

I-81 CORRIDOR IMPROVEMENT PLAN EXECUTIVE SUMMARY



DECEMBER 3, 2018

Office of
INTERMODAL
Planning and Investment

VDOT

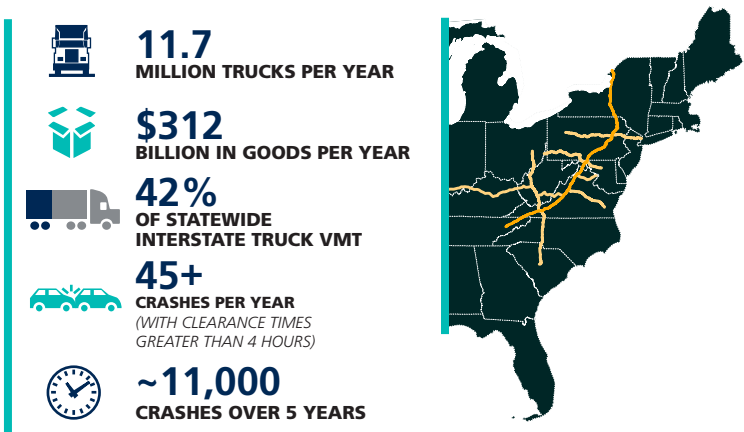
DRPT
Virginia Department of Rail and Public Transportation

I-81 Executive Summary

Overview

As a critical north-south backbone of the East Coast's freight network, the I-81 corridor is vital to the efficient movement of goods through Virginia. More than one-third of all trucks and nearly 50% of the state's value of goods are transported along this 325-mile corridor (*Transearch, 2012*). I-81 has the highest per capita truck volume in Virginia (*VDOT Traffic Monitoring System*). Within Virginia, I-81 connects with five other interstates and traverses 21 cities and towns, 13 counties, and 25 colleges and universities between the Tennessee and West Virginia border. I-81 also runs parallel to the Blue Ridge Parkway, the nation's most visited national park. See **Figure 1** for additional statistics.

Figure 1. I-81 Corridor Significance



These competing travel demands have created a corridor that is plagued by significant safety and reliability issues. There are more than 2,000 vehicle crashes annually with 26% involving heavy trucks, the highest percentage for any interstate in Virginia. The resulting travel delay is unpredictable and impacts both heavy commercial vehicle on-time performance as well as travel for passenger vehicles. For example, in an average year, there are more than 45 major crashes that take more than four hours to clear. The majority of the I-81 corridor is two lanes in each direction—when one lane is blocked there is a 65% reduction in capacity. Contributing factors to the long crash clearance times include: lack of capacity, the rolling terrain, lack of reliable detour routes, and the constrained configuration.

Why the I-81 Corridor Improvement Plan (“the Plan”) is Necessary

I-81 is the main street and key economic artery of western Virginia. Over time, the corridor has been improved to keep up with economic and travel growth. However, in the last decade, as the economy has grown, I-81 has experienced traffic growth, and as a result a degradation in the overall performance of the corridor. It is anticipated that travel will continue to increase on I-81, with truck traffic growing at a faster pace than automobile traffic. Conditions along the corridor are expected to continue to degrade, and by 2040, it is expected that there will be nearly 20 million truck trips carrying three quarters of a trillion dollars' worth of goods every year (*Transearch, 2012*).

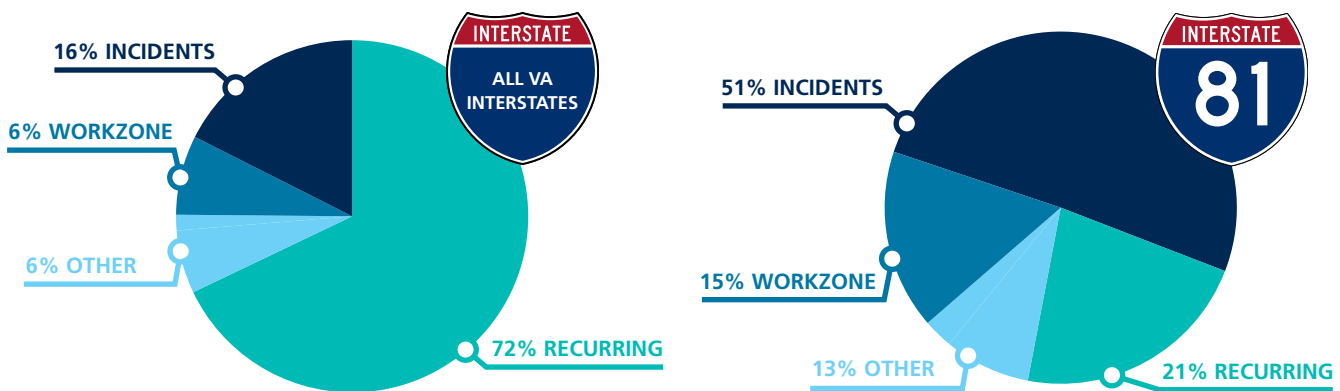
Due to the high percentage of trucks and rolling terrain, I-81 suffers from the highest incident-related delay among interstates in Virginia. Delay is generally classified as recurring delay and non-recurring delay. Recurring delay is typically encountered during the morning or evening commute and people who travel the area frequently know to plan on recurring delay. Non-recurring delay is associated with other planned and/or random factors, such as work zones, incidents (crashes/disabled vehicles on the shoulder), weather, holidays, and/or special events. Travelers cannot plan for non-recurring delay, and therefore such events can be more disruptive to travelers than recurring delay.

