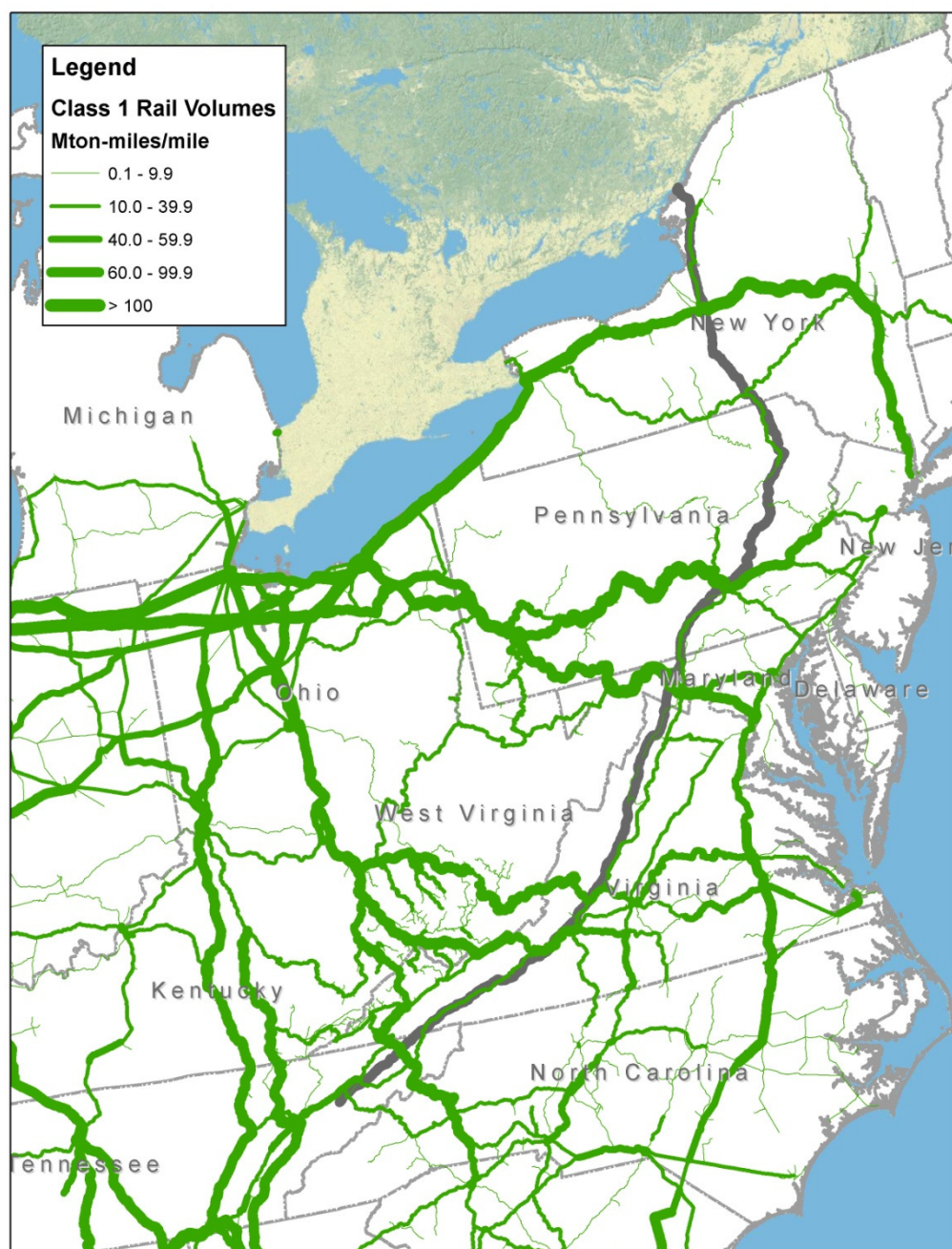
Source: FHWA FAF³ data, 2007 – mapped by Cambridge Systematics

Figure 2.11 HPMS Traffic and Truck Volumes – I-81



Source: Highway Performance Monitoring System (HPMS) data, 2007 – mapped by Cambridge Systematics

Figure 2.12 Rail Volumes – Class 1 Railroads

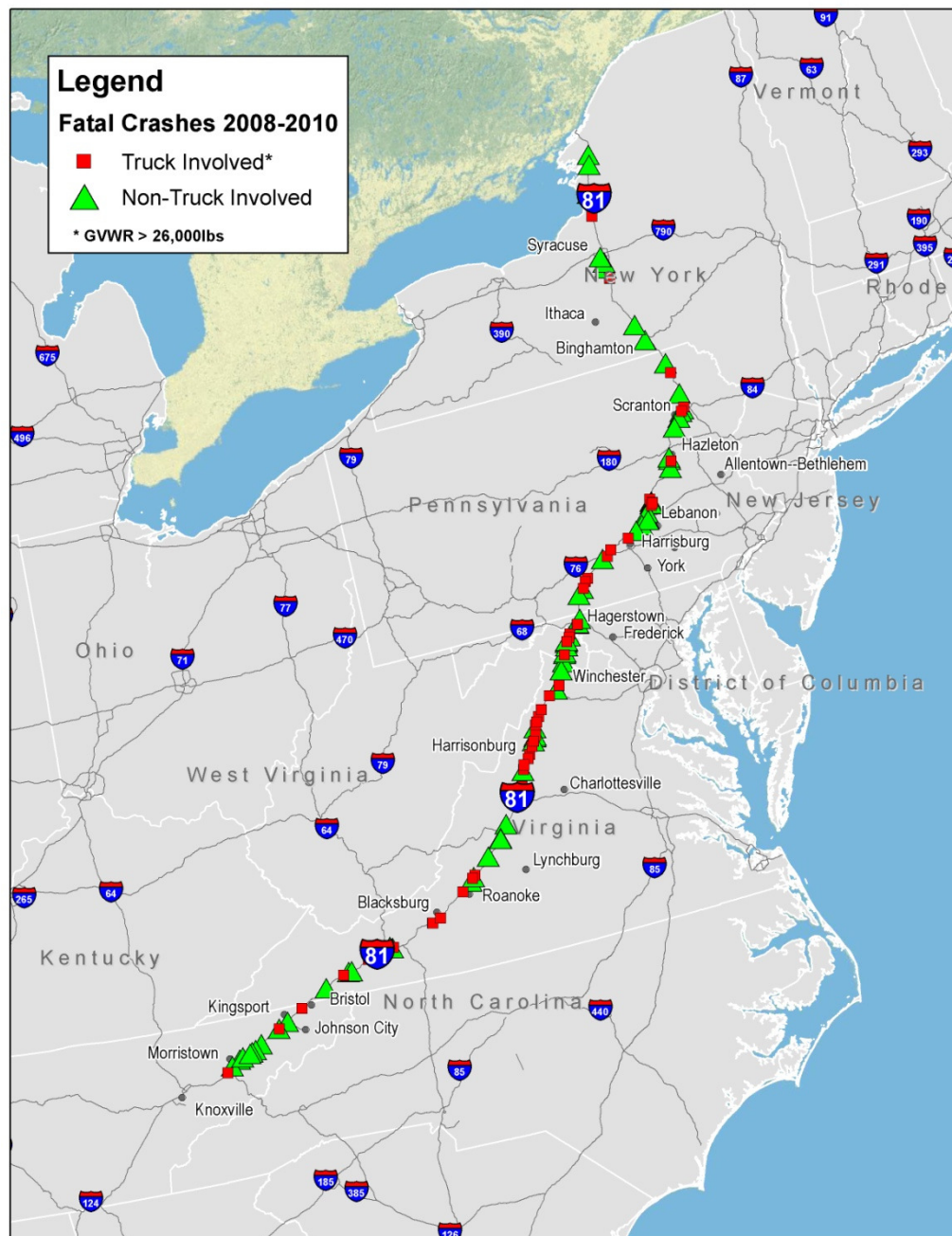


Source: Federal Railroad Administration (FRA) data (2009) – tailored and mapped by Cambridge Systematics

2.5 SAFETY

Figure 2.13 below shows the location of all fatal crashes on I-81 from 2008 through 2010. Those that are truck involved are highlighted in red.

Figure 2.13 Fatal Crashes – 2008 through 2010



Source: National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS) data – mapped by Cambridge Systematics

2.6 STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAMS

A review of each state's most recent Statewide Transportation Improvement Program (STIP) reveals that a number of projects to make improvements to I-81 are in progress or in the pipeline. Table 2.1 summarizes the time periods covered by each of the STIPs for the I-81 states. Table 2.2 lists each I-81-related project identified.³ Because of variances among the states, modifications were made to the way the STIP data were presented to enable all I-81 projects to be included in a single table. Descriptions of the column headings and sources for Table 2.2 are listed below:

- **State** - the State where the project is being (or will be) implemented.
- **Jurisdiction** - the County where the project is being (or will be) implemented. For some Virginia projects, this field may indicate a DOT District or a City instead of a County.
- **Project #** - the unique identifier given to the project by the State. In Virginia this is the UPC, in West Virginia it is the State Project Number, in Maryland it is the page number and item number from the Consolidated Transportation Program, in Pennsylvania it is the Project Number, in New York it is the PIN.
- **Description** - a description of the project. In Virginia it is a combination of the Scope, Project, and Description fields; in West Virginia it is a combination of the Phase, Project Name, and Type of Work fields; in Maryland it is the Description and Improvement Type field; in Pennsylvania it is the Project Title; and in New York it is a combination of the Project Description and Phase Type fields.
- **Federal Funds** - the Federal funds to be applied to the project. In Virginia it is the sum of the FY12, FY13, FY14, and FY15 fields; in West Virginia it is the Federal Dollar Amount field; in Pennsylvania it is the sum of the Federal FFY 2012, 2013, and 2014 Cost fields; and in New York it is the sum of the 2012, 2013, and 2014 Federal Aid Cost fields.
- **State, Local, and Other Funds** - the State, local, and other funds applied to the project. In Virginia, it is the Match field; in West Virginia it is the Total Phase \$ Amount field minus the Federal Dollar Amount field; in Pennsylvania it is the sum of the State and Local FFY 2012, 2013, and 2014 fields; and in New York it is the sum of the 2012, 2013, and 2014 Non Federal Aid Rollup fields.

³ The tables presented here display a subset of the information available within the various STIPs. Please see the actual STIPs for additional details.

- **Total Planned Obligations** – the total funds to be applied to the project during the years covered in the STIP. In Virginia it is the sum FY12, FY13, FY14, FY15, and Match fields; in West Virginia it is the Total Phase \$ Amount field; in Maryland it is the Total Estimated Cost field; in Pennsylvania it is the sum of the Federal, State, and Local FFY 2012, 2013, and 2014 fields; and in New York it is the sum of the 2012, 2013, and 2014 Sum of Federal and Non Federal fields.

Table 2.1 Summary of I-81 STIPs

Table Number	State	Years
N/A	Tennessee	2011 - 2014
Table 2.2	Virginia	2012 – 2015
Table 2.2	West Virginia	2012 – 2017
Table 2.2	Maryland	2012 – 2017
Table 2.2	Pennsylvania	2011 – 2014
Table 2.2	New York	2011 - 2014

Source: I-81 state STIPs.