Improvements identified in the plan will:

- Reduce annual hours of delay by more than 6 million
- Reduce annual crashes in the corridor by 450

For all other interstates in Virginia, recurring delay comprises approximately 70% and incidents comprise 16% of the delay. For I-81, recurring delay represents just over 20% but incidents comprise more than 50% of the delay. This indicates that most of the motorist delay on I-81 is attributable to a combination of incidents, work zones, and weather (VDOT Operations Planning and VTRC Analysis, 2018). These conditions also lead to highly unreliable travel times on this vital interstate, impacting both citizens’ daily lives and the movement of freight that is essential to our local, state, and national economies. **Figure 2** summarizes the differences between the delay characteristics on I-81 versus all other interstates in Virginia.

Figure 2. Delay Experienced on Virginia Interstates Versus I-81



Chapter 743 and the Plan

With the adoption of Chapter 743 of the 2018 Virginia Acts of the General Assembly, the Commonwealth Transportation Board (CTB) was directed to develop and adopt the Plan including an examination of the entire corridor and methods of financing such improvements. This document addresses the General Assembly’s direction. Since May 2018, the CTB, Office of Intermodal Planning and Investment (OIPI), Virginia Department of Transportation (VDOT), and Virginia Department of Rail and Public Transportation (DRPT) have conducted 12 public meetings and hearings attended by more than 950 individuals, held focus groups, received more than 2,000 public comments, and identified more than \$4.3 billion in recommended improvements in the I-81 corridor. Based on public input, applied prioritization methodology, and available market capacity, this plan recommends implementing \$2.04 billion in improvements during the next 7-10 years. The Plan also identifies \$43 million in immediate operations and incident management improvements (heretofore referred to as operational improvements) and \$2 billion in capital improvements. Methods of financing these improvements are also identified and detailed in **Table 2** and **Table 3** shown on Page 8.



The Plan first identified the top 20% of problem areas along the corridor based on (i) safety, (ii) congestion, and (iii) areas with lane closures greater than one hour. Data was not the only factor in project identification, public comments were also considered. Capital improvements were prioritized based on person-hours of delay, crash frequency, and access to jobs. From an implementation perspective, the critical first step is implementing operational improvements that can be accomplished within 12 months of the Plan’s legislative approval. The capital improvements are intended to build upon these operational improvements.

Beyond the original scope of this project, the Plan identifies three issues that are recommended for further study—speed enforcement, truck parking, and multimodal transportation options. These topics all require significant coordination with external parties and were not able to be completed prior to submission of this Plan. Speed enforcement and truck parking will be reviewed by task forces, while OIPI and DRPT will finalize the multimodal transportation options. Therefore, \$100 million is reserved in the early years of the Plan to address these issues. For each issue, a comprehensive strategy and implementation plan with funding recommendations will be developed. Finally, potential funding options for the \$2.04 billion Plan are explored as well as the economic impacts as required by Chapter 743.

Public Outreach

Public involvement was encouraged throughout the study and served as a critical component of developing the Plan. Focus groups, public meetings, and hearings were held throughout the corridor, along with CTB updates. A website, www.VA81corridor.org, was created to provide information and to gather input from stakeholders including local governments, the trucking industry, other businesses, and citizens. In addition, an email address was established for receiving comments and a public phone number was made available. During the public meetings and hearings, attendees were able to view maps of the corridor in their respective district, listen to a presentation about the project and its progress, and ask questions. The display boards and presentations were also made available on the website. The website also includes an online mapping tool that allowed comments to be made about a specific location.