Table 2.2 STIP Line Items

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
Virginia	Wythe County	51441	I-81 Corridor Improvement Study – Tier 2 – I-77/I-81 Overlap From Exit 72 (I-77) near Wytheville To Exit 81 (I-77) near Wytheville (9 MI)	\$0	\$0	\$0
Virginia	Bristol District-wide	68717	RTE 81 - PPTA PROJECT DEVELOPMENT & MANAGEMENT	\$0	\$0	\$0
Virginia	Smyth County	97555	I-81 NBL BRIDGE PROJECT AT ROUTE 11 STR #17478 (New Bridge)	\$1,065,578	\$266,395	\$1,331,973

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
Virginia	Washington County	17745	RTE 81 - INTERCHANGE IMPROVEMENTS (Reconstruction) FROM: 0.6 MILE NORTH ROUTE 140 TO: 0.9 MILE NORTH ROUTE 75 (VIRGINIA CREEPER TRAIL) (2.5 MI)	\$474,100	\$52,678	\$526,778
Virginia	Washington County	97533	I-81 PAVING WASHINGTON COUNTY (Resurfacing)	\$1,104,300	\$122,700	\$1,227,000
Virginia	Washington County	97556	ROUTE I-81 NBL-WASHINGTON COUNTY STR #18928 (New Bridge)	\$407,332	\$45,259	\$452,951
Virginia	Wythe County	97534	Route 81N Paving Wythe County (Resurfacing)	\$299,700	\$33,300	\$333,000
Virginia	Wythe County	97583	ROUTE I-81 SBL BRIDGE PROJECT - WYTHE COUNTY STR #22370 (New Bridge)	\$754,097	\$83,789	\$837,886
Virginia	Salem District-wide	70667	Route 81 Corridor Safety Improvements	\$0	\$0	\$0
Virginia	Botetourt County	53097	RTE 81 - WIDEN FROM 4 TO 8 LANES - PE & RW ONLY (Major Widening) FROM: 0.28 MI S. OF RTE 648 MP 147.45 TO: 0.79 MI N. OF RTE 779E 220 - MP 152.4 (4.9 MI)	\$528,611	\$0	\$528,611

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
Virginia	Christiansburg	16389	RTE 81 - MAJOR WIDENING - RTE 460 CONNECTOR FROM: 3.476 KM S. RTE 460/11 TO: 0.867 KM N. RTE 460/11 (4.342 KM)	\$0	\$0	\$0
Virginia	Montgomery County	16317	RTE 81 - MAJOR WIDENING - RTE 460 CONNECTOR FROM: 0.867 KM N. RTE 460/11 TO: 1.936 KM N. RTE 460/11 (1.069 KM)	\$0	\$0	\$0
Virginia	Roanoke County	16591	RTE 81 - WIDEN FROM 4 TO 8 LANES - PE ONLY FROM: 0.047 MI N. OF BUTT HOLLOW ROAD (RTE 641) MP 135.9 TO: 0.2 MI N. OF GOODWIN AVENUE (RTE 635) MP 138.6 (2.566 MI)	\$0	\$0	\$0
Virginia	Roanoke County	16593	RTE 81 - WIDEN FROM 4 TO 8 LANES - PE & RW ONLY (Major Widening) FROM: 0.881 MI N. OF I-581 MP 144.5 TO: 0.28 MI S. OF RTE 648 MP 147.45 (3 MI)	\$0	\$0	\$0

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
Virginia	Roanoke County	53094	RTE 81 - WIDEN FROM 4 TO 8 LANES - PE ONLY (Major Widening) FROM: 0.2 MI N. OF GOODWIN AVENUE (RTE 635) MP 138.6 TO: 0.75 MI N. OF THOMPSON MEMORIAL DR (RTE 311) MP 140.9 (2.5 MI)	\$0	\$0	\$0
Virginia	Roanoke County	53096	RTE 81 - WIDEN FROM 4 TO 8 LANES - PE ONLY (Major Widening) FROM: 0.786 MI S. OF I-581 MP 143.1 TO: 0.881 MI N. OF I-581 MP 144.5 (1.667 MI)	\$0	\$0	\$0
Virginia	Roanoke County	97560	Route 81 SB Ramp to 581 SBL Roanoke County STR# 14891 (New Bridge)	\$944,797	\$104,977	\$1,049,774
Virginia	Roanoke County	97579	ROUTE I-81 SBL - ROANOKE COUNTY STR # 14869 (New Bridge)	\$315,416	\$35,046	\$350,462
Virginia	Roanoke County	97623	I-81 ROANOKE CO BRIDGE PROJECT OVER 581SB STR # 14893 (New Bridge)	\$472,157	\$52,462	\$524,619

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
Virginia	Salem District-wide	67588	RTE 81 - DEVELOPMENT OF NEPA DOCUMENT (Environmentally Related)	\$0	\$0	\$0
Virginia	Augusta County	97561	RTE I-81 PAVING AUGUSTA COUNTY (Resurfacing)	\$0	\$0	\$0
Virginia	Augusta County	97562	RTE I-81 PAVING AUGUSTA COUNTY (Resurfacing)	\$307,200	\$76,800	\$384,000
Virginia	Frederick County	75881	RTE 81 - INTERCHANGE MODIFICATION, EXIT 310 (Safety/Traffic Ops/TSM)	\$152,608	\$0	\$152,608
Virginia	Frederick County	88659	I-81 Exit 307 Interchange Relocation Study (Studies Only)	\$1,170,000	\$130,000	\$1,300,000
Virginia	Rockingham County	56382	RTE 81 – BRIDGE WIDENING (4-LANE) & REPLACEMENT – SAFETY IMPROVEMENT (Bridge Replacement)	(\$214,325)	(\$53,581)	(\$267,906)
			FROM: 0.349 Mi. E. of South Main St. (Route 11) TO: 0.725 Mi. E. of South Main St. (Route 11) (0.376 MI)			
Virginia	Staunton District-wide	67589	RTE 81 - DEVELOPMENT OF NEPA DOCUMENT (Environmentally Related)	\$0	\$0	\$0

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
Virginia	Statewide	72259	RTE 81 – ITS SYSTEM INTEGRATION PROJECT NON-CONSTRUCTION (Safety/Traffic Ops/TSM)	\$0	\$0	\$0
West Virginia	Berkeley County	U30281 25000	Design and Construct Additional Truck Parking at I-81 Welcome Center & Weigh Station	\$1,096,000	\$274,000	\$1,370,000
Maryland	Washington County	Page SHA-W-4 Item 15	Maryland Veterans Memorial Highway; at I 70 Interchange Phase II; Upgrade Ramps 6 and 8, widen Hopewell Road Bridge			\$4,063,000
Pennsylvania	Cumberland County	91357	District 8-0 DMS/SMP Ph A	\$1,480,000	\$520,000	\$2,000,000
Pennsylvania	Dauphin County	90625	District 8-0 RAPIDS	\$2,094,639	\$0	\$2,094,639
Pennsylvania	Schuylkill County	75933	I-81 Delano to McAdoo	\$34,070,400	\$3,785,600	\$37,856,000
Pennsylvania	Schuylkill County	76372	I-81 Leb. Co. To Pine Gve	\$38,966,803	\$4,329,645	\$43,296,448
Pennsylvania	Luzerne County	67494	SR 0081, Br. Rehab Laflin	\$0	\$16,555,185	\$16,555,185
Pennsylvania	Luzerne County	69149	I-81 Br Rehab, Jenkins/Pitt	\$16,218,987	\$1,802,110	\$18,021,097
Pennsylvania	Luzerne County	47955	Reconstruct Exit 178 Avoca	\$24,029,712	\$2,669,968	\$26,699,680
Pennsylvania	Luzerne County	75088	I 81 BDG Rehab Plains/Jen	\$10,371,683	\$1,152,410	\$11,524,093
Pennsylvania	Luzerne County	85481	Recon 178 Avoca ITS	\$0	\$324,480	\$324,480
Pennsylvania	Luzerne County	91404	ITS SMP Phase A	\$2,700,000	\$300,000	\$3,000,000

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
Pennsylvania	Lackawanna County	75128	I-81 PM/Pav Rest	\$24,318,720	\$2,702,080	\$27,020,800
Pennsylvania	Lackawanna County	69345	Widen I-81 C. Scr to Davis	\$400,000	\$100,000	\$500,000
Pennsylvania	Lackawanna County	81920	I-81 NB and SB Grinding	\$692,951	\$76,995	\$769,946
Pennsylvania	Lackawanna County	8229	I-81 Main Ave & River Bridge	\$5,972,760	\$663,640	\$6,636,400
Pennsylvania	Susquehanna County	9678	SR1029 & I-81 Bridge Repairs	\$428,135	\$107,034	\$535,169
New York	Oswego County	350157	BRIDGE REHABILITATION OF MILLER ROAD OVER I81, TOWN OF SANDY CREEK. BIN 1031930. GENERAL BRIDGE REHABILITATION. STATE OF GOOD REPAIR. (Detailed design, construction, and construction inspection)	\$2,874,000	\$350,000	\$3,224,000
New York	Cortland County	350159	I81 OVER RT 221, BRIDGE REHABILITATION, VILLAGE OF MARATHON, TOWN OF MARATHON. BIN'S 1031301, 1031302. GENERAL BRIDGE REHABILITATION. STATE OF GOOD REPAIR. (Scoping, preliminary design, and detailed design)	\$336,000	\$37,000	\$373,000

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
New York	Cortland County	350161	ROUTE I81 OVER ABANDONED LEHIGH VALLEY RAILROAD, CITY OF CORTLAND. BIN'S 1031381, 1031382. BRIDGE REMOVAL, TAKING 2 STRUCTURES OFF THE DEFICIENT BRIDGE LIST IN A COST EFFECTIVE MANNER. (Right-of-way acquisition, detailed design, construction, and construction inspection)	\$971,000	\$110,000	\$1,081,000
New York	Cortland County	350162	I81 BRIDGES OVER SOUTH HILL RD (SOMMERVILLE RD), TOWN OF CORTLANDVILLE. BIN 1031381, 1031382. BRIDGE REPLACEMENT. NEW STRUCTURE TO REPLACE DEFICIENT STRUCTURE. (Right-of-way acquisition, right-of-way incidentals, preliminary design, and detailed design)	\$532,000	\$59,000	\$591,000
New York	Cortland County	350169	I-81 BRIDGES OVER RUSSELL RD & RIDGE. TOWNS OF CORTLANDVILL AND VIRGIL BIN'S 1031321, 1031322, 1031351, 1031352. GENERAL BRIDGE REHABILITATION. STATE OF GOOD REPAIR. (Scoping, preliminary design, detailed design, construction, and construction inspection)	\$8,358,000	\$2,090,000	\$10,448,000

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
New York	Oswego County	350170	RESURFACE I81, FROM CENTRAL SQUARE, JUST SOUTH OF RT 49 TO 1 MILE NORTH OF TINKER TAVERN ROAD, TOWNS OF ALBION, HASTINGS, PARISH, RICHLAND AND VIL OF HASTINGS. (Scoping and preliminary design)	\$468,000	\$52,000	\$520,000
New York	Oswego County	360222	MBC-I81 FROM 1 MI N OF TINKER TAVERN RD TO JEFFERSON CO LN, VILLAGES OF PULASKI & SANDY CK, TOWNS OF RICHLAND AND SANDY CK. PREVENTIVE MAINTENANCE. SINGLE COURSE O'LAY. EXTEND SERVICE LIFE. (Scoping, detailed design, construction, and construction inspection)	\$9,402,000	\$1,044,000	\$10,446,000
New York	Oswego County	380648	I81, RM 3404-1099, 3404-1197, 3404-1242; TOWNS OF HASTINGS, PARISH AND RICHLAND, INSTALL THREE DYNAMIC MESSAGE SIGNS (Construction and construction inspection)	\$825,000	\$82,000	\$907,000

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
New York	Onondaga County	350156	REPLACE I81 BRIDGES OVER RT 80, TN OF TULLY. BIN'S: 1030661, 1030662, 1031421, 1031422, 1031441, 1031442. NEW STRUCTURE TO REPLACE DEFICIENT STRUCTURE. (Right-of-way acquisition, construction, and construction inspection)	\$8,949,000	\$916,000	\$9,865,000
New York	Oswego County	350163	I81 BRIDGE OVER THE ERIE CANAL AND ONEIDA RIVER, TN OF HASTINGS (Right-of-way incidentals and preliminary design)	\$1,023,000	\$114,000	\$1,137,000
New York	Onondaga County	350164	I81 OVER I90 NYS THRUWAY, TN OF SALINA. BIN 1031659. GENERAL BRIDGE REHABILITATION. STATE OF GOOD REPAIR. (Scoping, preliminary design, and detailed design)	\$428,000	\$107,000	\$535,000
New York	Onondaga County	350165	I81 BRIDGES OVER RT 11, ELEMENT SPECIFIC REHAB, TN OF SALINA. BIN'S 1008530, 1031671, 1031672. GENERAL BRIDGE REHABILITATION. STATE OF GOOD REPAIR. (Scoping, preliminary design, and detailed design)	\$336,000	\$84,000	\$420,000

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
New York	Onondaga County	350166	I81 OVER E CALTHROP AVE, CITY OF SYRACUSE. BIN 1031529. GENERAL BRIDGE REHAB. STATE OF GOOD REPAIR. (Detailed design, construction, and construction inspection)	\$1,499,000	\$375,000	\$1,874,000
New York	Onondaga County	360188	MBC - I81, FROM HIAWATHA BLVD TO I90, CITY OF SYRACUSE AND TN OF SALINA. PREVENTIVE MAINTENANCE, PAV'T, SINGLE COURSE O'LAY. EXTEND SERVICE LIFE. (Scoping and detailed design)	\$325,000	\$36,000	\$361,000
New York	Oswego County	360189	MBC - I81, ONONDAGA COUNTY LINE TO JUST SOUTH OF RT 49, TN OF HASTINGS. PREVENTIVE MAINTENANCE, SINGLE COURSE O'LAY. EXTEND SERVICE LIFE. (Detailed design, scoping, inspection, construction)	\$2,454,000	\$273,000	\$2,727,000
New York	Jefferson County	750076	REPLACE 2 BRIDGES CARRYING I81 OVER RT.970K. BINS 1032141 & 1032142 (Preliminary design and scoping)	\$194,000	\$21,000	\$215,000

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
New York	Jefferson County	750080	RT I-81 R&P FROM JEFFERSON COUNTY LINE NORTHERLY 20.8 MILES TO ARSENAL STREET (Construction and construction inspection)	\$15,000,000	\$0	\$15,000,000
New York	Jefferson County	750083	RT.193 OVER I81, DECK REPLACEMENT ON BIN 1094690, TOWN OF ELLISBURG. (Scoping, preliminary design, detailed design, construction, and construction inspection))	\$2,020,000	\$224,000	\$2,244,000
New York	Broome County	950097	REHABILITATE OR REPLACE SEPTIC SYSTEM DUE TO NON-COMPLIANCE WITH DEC PERMITTING REQUIREMENTS AT THE I-81 GATEWAY REST AREA, TOWN OF KIRKWOOD (Construction and construction inspection)	\$1,015,000	\$115,000	\$1,130,000

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
New York	Broome County	950098	REPLACE TWO DEFICIENT MAINLINE STRUCTURES CARRYING I81 OVER ROUTE 990G, THE PROJECT WILL ALSO LENGTHEN CULVERTS, AND WIDEN SHOULDERS WITHIN THE PROJECT LIMITS, TOWN OF KIRKWOOD (BINS 1031161 & 1031162) (Right-of-way acquisition, right-of-way incidentals, and detailed design)	\$990,000	\$111,000	\$1,101,000
New York	Broome County	950099	REPLACE OR REHABILITATE THE 4 DEFICIENT BRIDGES THAT CARRY I81 OVER LOUGHLIN AND COLESVILLE ROADS IN THE TOWN OF KIRKWOOD, (BINS 1013111, 1013112, 1013132, 1013150) (Right-of-way acquisition, right-of-way incidentals, and detailed design)	\$723,000	\$81,000	\$804,000
New York	Broome County	950100	REPLACE 4 DEFICIENT BRIDGES: I-81 OVER RTE 11 & OVER PEASE HILL ROAD. TOWNS OF CHENANGO & BARKER. BINS 1008291, 1008292, 1031241 & 1031242. (Construction and construction inspection)	\$12,132	\$1,348	\$13,480

State	Jurisdiction	Project #	Description	Federal Funds	State, Local, and Other Funds	Total Planned Obligations
New York	Broome County	950107	IMPROVEMENTS TO THE EXISTING SEPTIC SYSTEM AT THE WHITNEY POINT REST AREA, IN THE TOWN OF LISLE, TO BRING IT INTO COMPLIANCE WITH NYSDEC'S SOON TO BE ISSUED CONSENT ORDER. (Construction and construction inspection)	\$614,000	\$68,000	\$682,000

Source: [Commonwealth of Virginia Statewide Transportation Improvement Program \(STIP\) Fiscal Constraint Demonstration for Federal Fiscal Years 2012 Through 2015](#), approved September, 2011.

[West Virginia Statewide Transportation Improvement Program 2012 – 2017](#), published October 2011.

[Maryland Consolidated Transportation Plan](#) Updated January 18, 2012

[Pennsylvania Statewide Transportation Improvement Program 2011 – 2014](#), published August 2011.

[New York Statewide Transportation Improvement Program for Federal Fiscal Years 2011 – 2014](#). Updated April 2, 2012

Notes: The 2011 - 2014 [Tennessee State Transportation Improvement Program](#) does not include any I-81 projects.

2.7 DATASETS AND STUDIES

This section provides brief summaries of studies and plans for states and MPOs located along the I-81 multimodal corridor.

Tennessee

I-40 – I-81 Corridor Feasibility Study

The Interstate 40/Interstate 81 (I-40/I-81) corridor from Bristol to Memphis was identified through the statewide planning effort as a strategic statewide corridor and several projects along the corridor are included as high priority items in the 10-Year Plan. The plan was published in August 2008.

The study found that approximately 21 miles of the 75-mile segment of the I-81 corridor should be widened by 2030 based on the results of a benefit-cost analysis. It also provided construction cost estimates for alternative routes, truck climbing lanes, interchange improvements and expanded ITS solutions.

Tennessee Rail System Plan

The Tennessee Department of Transportation (TDOT) developed a comprehensive rail plan to provide policy, procedural, and system management guidance defining a new role for the department in rail system projects. Although this plan was completed in early 2003, it is the most current data available and continues to set the official long term policy direction for Tennessee.

Tennessee Long-Range Transportation Plan

The plan, published in 2005, notes that approximately 75% of freight movement in Tennessee is by truck. Tennessee ranks 6th in the nation for the amount of cargo carried by truck, and the trucking industry employs 4% of the state's workforce.

Virginia

Virginia Multimodal Freight Study – Phase 1

The study compiled available freight information from multiple sources, filled in gaps, and reported on Virginia's entire intermodal freight transportation system. It identified current needs as well as projected future needs for each mode, for the system as a whole, and for designated multimodal corridors and subregions of interest. The Phase 1 Study primarily addressed outreach, data collection, baseline forecasting, system inventory/analysis, and freight improvement opportunities.

The report finds that the highest average truck AADT is found on I-81, followed closely by I-95 and I-77, all with averages exceeding 10,000 trucks per day. The truck percentage for I-81 is high (27 percent), as is the truck percentage for I-77 reflecting a combination of high truck volumes and lower “background” automobile traffic. Average truck volumes on I-95 are almost as high as for I-81, but the truck percentage is lower because the background traffic is so much higher, given that I-95 traverses much more densely populated areas than I-81.

The Virginia Department of Rail and Public Transportation has agreed to work with Norfolk Southern Corporation to improve the I-81 rail corridor including enhanced rail operations in the congested Manassas-Front Royal rail corridor, and an expansion of Virginia Railway Express service in the Gainesville/Haymarket area.

I-81 is a critical freight corridor for the Mid-Atlantic region, connecting the emerging Texas, Gulf Coast, and Piedmont regions with the consumer-heavy Mid-Atlantic and Northeast regions. While truck traffic is heavy in both directions, there is a greater flow of goods from south to north than from north to south.

The Study provides an understanding of the contributions that freight makes to Virginia’s economy, the benefits and costs of improving – or failing to improve – Virginia’s freight transportation system, and a “return on investment” framework for decision-making. It provides substantial, implementable recommendations and solutions for Commonwealth planning and programming, addresses the critical roles that other levels of government and the private sector can and must play, and is grounded in a comprehensive outreach effort that reaches a full range of public and private stakeholders.

Virginia Multimodal Freight Study – Phase 2

Following on the Phase 1 study, the Phase 2 study estimated costs for various projects tied to improving freight performance. It compiled information from the various modal plans including the State Rail Plan, Virginia Port Authority Master Plan, Virginia Air Transportation System Plan Update, and Virginia Department of Transportation’s Six-Year Program to assess total programmed near term estimates for all the modes and the share that would be borne by the State of Virginia. It also organized the information and proposed solutions according to the 11 multimodal freight corridors and 4 subregions in the Commonwealth.

Ten near-term and ten longer-term projects identified in the study were related to the I-81 corridor. The total cost of implementing the near-term projects was estimated to be \$231.4 million while the total cost of the potential longer-term projects was \$1.1 billion. These projects included constructing truck climbing lanes on I-81 and rail improvements to the Heartland and Crescent Corridors, among others. The study estimated that in the Virginia portion of I-81, nearly 78% of truck tonnage is through traffic, therefore significant potential for long

term mode shift may be possible. The study also examined issues related to mitigating the impact of high truck traffic on I-81 such as increasing the number of truck parking spaces along the corridor.

Virginia Rail Plan

At the time of this report, the 2012 Virginia Rail Plan is being developed. The Virginia Rail Plan is updated every four years and serves as one of the modal plans that will be incorporated into the Commonwealth's statewide long-range multimodal transportation plan, VTrans2035. The total rail needs identified provide the foundation for a six year funding plan. The 2012 plan will assess the Commonwealth's needs for both passenger and freight rail through 2040. The Commonwealth provides funding support for those rail projects having Virginia public benefits through several mechanisms including the Rail Enhancement Fund, Rail Industrial Access Grants, Rail Preservation Grants, and the Intercity Passenger Rail Operating and Capital Fund.⁴

The report notes that the rail tonnage that has both an origin and a destination outside of Virginia and passes through Virginia mirrors that of trucking, with a heavy percentage of through traffic, although the major direction of through truck traffic is north-south and the major direction of through rail traffic is east-west. For this reason, modal shift to rail is both viable and possible. The study also notes that the Crescent Corridor parallels I-81 and that the state has been working with Norfolk Southern to improve passenger rail service along the I-81 corridor through the I-81/Route 29 Intercity Passenger Rail Project.

These two projects that impact the I-81 Corridor are highlighted in the Plan. The Crescent Corridor Initiative is to improve the efficiency of freight rail shipping from New Orleans to New Jersey and remove an estimated 1.6 million trucks from the I-81 corridor by 2035. The Crescent Corridor has a Virginia project cost of \$530 million.

The second project impacting the I-81 Corridor is the I-81/Route 29 Intercity Passenger Rail Project which will help manage highway congestion along the U.S. 29, I-81, and U.S. 460 corridors by eventually removing over 53,000 passenger vehicles from the I-81 and U.S. 460 corridors. This project is estimated to cost \$300 million.

⁴ The "Intercity Passenger Rail Operating and Capital Fund was passed by the General Assembly in 2011. While no money has been appropriated to the fund yet, the legislation gave the Commonwealth Transportation Board and General Assembly the flexibility to allocate existing transportation revenues into the fund." <http://www.drpt.virginia.gov/activities/railfunding.aspx>

Feasibility Plan for Maximum Truck to Rail Diversion in Virginia's Multimodal I-81 Corridor

The study assessed the performance of the rail lines serving the I-81 corridor including the Shenandoah and Piedmont Lines with respect to train speed and number of intermodal and non-intermodal trains per day. The study also assessed the number of divertible and non-divertible trucks per day by examining origin and destination (O/D) patterns, and commodity patterns. The study found that fuel price was an important driver of mode switch but that increases in fuel price alone would not likely be a decisive factor for total rail market share. The findings and recommendations of the study were largely consistent with the I-81 Tier I EIS.