Public Outreach

12	Public Input Meetings	1	Project Website
5	CTB Briefings	2000+	Comments from the Public
8	Meetings with Stakeholders	950+	Public Meeting Attendees

Operational Improvements Plan

Given the prevalence of non-recurring delay on I-81 and the high level of travel time unreliability, the study team developed a corridor-wide, performance-driven operations and incident management plan (Operational Improvements Plan) with the objective of getting traffic moving again during incidents. The focus of the Operational Improvements Plan is to get traffic moving by detecting, responding, informing travelers of, and clearing incidents. This is an important element, because while many of the capital improvements are intended to reduce incidents, it is not possible to eliminate them entirely. The Operational Improvements Plan serves as the basis for any potential improvement package going forward.

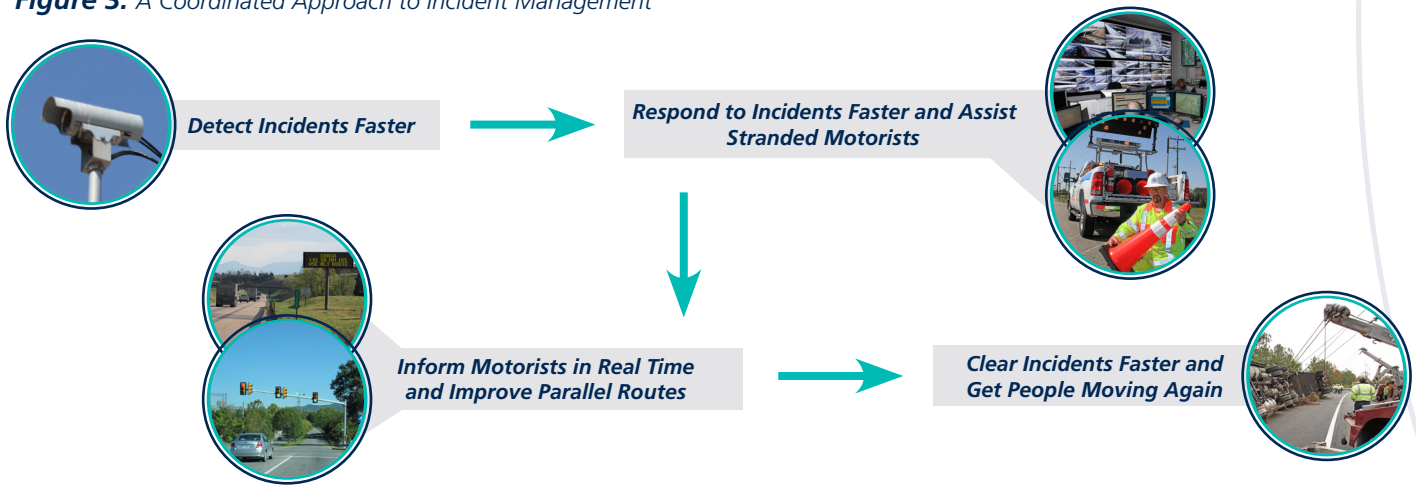
The Operational Improvements Plan developed for the entire I-81 corridor using data-driven and prioritized recommendations with the underlying objective of keeping traffic moving. Key components of the Operations Improvement Plan include additional traffic cameras to detect incidents, changeable message signs (CMS) to inform the public, expanded safety service patrols to respond to a crash,



contract emergency clearance to remove incidents, and improvements to parallel facilities. Each of these components contributes to getting traffic moving once an incident occurs, which will significantly improve operations during non-recurring incidents on the I-81 corridor, reduce the time drivers are stuck in congestion, and keep traffic moving along the roadway and the parallel routes.

Figure 3 summarizes the coordinated approach to the enhanced Operational Improvement Plan throughout the corridor.

Figure 3. A Coordinated Approach to Incident Management



Detour Routes and Improvements to Parallel Facilities

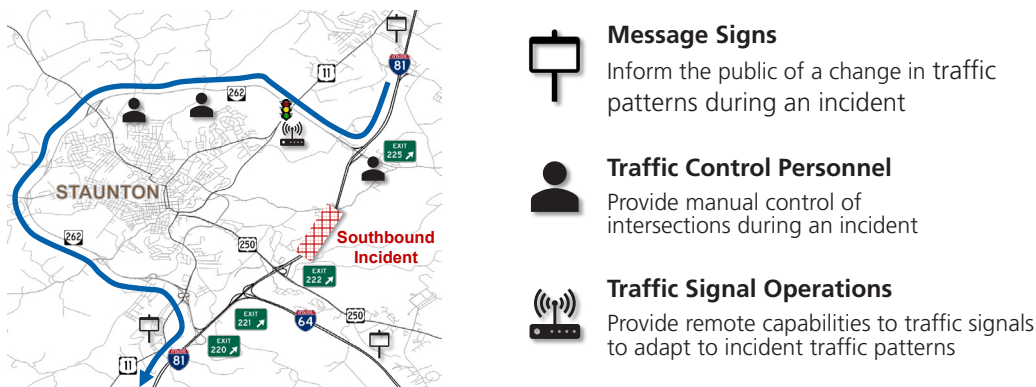
Facilities that are parallel to the I-81 corridor can serve as relief or an alternative route for travelers when there are incidents on the interstate, particularly those requiring lane closures on the mainline. Should the General Assembly pursue a tolling option on the corridor, truck restrictions will likely be placed on parallel routes—it is anticipated that these restrictions would be lifted by law enforcement during emergencies.

Incident Detour Plans (IDPs) were developed for an incident occurring between every exit ramp on the interstate in the northbound and southbound directions as well as directly at each exit. The IDPs identify facilities that are parallel to I-81 that can be used to reroute traffic off the mainline in the case of a lane-closing incident. These plans are intended to alleviate incident delay, secondary crashes, and subsequent congestion. The IDPs primarily propose traffic control personnel and signing recommendations (including portable CMS) necessary to accommodate and guide the detoured traffic. An example IDP is shown in **Figure 4**.

The IDPs were developed in coordination with:

- VDOT (regions, districts, and residencies)
- Virginia State Police
- Local Agencies
 - public works/engineering
 - law enforcement

Figure 4. Sample Detour Plan for a Southbound Incident Between Exit 222 and Exit 225



For the sample detour plan shown in **Figure 4**, operational improvements on the detour routes could reduce queues on I-81 by 8 miles and travel time by 45 minutes during a multi-hour full closure

Identification and Prioritization of Capital Improvements

The study team considered performance measures, contributing factors, and public input to develop potential capital improvements. The team also reviewed projects already funded in the CTB's Six-Year Improvement Program (SYIP) to determine how those projects may help improve conditions in the corridor. The study team examined recently constructed projects to determine how those projects may resolve issues in the corridor and whether crashes and delays in those areas may have been due to work zones.

Various capital improvements were recommended in the corridor based on the performance measures and contributing factors (e.g. traffic volume, grade, geometrics, and ramp spacing). The recommendations included:

- ➔ **Auxiliary lanes:** an extra lane constructed to connect on- and off-ramps between closely spaced interchanges to reduce the impacts of traffic entering and exiting the interstate
- ➔ **Truck climbing lanes:** an extra lane to separate trucks and other vehicles on uphill grades. The lane ends on the downhill side of the grade
- ➔ **Widening by one lane:** an extra lane constructed for multiple miles to increase the capacity of the interstate
- ➔ **Acceleration and deceleration lane extensions:** longer lengths to accelerate when entering the interstate and decelerate when exiting the interstate
- ➔ **Shoulder widening:** widening the inside shoulder (to the left of the direction of travel) to 12 feet
- ➔ **Curve improvements:** a variety of improvements that reduce the potential for crashes through horizontal curves, such as LED-lit chevron signs, high-friction surface treatments, and drainage improvements

Chapter 743 requires a targeted set of improvements to be "evaluated using the statewide prioritization process pursuant to § 33.2-214.1 of the Code of Virginia." This process, commonly known as SMART SCALE, was implemented by the CTB in 2015. The SMART SCALE process was not replicated in its entirety for this Plan; rather, the study team implemented practical and applicable measures under the Plan constraints. The operational improvements were assumed to be a stand-alone fundamental element and were excluded from the prioritization.

The following measures were used in the prioritization process:

- ✓ **safety** – reduction in the number of fatal and injury crashes (40%)
- ✓ **congestion mitigation** – decrease in person-hours of delay (40%)
- ✓ **accessibility** – access to jobs (15%) and access to jobs for disadvantaged populations (5%)

The prioritization process determined the projects most appropriate for inclusion in the Plan, which were presented to the public in the October meetings. Following the October public meetings there were refinements to the I-81 prioritized improvement projects based on feedback from the public, direction from the CTB, and a review of potential value engineering opportunities to reduce costs and maximize benefits. **Table 1** summarizes the resulting recommended improvements by district.