I-81 Corridor Improvement Studies- Tier 2

In 2011, the Virginia Department of Transportation (VDOT) completed a Tier 2 Environment Assessment of the section of I-81 that overlaps with Interstate 77. The study followed a Tier 1 Environmental Impact Statement (2007) which identified the I-77 overlap as one of eight sections of independent utility along the entire Virginia section of I-81. The study concluded its evaluation of 16 alternatives by carrying two build alternatives in addition to the no-build alternative for detailed evaluation. By resolution on May 16, 2012, the Virginia Commonwealth Transportation Board (CTB) selected the alternative that widened the existing I-81/I-77 overlap as the preferred alternative. VDOT is currently studying short range improvements to address operational issues at the northern I-81/I-77 interchange due to seasonal traffic conditions.

VDOT has also recently initiated a second Tier 2 environmental study on another section of independent utility, located between Christiansburg (Exit 118) and Roanoke (Exit 143). The widening concept that will advance into the Tier 2 environmental study is the addition of two general purpose highway lanes on I-81 in each direction adjacent to the existing lanes to address future traffic demands. The study is expected to take two years to complete.

VTrans2035

The VTrans2035 is an update of the previously completed VTrans2025. While the final report has not yet been published the executive summary is available. The Secretary of Transportation's Office, through the Office of Intermodal Planning and Investment, led the development of VTrans2035 that involved the following five state transportation agencies:

- Department of Aviation
- Department of Motor Vehicles
- Department of Rail and Public Transportation
- Virginia Port Authority

- Department of Transportation

The plan calls on the Department to develop master plans for needs of Corridors of Statewide Significance (CoSS). There are 11 existing CoSS throughout Virginia. In the future, some may be added or deleted. The purpose of the CoSS plans is to provide a multimodal statewide perspective to guide localities in land use and transportation planning.

2035 Virginia Surface Transportation Plan

The 2035 Virginia Surface Transportation Plan represents the first time VDOT and the Department of Rail and Public Transportation (DRPT) have organized multimodal proposals into a single plan. The plan provides information for potential long-term project development and investment based on the goals identified in VTrans2035, Virginia's statewide multimodal transportation policy plan.

The plan identifies investment priorities which include freight rail along I-81 and provides estimated costs of addressing these priorities. It projects employment growth along the I-81 corridor that will impact future traffic demand. Furthermore, it uses a measure called "percent decrease in peak hour speed" to convey the likely impact of congestion on traffic flow through key portions of the I-81 corridor.

Blacksburg/Christiansburg/Montgomery Area Metropolitan Planning Organization MPO Freight Study

This freight study was developed by the New River Valley Planning District Commission for the Blacksburg/Christiansburg/Montgomery Area MPO. It provides an overview of inbound and outbound freight loads and freight value (all modes) in the Montgomery County, VA area based on 2004 Global Insight TRANSEARCH data. It also provides analysis of freight volumes and commodities by mode (highway, rail, and air) and summarizes the result of a survey of area freight users. The survey results highlighted the need for increased road capacity for trucked freight, including expansion of I-81, the primary access route for freight into and out of the region.

Roanoke Valley Area Metropolitan Planning Organization (MPO) 2035 Long Range Transportation Plan

This document is the financially constrained long range plan developed to guide investment of public funds in multimodal transportation facilities. The plan is updated every 5 years, and may be amended as a result of changes in projected Federal, state and local funding, or other significant studies/plans. The plan was approved June 23, 2011.

The study notes that trucks and other traffic along the I-81 corridor will likely increase with the construction of an intermodal center in Elliston and the expansion of Virginia Tech's Corporate Research Center in Blacksburg. The plan

identifies some “Fast Action” projects that could provide immediate benefits. These include improved highway signs on I-81 and I-581. These would include signs identifying the location of major industrial destinations. The need for this project was identified through shipper interviews. The study indicated that construction of the proposed I-73 corridor would take much of the congestion off I-81.

Win Fred MPO 2035 Transportation Plan

This document is the financially constrained long range plan for the Winchester – Frederick County area of northwestern Virginia. The Win Fred MPO held its first meeting in early 2003 after designation as an urbanized area by the U.S. Census Bureau in 2002. The plan notes that the I-81 corridor is vital to northwestern Virginia and that many businesses in the region are there because of the easy access to I-81. Three I-81 interchange improvement projects are included in the 2035 Plan.

West Virginia

West Virginia Multimodal Statewide Transportation Plan

The statewide transportation plan was completed in 2009. It evaluated both a constrained and a financially unconstrained comprehensive plan and compared cost elements for each. It budgeted \$463 million annually for highways and \$101 million annually for bridges. The plan spotlights the projected growth of Martinsburg, which will place additional strain on I-81.

Direction 2035

Direction 2035 is the Hagerstown/Eastern Panhandle Metropolitan Planning Organization’s (HEPMPO) Long Range Transportation Plan update. HEPMPPO covers both the West Virginia and Maryland portion of I-81 and is described in the Maryland section below.

Maryland

Maryland Statewide Freight Plan

The *Maryland Statewide Freight Plan* provides a comprehensive overview of the State’s current and long-range freight system performance and outlines the public and private investments and policies needed to ensure the efficient movement of freight. This document serves as an input to the *Maryland Transportation Plan* and represents the culmination of data analysis and outreach efforts to identify freight policies and both public and private project needs and solutions. It was published in September 2009.

For the Maryland portion of the corridor, the study notes that in 2006, through trips accounted for approximately 97 percent of total truck tonnage on I-81 compared with 57 percent of total truck tonnage on I-95.

2009 Maryland Transportation Plan

The Maryland Transportation Plan (MTP) is a 20-year vision for transportation in Maryland. The MTP outlines the State's transportation policies and priorities and helps guide statewide investment decisions across all methods of transportation. The MTP is one component of the annual State Report on Transportation, which also includes the Consolidated Transportation Program (CTP) and the Attainment Report (AR).

The Maryland Department of Transportation sets forth strategic goals and objective to guide its investment decisions. Future decisions on investment in the I-81 corridor will be guided in large part by whether this investment is consistent with the state's transportation goals and performance metrics. Freight Demand and Infrastructure Capacity is identified as one of six critical issues facing the state. At present MDOT is working with private railroads and Federal partners to identify potential improvements to the freight rail system in Maryland.

Maryland State Highway Administration (SHA) and Maryland Transportation Authority (MDTA) Freight Implementation Plan

The Maryland State Highway Administration (SHA) and Maryland Transportation Authority (MDTA) Freight Implementation Plan serves as a guide for planning and project development and provides direction for future transportation investments to enhance the safe and efficient movement of commercial vehicle freight. This document includes candidate short term highway improvements that will impact freight mobility, and specific highway freight projects to inform the state's long range planning efforts.

Direction 2035

Direction 2035 is the Hagerstown/Eastern Panhandle Metropolitan Planning Organization's (HEPMPO) Long Range Transportation Plan update. It projects that all major freight routes, except for US 40, are anticipated to double in freight traffic by 2035. The constrained plan funds only 12% of the needs in Maryland and West Virginia based on current revenue projections.

Pennsylvania

Pennsylvania Mobility Plan

Pennsylvania's long-range statewide transportation plan is known as the Pennsylvania Mobility Plan. The Plan sets Pennsylvania's transportation direction through 2030. The Pennsylvania Department of Transportation (PennDOT) led development of the plan with a 75-member stakeholder

development team. The two-year plan development process concluded in fall 2006.

The plan notes that the principal threat to transportation mobility in Pennsylvania comes not from congestion, due to the state's low population growth rate, but rather from the decreased purchasing power of traditional financing tools. It notes that intermodal freight movements have overtaken coal as the rail industry's top revenue business within Pennsylvania. Thus, facilitation of intermodal rail can be expected to become a priority for the Department in the future.

Pennsylvania Intercity Passenger and Freight Rail Plan

The Pennsylvania Intercity Passenger and Freight Rail Plan provides a vision for Pennsylvania's future rail system and establishes a "framework for federal and state rail investments within the Commonwealth, ultimately resulting in a system that supports sustainable, livable, thriving communities." The Plan looks at the entire rail system in the Commonwealth and identifies the top passenger and freight issues by rail line category (major lines, regional segments, and local connections). The Plan also identifies eight major goals and priority freight rail and intercity passenger rail corridors. The I-81 freight rail corridor is identified as a priority and encompasses part of Norfolk Southern's Crescent Corridor. The Plan notes that while the Crescent Corridor in Pennsylvania is double stack cleared and 286k compliant, there are still needs for track upgrades and speed improvements as well as additional yard capacity.

HATS 2035 Regional Long Range Transportation Plan

This report is the regional long range plan for the Harrisburg region. The plan calls for increased accessibility and mobility of people and for freight. It identifies a series of I-81 corridor projects that equal \$1.1 billion. Completion of the entire I-83 Master Plan and each of the I-81 Corridor Plan projects totals \$2.5 billion.

Lackawanna - Luzerne Regional Plan

The long-range transportation plan was passed in 2011. Located in northeastern Pennsylvania, Lackawanna and Luzerne Counties are comprised of 116 municipalities with a combined population of over half a million people. The comprehensive plan and the long-range transportation plan for Lackawanna and Luzerne counties have been combined and together are known as the Lackawanna-Luzerne Regional Plan. The plan reveals that most of the industrial land in the region is concentrated along the I-81 corridor.

New York

Binghamton Regional Freight Study

The intent of this study is to help the MPO, the New York State Department of Transportation (NYSDOT), and their partners better understand current and future freight movements to and through Greater Binghamton, and how to best serve the needs of local businesses and encourage future economic development. The study examines all modes of surface freight transportation.

Located at the intersection of I-81, I-88, and the NY 17/I-86 Southern Tier Expressway corridor, Binghamton lies about 80-miles equidistant between the major east/west routes of I-90 and I-80. Binghamton also is home to rail connections for Canadian Pacific (CP), Norfolk Southern, and New York Susquehanna and Western Rail (NYSW). Through the NYSW line, Binghamton area freight has an easy connection with the CSX line in Syracuse.

Because Binghamton sits at a confluence of highway and rail routes, it is strongly connected to neighboring regions. However, Binghamton must rely on intermodal facilities in neighboring regions to connect to global markets. Tied to Eastern Seaboard cities via I-88 and I-81, and to the Midwest via I-86/NY 17, the Binghamton region has emerged as a popular location for the logistics, warehousing, and distribution industries. Although distribution, construction, tourism, and services are becoming larger parts of the Binghamton area's economy, the region's economic legacy remains tied to manufacturing. The Study, completed in 2008, specifically identifies a need for capacity expansion on I-81 as a requisite for future long term growth.

The I-81 Challenge

The I-81 Challenge is being led by two entities, the New York State Department of Transportation and the Syracuse Metropolitan Transportation Council (SMTC), the region's metropolitan planning organization (MPO). Together, these two entities are engaging the community in identifying options for improving the I-81 corridor, particularly the elevated sections of the highway in downtown Syracuse.

The initiative was launched in 2009. Specific issues examined include the rehabilitation of the viaduct section of I-81 including options to rebuild, remove or replace the viaduct. A series of public involvement workshops was held. Major issues noted by the attendees were:

- The need for a connection from I-81 S to I-690 W and I-690 E to I-81 N;
- Congestion and safety concerns through the current I-690/I-81 interchange;
- Dangerous merges and ramps;
- Traffic congestion on local streets and the viaduct;
- Bike and pedestrian access and safety concerns under the viaduct; and

- Local access to downtown Syracuse from I-81.

Strategies for a New Age: New York State's Transportation Plan for 2030

This report is the State of New York's comprehensive statewide transportation master plan.

The plan identifies improvements to the transportation system along the northern tier of New York State between I-81 and I-87 that are intended to address the access and mobility needs and economic development opportunities identified in the 2002 North Country Transportation Study.

The report also found that construction of the Fort Drum Connector will provide a faster, more efficient connection from Interstate 81 to a growing military base in Northern New York State.

Transportation Tomorrow 2035

This long range transportation plan was adopted by the Binghamton Metropolitan Transportation Study. It found that even though the population of the city of Binghamton has been steadily falling, sprawl has been increasing due to greater percentages of the total regional population moving out of the city of Binghamton and into suburban communities. This sprawl without growth results in more infrastructure to maintain in terms of roads and utilities without a concurrent increase in the tax base to support it. The report shows that an ITS system is planned to improve travel information and travel time reliability on major corridors including I-81.

Long Range Transportation Plan 2011 Update (Syracuse)

The document is a blueprint to guide the region for the next 20 years based on projections of future traffic growth and financial projections. The SMTTC has produced five updates since the original plan was published in 1995. The updates are intended to be used in conjunction with the 1995 plan.

The plan highlights the fact that I-81 intersects the NYS thruway north of the City of Syracuse and that it is also serviced by the I-481 bypass. Many of the region's largest employers are located in Onondaga County. These include freight interests such as Wegman's Food and Lockheed Martin.

Table 2.21 below lists the studies described above by state, date published, and base plus forecast year (if applicable). The study titles are hyperlinked to their respective web site locations.

Table 2.3 Study Matrix by State

Studies and Plans	Tennessee	Virginia	West Virginia	Maryland	Pennsylvania	New York
State Freight Studies						
Title	<u>I-40 / I-81 Corridor Feasibility Study</u>	<u>Virginia Multimodal Freight Study – Phase 1</u>		<u>Maryland Statewide Freight Plan</u>		
Year	2007	2008		2009		
Title		<u>Virginia Multimodal Freight Study – Phase 2</u>				
Year		2010				
Regional Freight Studies						
Region		Montgomery County, VA area				Binghamton
Title		<u>Blacksburg/ Christiansburg/ Montgomery Area Metropolitan Planning Organization MPO Freight Study</u>				<u>Binghamton Regional Freight Study</u>
Year		2008				2008

Studies and Plans	Tennessee	Virginia	West Virginia	Maryland	Pennsylvania	New York
Other Studies						
Title	<u>Tennessee Rail System Plan</u>	<u>Virginia State Rail Plan – 2008 Update</u>			<u>Pennsylvania Intercity Passenger and Freight Rail Plan</u>	<u>New York State Rail Plan</u>
Year	2003	2008			2010	2009
Title		<u>Feasibility Plan for Maximum Truck to Rail Diversion in Virginia's I-81 Corridor</u>				<u>The I-81 Challenge</u>
Year		2010				ongoing
Title		<u>I-81 Corridor Improvement Study Tier 2 – I-77/I-81 Overlap</u>				
Year		2011				
		<u>http://www.virginiainterstates.org/i81corridor_study.asp</u>				

Studies and Plans	Tennessee	Virginia	West Virginia	Maryland	Pennsylvania	New York
State LRTPs						
Title	<u>Tennessee Long Range Transportation Plan</u>	<u>VTrans2035 2035 Virginia Surface Transportation Plan</u>	<u>West Virginia Multi-Modal Statewide Transportation Plan</u>	<u>2009 Maryland Transportation Plan</u>	<u>Pennsylvania Mobility Plan</u>	<u>Strategies for a New Age: New York State's Transportation Plan for 2030</u>
Revised Year / Forecast Year	2005 / 2025	2010 / 2035	2010 / 2034	2009 / 2035	2006 / 2030	2006 / 2030
Regional LRTP #1						
Region		Roanoke Valley	Hagerstown / Eastern Panhandle	Hagerstown / Eastern Panhandle	Harrisburg	Binghamton
Title		<u>Roanoke Valley Area Metropolitan Planning Organization (MPO) 2035 Long Range Transportation Plan</u>	<u>Direction 2035</u>	<u>Direction 2035</u>	<u>HATS 2035 Regional Long Range Transportation Plan</u>	<u>Transportation Tomorrow 2035</u>
Revised Year / Forecast Year		2011 / 2035	2010 / 2035	2010 / 2035	2010 / 2035	2010 / 2035

Studies and Plans	Tennessee	Virginia	West Virginia	Maryland	Pennsylvania	New York
Regional LRTP #2						
<i>Region</i>		Winchester / Frederick County			Scranton / Wilkes Barre	Syracuse
<i>Title</i>		Win-Fred MPO 2035 Transportation Plan			Lackawanna – Luzerne Regional Plan	Long Range Transportation Plan 2011 Update
<i>Revised Year / Forecast Year</i>		2012 / 2035			2011 / 2035	2011 / 2035

Source: Consolidation of web searches and information provided by the I-81 states.

3.0 Data Gaps

Data from Federal agencies is readily available, has few gaps, and is ideal for multi-state corridor analysis because it is standardized and consistent across jurisdictions. Data at the state level varies in quantity, in quality, and in the way it is organized. Many states, however, do collect and maintain similar types of data. Some states post large quantities of data on their web sites, while others may track the data but keep it in-house or provide it upon request. Data at the regional, county, and city level vary widely and given the length of the I-81 corridor, obtaining consistent data from such a large number of jurisdictions is difficult if not impossible and often requires substantial time and resource investments to gather. Data from private entities such as railroads, trucking firms, distribution center operators, etc. is often considered proprietary and therefore difficult to collect and use. Large studies often devote considerable portions of their total budget to the collection of such data through outreach activities.

While a wealth of data was collected during this effort, some gaps remain. These are organized in the following categories:

Demand Data

GIS layers of Annual Average Daily and Truck Percentage were generally provided. The most recent HPMS data was collected, but it is somewhat dated (2008).

Supply Data

Roadway supply data is good (number of lanes, roadway condition, bridge condition, etc.). Rail supply data is less good. Obtaining accurate GIS layers for terminal locations is generally not possible. For the rail intermodal terminals shown in Figure 2.7, for example, significant time was spent reviewing railroad web sites and annual reports to find each terminal address and geocode it into a GIS shapefile.⁵ This was necessary because the National Transportation Atlas Database (NTAD) shapefile does not accurately represent terminal location and ownership.

Distribution Center Data

Major distribution center size and location data (GIS shapefile) are currently not available for Tennessee and Pennsylvania. New York provided the information

⁵ This shapefile is included in the CD-ROM for the participating states.

needed to create a shapefile for the major DC's along I-81. Maryland, West Virginia, and Virginia provided shapefile data. In addition to DC center data several states also provided shapefile data on industrial buildings. These data typically include a wealth of detail on utilities, taxes, and building characteristics and are likely used to support economic development efforts.

Demographic Data

While the U.S. Census Bureau and the Bureau of Labor Statistics provide consistent employment data, they are often suppressed for specific North American Industry Classification System (NAICS) codes due to privacy concerns. It is often helpful to have complete NAICS data for understanding the role of goods movement industries, freight-related industries, and freight-dependent industries. Most states did not provide unsuppressed employment data for this effort.

Table 3.1 below summarizes the data collected to date for this study.⁶

⁶ Check marks indicate data has been collected.

Table 3.1 Data Collected

Datasets	Tennessee	Virginia	West Virginia	Maryland	Pennsylvania	New York
Demographic Data						
<i>Population (US Census)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Employment (US Census)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Employment - NAICS⁷ and County Breakdown (States)</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Supply Data (roadway)						
<i>Number of Lanes (HPMS⁸)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Roadway Condition (HPMS)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Bridge Condition</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Demand Data – (roadway)						
<i>AADT (mappable State data)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>AADTT (mappable State data)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>AADT (HPMS – universal)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>AADTT (HPMS – sample)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Truck Tonnage (FAF)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Truck Commodity / O:D⁹ (FAF)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

⁷ NAICS – North American Industry Classification System

⁸ HPMS – Highway Performance Monitoring System

⁹ O:D – Origin-Destination

Datasets	Tennessee	Virginia	West Virginia	Maryland	Pennsylvania	New York
<i>Truck Units (FAF calculated)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Truck Survey Data</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety Data – (roadway)						
<i>CMV¹⁰ Fatal Crashes</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Supply Data – (rail)						
<i>Rail Network Shapefiles</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Demand Data – (rail)						
<i>Rail system data (FRA¹¹ / BTS¹²)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Rail Tonnage (FAF)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Rail Commodity / O:D (FAF)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Safety Data – (rail)						
<i>At-Grade Fatalities</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Distribution Centers						
<i>Location and Size</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Source: Various web sites and emailed files compiled by Cambridge Systematics

¹⁰ CMV – Commercial Motor Vehicle

¹¹ FRA = Federal Railroad Administration

¹² BTS – Bureau of Transportation Statistics

4.0 Example FAF³ Analysis

The Freight Analysis Framework (FAF) integrates data from a variety of sources to create a comprehensive picture of freight movement among states and major metropolitan areas by all modes of transportation. The FAF³ dataset allows for detailed analysis of freight flows at select links in the transportation network. Results of this “select link analysis” for two counties on the I-81 corridor are shown in this chapter.¹³

4.1 OVERVIEW OF ANALYSIS

The basic outline of the analysis performed is:

1. Organize the disaggregated FAF³ data into analysis zones (see Table 4.1).
2. Make a model run to assign flows to the FAF³ network.
3. Convert annual tons to daily trucks using commodity specific factors.
4. Analyze the flows in two counties on the I-81 corridor.¹⁴
5. Calculate the direction (inbound, outbound, intrastate, and through) for the flows within the selected counties.
6. Calculate the origins and destinations of the flows within the selected counties.
7. Determine the composition of commodities hauled by the trucks moving on I-81 within the selected counties.

¹³ The FAF³ data product is organized into 131 analysis regions that are comprised of 74 metropolitan areas, 33 regions made up of state remainders, and 16 regions that are entire states (with no metropolitan areas). Cambridge Systematics has disaggregated this data down to the county level and this disaggregated data was used for the analysis.

¹⁴ Botetourt County, VA and Schuylkill County, PA were selected for this analysis because I-81 does not interchange with any other major interstates within them. They were also selected because they are near the midpoint of I-81 within their respective States.

Table 4.1 FAF Analysis Zones

Analysis Zone	Jurisdictions Included
Tennessee	TN
Virginia	VA
West Virginia	WV
Maryland	MD
Pennsylvania	PA
New York	NY
Delaware	DE
New Jersey	NJ
District of Columbia	DC
Southeast	FL, GA, SC, NC
Deep South	AL, MS
South Central	OK, TX, AR, LA
New England	CT, ME, MA, NH, RI, VT
East North Central	IL, IN, KY, MI, OH, WI
West North Central	IA, KS, MN, MO, NE, ND, SD
Mountain	AZ, CO, ID, MT, NM, NV, UT, WY
Pacific	AK, CA, HI, OR, WA
Mexico	Mexico
Eastern Canada	NB, NL, NS, NU, ON, PE, QC
Western Canada	AB, BC, MB, NT, SK, YT

Source: Cambridge Systematics

FAF3 reports annual tonnage and dollar valued freight flows using the same 43 2-digit Standard Classification of Transported Goods (SCTG) codes used by the 2007 U.S. Commodity Flow Survey (CFS) (see Table 4.2).