The I-81 corridor in Virginia passes through, or is in close proximity to, many important historic and natural resources. During the preliminary engineering phase of project development when the environmental impact analyses are conducted, the impact on these sites will be avoided and/or minimized to the greatest extent possible.

Table 1. Summary of Recommended Capital Improvements by each VDOT District

District	Number of Projects by Type							Total Number of Projects	Total Cost (millions \$)
	Widening	Auxiliary Lane	Truck Climbing Lane	Acceleration Lane Extension	Deceleration Lane Extension	Curve Improvement	Shoulder Widening		
Bristol	1	3	3	6	10	4	0	27	\$285.2
Salem	4	0	0	4	2	3	0	13	\$875.3
Staunton	4	1	2	10	4	1	1	23	\$838.1
Total I-81 Corridor Number of Improvements	9	4	5	20	16	8	1	63	\$1,998.8

Ongoing Initiatives

During the development of the Plan, a few key issues requiring extensive coordination with external parties were highlighted by public feedback and direction from the CTB. These issues included: truck parking, speed enforcement, and multimodal options. Given the need for continuing coordination and advancement of strategies, recommendations include the establishment of two task forces that would meet regularly to identify and address needs in the corridor.

Truck Parking

The I-81 corridor is heavily used as a long-haul route for the movement of goods. Due to the length of the corridor within the Commonwealth, truck drivers often stop for gas and long-term parking. To comply with the federal hours of service regulations, truck drivers must park their vehicles and rest at certain intervals to ensure they are not driving while fatigued. When adequate truck parking is not available, drivers are forced to choose between violating regulations by continuing to drive or by parking in non-designated and often unsafe areas such as highway shoulders, interchange ramps, shopping centers, or vacant lots. These options are not a safe choice. A truck parking evaluation, performed as part of the Plan, identified a 950-truck-parking space deficiency.

Recommended in the Plan is the creation of an I-81 corridor truck parking task force comprised of members representing VDOT, private travel center owners, economic development authorities, trucking associations, and representatives from local and regional governments and planning agencies.



The purpose of the task force would be to:

1. Identify site-specific issues and overcome obstacles to parking development
2. Investigate opportunities to fund the expansion of public and private truck parking facilities in targeted locations
3. Develop a truck parking information system for public rest areas initially and examine opportunities to partner with the private sector
4. Implement mobile technology to assist truck drivers with finding available and reserved parking

Speed Enforcement Initiatives

A theme that emerged during the public outreach process was an overall lack of speed enforcement on the I-81 corridor. Many comments focused on the northern end of the corridor needing additional speed enforcement. During the August public meetings, comments were specifically sought on reducing the posted speed and support for additional speed enforcement on I-81. While only 43% of respondents supported reducing the speed limit, over 70% of respondents indicated that they would support additional speed enforcement.

Recommended in the Plan is the establishment of an I-81 corridor speed enforcement task force comprised of members representing the CTB, Department of State Police, and local law enforcement to determine strategies for enhanced speed enforcement. The task force would examine differences in current speed enforcement practices and evaluate technological solutions to assist in those practices.

Multimodal Options

Another theme that emerged from the public outreach process was the need to consider investments in multimodal enhancements benefitting the I-81 corridor. For multimodal improvements to become a reality, there would need to be cooperation from the railroad industry, Amtrak, local governments, intercity bus operators, and regional planning bodies. Further development of multimodal improvements will be undertaken by OIPI and DRPT.

Financing Options

Chapter 743 of the 2018 General Assembly provided direction on the financing options that were to be considered as part of the Plan. The legislation directed that the CTB evaluate the feasibility of using toll financing and other financing means. In addition, the legislation stated that the Plan could consider tolls on heavy commercial vehicles and High Occupancy Toll (HOT) lanes but could not consider options that toll all users or options that toll commuters. As the study team evaluated financing options, HOT lanes were removed from consideration since there were no pre-existing high occupancy vehicle (HOV) lanes and traffic patterns did not support this option.

As previously discussed, approximately \$2.04 billion in improvements are recommended for the entire I-81 corridor. This includes \$43 million for operational improvements and \$2.0 billion for capital improvements. This \$2.04 billion is in addition to the \$225 million in I-81 and Route 11 improvements already funded in the current SYIP adopted by the CTB. Longer term, an additional \$2.0 billion in capital improvements are recommended to address all identified problems and their contributing factors. The recommended truck parking task force and I-81 speed enforcement task force will likely identify additional costs for addressing short- and long-term solutions as part of their work. Therefore, to ensure that funds are available, \$100 million has been reserved in FY 2021 and FY 2022 for these costs.