Table 4.2 Standard Classification of Transported Goods (SCTG) Codes

SCTG Code	Description	SCTG Code	Description
01	Animals and Fish (live)	22	Fertilizers
02	Cereal Grains (includes seeds)	23	Other Chemical Products and Preparations
03	Agricultural Products (excludes Animal Feed, Cereal Grains, and Forage Products)	24	Plastics and Rubber
04	Animal Feed, Eggs, Honey, and Other Products of Animal Origin	25	Logs and Other Wood in the Rough

SCTG Code	Description	SCTG Code	Description
05	Meat, Poultry, Fish, Seafood, and Their Preparations	26	Wood Products
06	Milled Grain Products and Preparations, and Bakery Products	27	Pulp, Newsprint, Paper, and Paperboard
07	Other Prepared Foodstuffs, Fats, and Oils	28	Paper or Paperboard Articles
08	Alcoholic Beverages and Denatured Alcohol	29	Printed Products
09	Tobacco Products	30	Textiles, Leather, and Articles of Textiles or Leather
10	Monumental or Building Stone	31	Non-Metallic Mineral Products
11	Natural Sands	32	Base Metal in Primary or Semi-Finished Forms and in Finished Basic Shapes
12	Gravel and Crushed Stone (excludes Dolomite and Slate)	33	Articles of Base Metal
13	Other Non-Metallic Minerals not elsewhere classified	34	Machinery
14	Metallic Ores and Concentrates	35	Electronic and Other Electrical Equipment and Components, and Office Equipment
15	Coal	36	Motorized and Other Vehicles (includes parts)
16	Crude Petroleum	37	Transportation Equipment, not elsewhere classified
17	Gasoline, Aviation Turbine Fuel, and Ethanol (includes Kerosene, and Fuel Alcohols)	38	Precision Instruments and Apparatus
18	Fuel Oils (includes Diesel, Bunker C, and Biodiesel)	39	Furniture, Mattresses, and Mattress Supports, Lamps, Lighting Fittings, and Illuminated Signs
19	Other Coal and Petroleum Products, not elsewhere classified	40	Miscellaneous Manufactured Products
20	Basic Chemicals	41	Waste and Scrap (excludes of agriculture or food)
21	Pharmaceutical Products	43	Mixed Freight
22	Fertilizers		

Source: U.S. Department of Transportation Research and Innovative Technology Division and U.S. Census Bureau

4.2 BOTETOURT COUNTY, VIRGINIA

The FAF³ analysis shows that 48 percent of all trucks moving on I-81 in Botetourt County are passing through the state of Virginia. While just under 30 percent are moving from an origin in Virginia to a destination in Virginia. The remaining tonnage is split between goods moving inbound to Virginia (12 percent) and outbound from Virginia (10 percent). This is illustrated in Table 4.3.

Table 4.3 Direction of I-81 Truck Traffic – Botetourt County, VA

Direction	Average Daily Trucks	Share of Total
Inbound to Virginia	955.0	12.1%
Outbound from Virginia	805.3	10.2%
Intrastate	2,347.9	29.7%
Through Virginia	3,798.7	48.0%
Total	7,907.0	100.0%

Source: FHWA FAF³ data analyzed by Cambridge Systematics

Tables 4.4 and 4.5 show the top destinations and the top origins for the trucks moving on I-81 through Botetourt County.

Table 4.4 Top Destinations for I-81 Truck Traffic – Botetourt County, VA

Analysis Zone	Average Daily Trucks	Share of Total
Virginia	3,153.2	39.9%
New York	1,051.6	13.3%
South Central	919.9	11.6%
New England	420.2	5.3%
Southeast	412.8	5.2%
All Others	1,949.3	24.7%
Total	7,907.0	100.0%

Source: FHWA FAF³ data analyzed by Cambridge Systematics

Table 4.5 Top Origins for I-81 Truck Traffic – Botetourt County, VA

Analysis Zone	Average Daily Trucks	Share of Total
Virginia	3,303.0	41.8%
South Central	2,025.0	25.6%
Pennsylvania	399.0	5.0%
New York	389.8	4.9%
Tennessee	321.8	4.1%
All Others	1,468.4	23.6%
Total	7,907.0	100.0%

Source: FHWA FAF³ data analyzed by Cambridge Systematics

Table 4.6 shows the average composition of the freight moving on I-81 in Botetourt County. The top five commodities are cereal grains, gravel and crushed stone, other prepared foodstuffs, base metals, and basic chemicals.

Table 4.6 Commodity Breakdown of I-81 Truck Traffic – Botetourt County, Virginia

SCTG Code	Description	Share of Total	SCTG Code	Description	Share of Total
02	Cereal Grains (includes seeds)	9.58%	34	Machinery	1.53%
12	Gravel and Crushed Stone (excludes Dolomite and Slate)	8.11%	04	Animal Feed, Eggs, Honey, and Other Products of Animal Origin	1.47%
07	Other Prepared Foodstuffs, Fats, and Oils	6.53%	36	Motorized and Other Vehicles (includes parts)	1.39%
32	Base Metal in Primary or Semi-Finished Forms and in Finished Basic Shapes	6.46%	40	Miscellaneous Manufactured Products	1.24%
20	Basic Chemicals	6.30%	29	Printed Products	1.20%
41	Waste and Scrap (excludes of agriculture or food)	6.18%	35	Electronic and Other Electrical Equipment and Components, and Office Equipment	1.19%
19	Other Coal and Petroleum Products, not elsewhere classified	4.98%	39	Furniture, Mattresses, and Mattress Supports, Lamps, Lighting Fittings, and Illuminated Signs	0.97%
26	Wood Products	4.52%	28	Paper or Paperboard Articles	0.97%
24	Plastics and Rubber	4.29%	01	Animals and Fish (live)	0.93%

SCTG Code	Description	Share of Total	SCTG Code	Description	Share of Total
33	Articles of Base Metal	3.65%	15	Coal	0.80%
31	Non-Metallic Mineral Products	3.61%	18	Fuel Oils (includes Diesel, Bunker C, and Biodiesel)	0.64%
25	Logs and Other Wood in the Rough	3.57%	17	Gasoline, Aviation Turbine Fuel, and Ethanol (includes Kerosene, and Fuel Alcohols)	0.53%
03	Agricultural Products (excludes Animal Feed, Cereal Grains, and Forage Products)	2.44%	22	Fertilizers	0.49%
27	Pulp, Newsprint, Paper, and Paperboard	2.40%	11	Natural Sands	0.48%
43	Mixed Freight	2.26%	21	Pharmaceutical Products	0.24%
06	Milled Grain Products and Preparations, and Bakery Products	2.14%	14	Metallic Ores and Concentrates	0.14%
30	Textiles, Leather, and Articles of Textiles or Leather	1.95%	37	Transportation Equipment, not elsewhere classified	0.10%
23	Other Chemical Products and Preparations	1.69%	10	Monumental or Building Stone	0.09%
13	Other Non-Metallic Minerals not elsewhere classified	1.69%	38	Precision Instruments and Apparatus	0.03%
08	Alcoholic Beverages and Denatured Alcohol	1.62%	09	Tobacco Products	0.02%
05	Meat, Poultry, Fish, Seafood, and Their Preparations	1.55%	16	Crude Petroleum	0.02%

Source: FHWA FAF³ data analyzed by Cambridge Systematics

4.3 SCHUYLKILL COUNTY, PENNSYLVANIA

The FAF³ analysis shows that over 70 percent of all trucks moving on I-81 in Schuylkill County are moving from an origin in Pennsylvania to a destination in Pennsylvania. Just over 7 percent are passing through Pennsylvania. The remaining tonnage is split between goods moving inbound to Pennsylvania (11 percent) and outbound from Pennsylvania (11 percent). This is illustrated in Table 4.7.

Table 4.7 Direction of I-81 Truck Traffic – Schuylkill County, Pennsylvania

Direction	Average Daily Trucks	Share of Total
Inbound to Pennsylvania	441.8	11.0%
Outbound from Pennsylvania	434.2	10.8%
Intrastate	2,834.5	70.7%
Through Pennsylvania	296.2	7.4%
Total	4,006.7	100.0%

Source: FHWA FAF³ data analyzed by Cambridge Systematics

Tables 4.8 and 4.9 show the top destinations and the top origins for the trucks moving on I-81 through Schuylkill County.

Table 4.8 Top Destinations for I-81 Truck Traffic – Schuylkill County, Pennsylvania

Analysis Zone	Average Daily Trucks	Share of Total
Pennsylvania	3,268.7	81.6%
New York	272.5	6.8%
Maryland	98.6	2.5%
Virginia	85.4	2.1%
Southeast	78.9	2.0%
All Others	202.6	5.0%
Total	4,006.7	100.0%

Source: FHWA FAF³ data analyzed by Cambridge Systematics

Table 4.9 Top Origins for I-81 Truck Traffic – Schuylkill County, Pennsylvania

Analysis Zone	Average Daily Trucks	Share of Total
Pennsylvania	3,276.2	81.8%
New York	245.2	6.1%
Maryland	120.4	3.0%
Southeast	79.7	2.0%
Virginia	69.0	1.7%
All Others	216.2	5.4%
Total	4,006.7	100.0%

Source: FHWA FAF³ data analyzed by Cambridge Systematics

Table 4.10 shows the average composition of the freight moving on I-81 in Schuylkill County. The top five commodities are gravel and crushed stone, waste and scrap, other prepared foodstuffs, cereal grains, and other non-metallic minerals.

Table 4.10 Commodity Breakdown of I-81 Truck Traffic – Schuylkill County, Pennsylvania

SCTG Code	Description	Share of Total	SCTG Code	Description	Share of Total
12	Gravel and Crushed Stone (excludes Dolomite and Slate)	15.79%	27	Pulp, Newsprint, Paper, and Paperboard	1.31%
41	Waste and Scrap (excludes of agriculture or food)	8.59%	05	Meat, Poultry, Fish, Seafood, and Their Preparations	1.24%
07	Other Prepared Foodstuffs, Fats, and Oils	7.84%	19	Other Coal and Petroleum Products, not elsewhere classified	1.10%
02	Cereal Grains (includes seeds)	6.87%	34	Machinery	1.07%
13	Other Non-Metallic Minerals not elsewhere classified	6.84%	23	Other Chemical Products and Preparations	1.02%
15	Coal	4.31%	40	Miscellaneous Manufactured Products	0.96%
11	Natural Sands	3.92%	30	Textiles, Leather, and Articles of Textiles or Leather	0.93%
03	Agricultural Products (excludes Animal Feed, Cereal Grains, and Forage Products)	3.84%	17	Gasoline, Aviation Turbine Fuel, and Ethanol (includes Kerosene, and Fuel Alcohols)	0.85%
06	Milled Grain Products and Preparations, and Bakery Products	3.52%	01	Animals and Fish (live)	0.71%
32	Base Metal in Primary or Semi-Finished Forms and in Finished Basic Shapes	3.19%	36	Motorized and Other Vehicles (includes parts)	0.64%
26	Wood Products	2.92%	22	Fertilizers	0.51%
25	Logs and Other Wood in the Rough	2.60%	21	Pharmaceutical Products	0.49%
24	Plastics and Rubber	2.43%	18	Fuel Oils (includes Diesel, Bunker C, and Biodiesel)	0.46%
43	Mixed Freight	2.30%	35	Electronic and Other Electrical Equipment and Components, and Office Equipment	0.42%

SCTG Code	Description	Share of Total	SCTG Code	Description	Share of Total
31	Non-Metallic Mineral Products	2.23%	39	Furniture, Mattresses, and Mattress Supports, Lamps, Lighting Fittings, and Illuminated Signs	0.34%
28	Paper or Paperboard Articles	2.06%	10	Monumental or Building Stone	0.21%
04	Animal Feed, Eggs, Honey, and Other Products of Animal Origin	1.79%	14	Metallic Ores and Concentrates	0.07%
20	Basic Chemicals	1.71%	37	Transportation Equipment, not elsewhere classified	0.05%
29	Printed Products	1.69%	38	Precision Instruments and Apparatus	0.03%
33	Articles of Base Metal	1.65%	09	Tobacco Products	0.03%
08	Alcoholic Beverages and Denatured Alcohol	1.47%	16	Crude Petroleum	0.01%

Source: FHWA FAF³ data analyzed by Cambridge Systematics

5.0 Conclusion and Recommended Next Steps

This report provides a base upon which additional data can be collected, relevant studies conducted, and multistate cooperative efforts launched. The I-81 Corridor Coalition provides a natural forum for such efforts and should be utilized for that purpose. The I-81 Corridor Coalition is a “partnership comprised of local, regional, and state organizations that are all interested in sound transportation planning. The Coalition includes local governments, metropolitan planning organizations, and state transportation departments, as well as private sector and non-profit organizations. These partners are from each of the six states that the corridor runs through.”¹⁵ Collaborative efforts can also be generated through pooled fund studies similar to the one that funded this effort, however setting up the frameworks and agreements necessary may limit how frequently such efforts can be conducted.

Recommendations for further actions fall into three broad categories; 1) identifying opportunities for coordinated policy and action among the I-81 states, 2) establishing a central data and information repository and, 3) conducting additional studies of critical near-term issues.

Identify Opportunities for Coordinated Policy and Action Among the I-81 States

To set the stage for future collaboration, a review of policies among the I-81 states should be conducted. The net result of this review would be a matrix displaying the goals and strategies of each state with respect to the I-81 corridor, as well as the policies each state has regarding such critical themes as:

- Strategies for addressing congestion;
- Strategies for addressing commercial vehicle safety;
- Policies on promoting connectivity;
- Planning approaches;
- Policies on coordinating with other states on transportation issues;
- Strategies for promoting alternatives to trucking;
- Truck size and weight policies; and

¹⁵ from the I-81 Corridor Coalition Web Site <http://www.i-81coalition.org/index/>

- Approaches to working with private sector partners among others.

Establish a Central Data and Information Repository

The I-81 Corridor Coalition should lead the effort to establish a central data and information repository using data collection standards and formats developed by the Coalition. This could be either web-based or an ftp site. The repository would be populated with the information collected to date as well as the information requested, but not yet collected, from states as part of this study. The repository should be updated on a regular basis with new or updated traffic information, statewide investment plans and studies, environmental documents, and other relevant information and data as they are developed or uncovered. This effort would include the establishment of best management practices for studies and data collection along I-81 to ensure compatibility across boundaries and encourage coordination of efforts.

Conduct Additional Studies of Critical Near-Term Issues

Recommended topic areas for additional study include:

Coordinated Multistate Truck Origin-Destination Surveys

I-81 truck origin-destination surveys have been conducted within the last five years in Virginia and in Tennessee to support planning efforts within the indicated states. A coordinated multistate truck origin-destination survey effort can be designed and conducted to establish a common baseline for the entire corridor, validate and fill gaps in FAF information, and better understand truck to rail diversion opportunities. Objectives of such a coordinated survey could include: (1) characterization of the types, trip purposes, and origins and destinations of trucks using I-81; and (2) truck counts to establish baseline truck travel data.

Studies to Identify Shared Management, Investment, and Modal Strategy Opportunities

Additional studies may target freight mode shift opportunities (already studied extensively in the TN, VA, WV, MD, and southern PA portions of the corridor), safety improvements, truck parking facilities and plans, and environmental conditions along the corridor.

Studies to Identify Potential Planning Gaps or Overlaps / Inconsistencies Between Individual States' Plans and Studies

This effort may also include identification of gaps, overlaps, and inconsistencies between state and regional plans and studies.

Studies of Economic Development Potential

Economic development studies to include baseline analysis of regional, state, and multistate economic benefits of the I-81 corridor both today, and under alternative future volume and policy scenarios.

A. Appendix

A.1 STATEWIDE AND MPO LONG-RANGE PLANS

A review of the most recent Long-Range plans (LRP) for the state's and MPOs along I-81 reveals lists of projects, studies, and initiatives intended to improve freight mobility along the corridor. These are summarized in the sections below.

Tennessee

Table A.1 lists each line item related to I-81 in the Tennessee I-40/I-81 Corridor Feasibility Study and Tennessee Rail System Plan.

Table A.1 Tennessee I-40 / I-81 Corridor Feasibility Study and Tennessee Rail System Plan Line Items – I-81

Description	Region	Solution	Cost Estimate (2008 dollars)
Improve operations of I-40/I-81 interchange	Lakeway & Tri-Cities	Extend I-40 WB, I-40 EB and I-81 NB acceleration lanes 800 feet. Extend I-81 SB deceleration lane 400 feet	\$1,300,000
Lengthen ramps at I-81 rest area	Lakeway & Tri-Cities	Extend I-81 SB acceleration lane 900 feet and SB deceleration lane 700 feet	\$650,000
Improve exit ramp capacity at I-81 interchange at Exit 69	Lakeway & Tri-Cities	Provide dual right turn lane on I-81 NB off-ramp for 500 feet	\$250,000
Re-design I-81/I-26 interchange	Lakeway & Tri-Cities	Reconfigure I-81 and I-26 system cloverleaf interchange by converting two existing loop ramps to directional fly-over ramps. Improvement includes ramp modifications, culvert extension and bridge widening.	\$43,600,000
Bristol to Knoxville Rail Corridor Improvements		From Tennessee Rail System Plan: Track and signal improvements between Bristol and Knoxville.	\$399,000,000 (2002 dollars)

Source: [Tennessee I-40 / I-81 Corridor Feasibility Study](#) and [Tennessee State Rail System Plan](#)

Virginia

Table A.2 lists each line item related to I-81 in the Virginia 2035 State Highway Plan, the Virginia Statewide Rail Plan, and the Virginia Multimodal Freight Study Phase 2.

Table A.2 Virginia 2035 State Highway Plan and Virginia Statewide Rail Plan Line Items – I-81

Jurisdiction	From	To	Description	Estimated Cost (1,000)
Wytheville - Wythe	RTE I-77 NORTH	OFF RAMP TO 619	WIDENING / IMPROVEMENT – 8 LANES	\$321,037
Botetourt	RTE 220 ALT	RTE 779 Overpass	WIDENING / IMPROVEMENT – 6 LANES	\$94,065
Roanoke - Botetourt - Salem	RTE 112	RTE 220 ALT	WIDENING / IMPROVEMENT – 8 LANES	\$396,905
Roanoke-Salem	RTE 647	RTE 112	WIDENING / IMPROVEMENT – 6 LANES	\$69,590
Augusta	RTE 262	RTE 250	WIDENING / IMPROVEMENT – 6 LANES	\$81,189
Augusta	RTE 250	RTE 275	WIDENING / IMPROVEMENT – 8 LANES	\$75,802
Augusta	RTE 275	RTE 612	WIDENING / IMPROVEMENT – 6 LANES	\$48,751
Frederick	RTE 277	RTE 37	WIDENING / IMPROVEMENT – 6 LANES	\$57,664
Frederick	RTE 7	RTE 672	WIDENING / IMPROVEMENT – 6 LANES	\$156,889
Frederick - Winchester	RTE 37	RTE 7	WIDENING / IMPROVEMENT – 8 LANES	\$172,205
Harrisonburg-Rockingham	North Bridge River	RTE 11 Conn Ramp	WIDENING / IMPROVEMENT – 6 LANES	\$448,493
City of Bristol			Exit 7 - additional capacity needed on ramps and cross streets. Poor access control adjacent to on/off ramps. Limited ROW.	\$20,000
Smyth			Improve interchange at Exit 35	\$0
Smyth			Improve interchange at Exit 47	\$0
Town of Abingdon			Rural diamond interchange design at Exit 17 cannot adequately handle the current level of traffic. Significant congestion. Poor access management adjacent to on/off ramps. Interchange and cross street need to be modified and upgraded.	\$20,000
Washington			Improve interchange at Exit 19	\$0
Botetourt			Comprehensive improvements to existing Exit 150 interchange to address congestion, safety and access management problems.	\$100,000
Botetourt			Improve Troutville interchange per MPO CLRP. Cost included in widening project on I-81.	\$0
Montgomery			Improve I-81 (Route 177) interchange due to ramp deficiencies and pending development. Recommendation from Montgomery County.	\$0

Jurisdiction	From	To	Description	Estimated Cost (1,000)
Town of Christiansburg			Improve I-81 / Main St. (Route 8) interchange for operations per MPO CLRP.	\$3,000
Frederick			Replace 3 lane bridge and relocate Waverly Rd. per MPO CLRP.	\$9,300
Frederick			Construct new grade separated interchange with Rte 37 expansion per WinFred2030 CLRP	\$96,000
Frederick			Improve Interchange at Exit 310 (Route 37) as recommended in Win-Fred 2030 CLRP.	\$69,920
Frederick			Construct new grade separated interchange at I-81/Battaille Dr.	\$59,000
Frederick			Improve to directional interchange at I-81/Routes 17/50/522 as recommended in Win-Fred 2030 CLRP	\$109,000
Frederick			Improve Interchange at I-81 / Route 7 as recommended in Win-Fred 2030 CLRP.	\$49,000
Frederick			Improve interchange at I-81 / Route 11 per MPO 2030 CLRP.	\$58,000
Frederick			Ramp intersection turn lane improvements at I-81 / Route 669 interchange per 2030 CLRP.	\$700
Various			Norfolk Southern Crescent Corridor: Capacity improvements in Virginia include straightening curves, adding sidings/passing track, increasing clearance, and double tracking portions of the Piedmont, Shenandoah, Manassas, Bristol and Heartland lines.	\$530,000
Various			I-81/Route 29 Intercity Passenger Rail Project: Rail infrastructure, capacity, and station improvements and/or construction for more frequent Amtrak service to Lynchburg and Charlottesville, and expanded service to Roanoke, Bristol, and Richmond. Also includes passenger rail capacity analysis.	\$120,000

Source: [Virginia 2035 State Highway Plan](#), [Virginia Statewide Rail Plan](#), and [Virginia Multimodal Freight Study Phase 2](#)

West Virginia

Table A.3 lists each line item related to I-81 in the West Virginia Multi-Modal Statewide Transportation Plan. No specific rail projects paralleling the I-81 corridor were identified in the 2009 West Virginia State High-Speed and Intercity

Passenger Rail Plan. Note: West Virginia received a USDOT grant in 2011 to develop a State Rail Plan.

Table A.3 West Virginia Multi-Modal Statewide Transportation Plan Final Report Line Items – I-81

Project Name	Description	Project Capital Cost Less Earmarked Funds (\$000)	B/C Rating
I-81 Widening-S. Martinsburg I/C to Falling Waters	Construct 10.12 miles of additional lane in both directions	\$83,720	2.13
I-81 Widening-Falling Waters to MD Line	Construct 4.26 miles of additional lane in both directions	\$48,900	1.21
I-81 Widening-VA Line to S. Martinsburg	Construct 11.6 miles of additional lane in both directions	\$81,620	1.29

Source: [West Virginia Multi-Modal Statewide Transportation Plan – Final Report](#)

Maryland

While the Maryland Long Range Plan does not include a list of projects, one of the [Maryland Statewide Freight Plan's](#) priority highway projects is to reconstruct and widen I-81 from West Virginia to Pennsylvania. Adding a second track to Norfolk Southern's Crescent Corridor is also a high priority in the Plan.

Pennsylvania

The [Pennsylvania Long Range Plan](#) does not include a list of projects. The Pennsylvania Intercity Passenger and Freight Rail Plan provides a framework for evaluating passenger and freight rail projects and identifies the critical rail corridors (including the I-81 / Crescent Corridor), but does not list individual rail projects and costs.

New York

The [New York State Long Range Plan](#) does not include a list of projects. The [New York State Rail Plan](#) lists passenger rail projects on the CSX Mohawk Subdivision in the Syracuse area as described in table A.4 below.

Table A.4 New York State Rail Plan Line Items – I-81

Project Location	Project Description	Project Cost (\$ millions)
Mohawk Subdivision - Syracuse	This project is a set of track and signal improvements along the CSX Mohawk Subdivision in the Syracuse area. Work includes improvements at De Witt yard to remove train classification and	\$6.350

	other yard movements from the main line tracks utilized by Amtrak and through trains. Work also includes upgrades to track serving Syracuse passenger station platform.	
Syracuse	This project provides increased parking facilities for those who use passenger vehicles to access the station facilities	\$5.598
Syracuse	This project provides improved access and intermodal connection to station facilities for airport, transit, intercity bus, taxi, bicycles, and pedestrian as well as signage and roadway improvements to improve connectivity.	\$5.598
Syracuse	The first phase of this project installs a new westbound low-level platform with overhead passenger concourse and elevators. The second phase installs a new high-level platform with overhead passenger concourse and elevator, and configures the platform to allow a freight bypass track.	\$12.316
Syracuse	Completion of Park Street Bridge and modify interlockings for connection to Chicago Main Line.	\$0.000

Source: [New York State Rail Plan](#)

Lakeway Area Metropolitan Transportation Planning Organization

Table A.5 lists each item related to I-81 in the Lakeway Area MPO 2034 Long Range Transportation Plan.

Table A.5 Lakeway Area MPO Long Range Plan Line Items – I-81

Project Number	Location	Description	Estimated Cost (\$000)
48	I-81 and SR 32 (US 25E)	Exit 8 ramp rebuild	\$18,000

Source: [LAMTPO Long Range Transportation Plan](#)

Kingsport Area MPO

Table A.6 lists each line item related to I-81 in the Kingsport Area MPO 2030 Long Range Transportation Plan.

Table A.6 Kingsport Area MPO Long Range Plan Line Items – I-81

Project Number	Location	Type Project	General Improvements	Additional Information	Estimated Cost (\$000)
I-2A	Mile marker 60 to Exit 63 (TN)	Minor Reconstruction	Construct a Truck Lane to Accommodate High Volume of Truck Traffic	Add a Truck Lane to provide congestion relief	\$5,717

Project Number	Location	Type Project	General Improvements	Additional Information	Estimated Cost (\$000)
I-2B	SR36 (Fort Henry Dr) to Tri-Cities Crossing/Exit 56 (TN)	Major Reconstruction	Reconstruct to 6 lanes	Accommodates increasing traffic volume	\$17,151

Source: [Kingsport Area MPO 2030 Long Range Transportation Plan](#)

Bristol MPO

Table A.7 lists each line item related to I-81 in the Bristol MPO 2035 Long Range Transportation Plan.

Table A.7 Bristol MPO Long Range Plan Line Items – I-81

Project Number	Jurisdiction	From/At	To	Description	Cost (\$000)
T1-1	Sullivan Co., TN	Northbound off-ramp at exit 69		Widen ramp from one lane to two lanes	\$426
V1-2	Bristol, VA	Lee Hwy (US11/19) northbound off-ramp at Exit 7	Stagecoach Road	Widen Old Airport Rd from Lee Hwy to Exit 7 to add southbound right-turn lane and future median; modify intersection at Linden Dr to prevent eastbound left turns; add one lane under Exit 7 bridges; add northbound right-turn lane on Old Airport Rd leading to Exit 7 northbound on-ramp; modify traffic signals to accommodate changes	\$5,103
VR-3	Washington Co., VA	North end of existing six-lane section	Cordon line east (project extends beyond cordon)	Modify in accordance with strategy developed by VDOT	\$34,889

Source: [Bristol Urban Area Long-Range Transportation Plan Year 2035](#)

Roanoke Valley Area MPO

Table A.8 lists each line item related to I-81 in the Roanoke Valley Area CL RTP Vision List of projects.

Table A.8 Roanoke Valley Area MPO Long Range Plan Line Items – I-81

UPC	From	To	Recommended Improvement	Notes	Remaining Project Costs 2035 Dollars (\$000)
16591	Mile Post 135.9	Mile Post 138.6	widen from 4 to 8 Lanes	Project carried over from 2011 constrained list.	\$239,428
16593	Mile Post 144.5	Mile Post 147.45	widen from 4 to 8 Lanes	Project carried over from 2011 constrained list.	\$211,303
53094	Mile Post 138.6	Mile Post 140.9	widen from 4 to 8 Lanes	Project carried over from 2011 constrained list.	\$303,155
53095	Mile Post 140	Mile Post 143.1	widen from 4 to 8 Lanes	Project carried over from 2011 constrained list.	\$395,061
53096	Mile Post 143.1	Mile Post 144.5	widen from 4 to 8 Lanes	Project carried over from 2011 constrained list.	\$522,677

Source: [Roanoke Valley Area MPO CL RTP Vision List of Projects](#)

Win-Fred MPO

Table A.9 lists each line item related to I-81 in the Win-Fred¹⁶ MPO 2035 Transportation Plan.

Table A.9 [Win-Fred MPO Long Range Plan](#) Line Items – I-81

Map Project ID	Roadway Section	Vision Plan Improvement	Estimated Cost (\$000)
1	Mile Post 305-307	Widen I-81 to 6 lanes	\$18,348
2	Exit 310 (Route 37)	Widen I-81 to 6-lane section transitioning to Project #3 (Mile Post 310-313)	\$32,109
3	Exit 310-313 (Route 37; US 17/50/522)	Widen I-81 with 2-lane CD roads in both directions	\$27,522

¹⁶ Winchester-Frederick County MPO

Map Project ID	Roadway Section	Vision Plan Improvement	Estimated Cost (\$000)
4	Interchange at Exit 311/Battaile Drive Interchange on I-81	New Interchange. Project also includes: Removing existing bridge over I-81 (Papermill), Extending Battaile to new Interchange and Papermill Road, Widening existing portion of Battaile Drive to 4-lanes, and extending and widening Pleasant Valley to 4-lanes between Cedarmeade and Battaile.	\$75,000
5	Mile Post 313-317	Widen I-81 to 6 lanes and widen Senseny Road and Woodstock Lane Bridges over I-81	\$44,193
6	Mile Post 317 – 319	Widen I-81 to 6 lanes	\$17,263
7	Mile Post 319-321	Widen I-81 to 6 lanes	\$27,021
8	Mile Post 321-324	Widen I-81 to 6 lanes and widen Cedar Hill Road bridge over I-81	\$21,465
9	Interchange at Exit 307 (Route 277)	Relocate Existing Interchange to the south	\$90,382
10	Interchange at Exit 310 (Route 37S/642)	Construct Full Cloverleaf Interchange with C-D roads	\$45,000
11	Interchange at Exit 313 (US 17/50/522)	Improve Interchange. Project includes replacing existing bridge over I-81	\$41,715
12	Interchange at Exit 315 (Route 7)	Improve Interchange	\$41,715
13	Interchange at Exit 317 (US 11)	Improve Interchange including Ramp Relocation and add C-D roads between Exit 317 and new Exit 318	\$49,221
14	Interchange at Exit 318	Construct Full Cloverleaf Interchange with C-D roads to accommodate Route 37	\$13,700
15	Interchange at Exit 321 (Route 672)	Replace 2 lane bridge and relocate Waverly Rd	\$10,206
16	Interchange at Exit 323 (Route 669)	Turn lane improvements	\$1,836

Source: [Win-Fred MPO 2035 Transportation Plan](#)

Hagerstown/Eastern Panhandle MPO

Table A.10 lists each line item related to I-81 in the Hagerstown/Eastern Panhandle Long Range Multimodal Transportation Plan Update.

Table A.10 Hagerstown/Eastern Panhandle MPO Long Range Plan Line Items – I-81

County	Map ID	Project Location	Project Description	Cost (\$000)
Washington	1	Potomac River (WV State Line) to I-70	Widen to Six Lanes	\$159,211
Washington	2	I-70 to US 40	Widen to Six Lanes plus Collector/Distributor (as studied)	\$183,354
Washington	3	US 40 to PA Line	Widen to Six Lanes	\$280,521
Berkeley	4	Berkeley CL to WV 45	Widen to Six Lanes	\$241,154
Berkeley	5	Falling Waters to Potomac River	Widen to Six Lanes	\$83,826
Berkeley	109	North Martinsburg	Widen to Six Lanes	\$27,000

Source: [Hagerstown/Eastern Panhandle Long Range Multimodal Transportation Plan Update](#)

Harrisburg Area Transportation Study

Table A.11 lists each line item related to I-81 in the Harrisburg Area Transportation Study 2035 Regional Transportation Plan.

Table A.11 Harrisburg Area Long Range Plan Line Items – I-81

County	Municipality	Project Name	Description	Estimated Cost - 2010
Cumberland	Shippensburg	I-81 Widening - Segment 3	Exit 20 to Exit 44	\$496,882,876
Cumberland	Carlisle	I-81 Widening - Segment 4	Exit 44 to Exit 52 (Total = \$214,971,000)	\$35,814,816
Cumberland	Mechanicsburg	I-81 Widening - Segment 5	Exit 52 to Exit 59 (Total = \$131,330,000)	\$53,081,246
Dauphin	Harrisburg	I-81 Widening - Segment 6	Exit 70 to Exit 77 (Total = \$149,869,000)	\$125,113,810

Source: [Harrisburg Area Transportation Study 2035 Regional Transportation Plan](#)

Lebanon County MPO

Table A.12 lists each line item related to I-81 in the Lebanon County Comprehensive Plan.

Table A.12 Lebanon County MPO Long Range Plan Line Items – I-81

Improvement	Description	Status	Estimated Total Cost (\$000)	Time Frame
I-81 Preventative Maintenance, 8.0 miles	Preventative Maintenance on I-81 in Lebanon County from Dauphin County line to I-78/I-81 split	Plan Project All Phases	\$17,225	Medium

Source: [Lebanon County MPO Comprehensive Plan Revised 6/24/10](#)

Lackawanna/Luzerne MPO

Table A.13 lists each line item related to I-81 in the Lackawanna/Luzerne Regional Plan.

Table A.13 Lackawanna/Luzerne Regional Plan Line Items – I-81

County	Project ID	Project	Narrative	Estimated Cost (\$000)
Lackawanna	69345	Widen I-81 C. Scr to Davis	I-81 from Central Scranton Expressway to Davis St Widen four lanes to six lanes. Int improv at CSE, Moosic St and River St.	\$80,500
Lackawanna	6	I-81 ITS Camera - Exit 191	I-81 Viewmont, Exit 191 - Install ITS camera	\$450
Lackawanna	56	I-81 Detour/Moosic Signal Interconnection	Interconnect signals along Cedar Avenue, Pittston Avenue & Birney Avenue, Various municipalities - Improve progression & I-81 Diversion Route traffic control	\$1,500
Luzerne	182	ITS for I-81 Detours	ITS equipment for I-81 detours / adaptive green programming for signals	\$300
Lackawanna	4	I-81 Detector System - Pittston to Clarks Summit	I-81 Pittston to Clarks Summit - Detector system at each interchange (2 detectors each direction = 4 X \$30K each x 15 exits)	\$3,800
Lackawanna	5	I-81 ITS Camera - Exit 194	I-81 Clarks Summit, Exit 194 - Install ITS camera	\$500
Luzerne	203	I-81/PA 309 Interchange	I-81/PA 309 Interchange Safety Improvements - High crash rates on loop ramps and intersections; poor pavement condition	\$3,000
Luzerne	9128	I-81 Exit 170 Improvement	Safety Improvements at exit 170	\$28,079

Source: [Lackawanna/Luzerne Regional Plan](#)

Northern Tier Regional Planning and Development Commission

Table A.14 lists each line item related to I-81 in the Northern Tier Regional Planning and Development Commission Long Range Transportation Plan.

**Table A.14 Northern Tier Regional Planning and Development Commission
Long Range Transportation Plan Line Items – I-81**

County	Project Title	Estimated Cost
Susquehanna	Interchange improvement at Great Bend/Hallstead Planning Study	\$350,000
Susquehanna	Construct park and ride	\$275,000

Source: [Northern Tier Regional Planning and Development Commission Long Range Transportation Plan](#)

Binghamton Metropolitan Transportation Study

No specific I-81 projects were listed in the Long Range Transportation Plan.

Syracuse Metropolitan Transportation Council

No specific I-81 projects were listed in the Long Range Transportation Plan.