Based on the financial analyses, two alternatives appear to provide the necessary financing. These alternatives include two regional taxes and/or tolling an I-81 auto annual pass fee. All financing options require General Assembly approval before they can be implemented. Annual revenues in the first year

range from \$130 to \$204 million depending on the option. If a tolling option is selected, the study team recommends that the CTB allocate \$43 million from the Toll Facilities Revolving Account (TFRA) for implementation of the tolling system, including roadside equipment. TFRA requires a repayment and the Plan’s toll financing option assumes this repayment.

The potential tax options are summarized in **Table 2**. The General Assembly has authorized additional motor vehicle fuels tax and retail sales and use taxes in Northern Virginia and Hampton Roads— Planning District Commissions (PDCs) 8 and 23, respectively. If the same additional taxes were imposed in PDCs 3-7, combined, they are forecasted to generate sufficient revenues to pay debt service on the issuance of \$1.5 billion in 35-year bonds and \$502 million in pay-as-you-go revenue to complete the improvements within the 7- to 10-year window.

Table 2. Potential Regional Tax Options for the I-81 Corridor Improvement Plan (in millions)

Regional Tax Option	Rate	Est. Annual Revenue Generated 2020	Est. Annual Revenue Generated 2025	35-Year Bonds Assumed to be Issued
Retail Sales & Use Tax	0.7%	\$105	\$116	
Motor Vehicle Fuels Tax	2.1%	\$60	\$63	
Total		\$165	\$179	\$1,500

Tolling options considered for the I-81 Corridor Improvement Plan include:

1. Trucks only
2. Trucks and non-commuters
3. Variable tolling between daytime and nighttime for trucks and non-commuters
4. Variable tolling with an auto annual pass

Of these four tolling options, options two, three, and four best meet public input, federal and state tolling parameters, and generate enough revenue to meet the \$2.04 billion need with debt financing. Detailed financial analysis for option four is shown in **Table 3** because it is expected to generate the lowest amount of toll revenue.

Table 3. Potential Toll Rates and Resulting Revenue for Tolling Option 4 (in millions)

Toll Option Description	Truck Rate (per mile)	Auto Rate (per mile)	Variable	Auto Annual Pass	Est. Toll Revenue 2020	Est. Toll Revenue 2025
4 Variable Daytime and Nighttime with Auto Annual Pass	15¢ Daytime 7.5¢ Nighttime	7.5¢ Daytime 5¢ Nighttime	Yes	\$30	\$145	\$178

* For the purpose of the analyses, daytime tolling is considered to be the hours between 6:00 a.m. to 9:00 p.m. and nighttime tolling is between the hours of 9:00 p.m. to 6:00 a.m.

This variable tolling option allows for \$1.5 billion in bonds and \$502 million in pay-as-you-go revenues. Long-term revenues will be used to support the on-going costs of the Operational Improvements, tolling costs, and pay debt service on toll revenue bonds. Toll revenue bonds are traditionally issued by the Commonwealth and a general rule of thumb is that \$100 million in 35-year debt can be issued for every \$10 million in annual toll revenue. In later years, additional I-81 improvements can be funded or financed. As discussed previously, another \$2.0 billion is required to fully fund all the I-81 corridor improvements identified during this study (a total of \$4.3 billion).

Economic Impact Analysis

Chapter 743 directs that the Plan will “assess the potential economic impacts on Virginia agriculture, manufacturing, and logistics sector companies utilizing the I-81 corridor from tolling only heavy commercial trucks.” The study team used a three-step process to determine the economic impacts. The first step was to estimate the net reduction to trucking companies’ costs resulting from the future planned improvements on I-81. This involved estimating the reduction in their pecuniary costs due to the capital and operational improvements (such as travel time savings, reductions in vehicle operating costs, etc.) and netting that from the tolls they would have to pay to use I-81. With the recommended \$2.04 billion in operational improvements and capital improvements in place, reductions in trucking costs were estimated using a benefit-cost analysis framework.

The framework assumes all capital and operational improvements are deployed by year 2030. Since tolling on I-81 is assumed to begin in 2020 and continue beyond 2044, the trucking cost reductions were extrapolated to cover a 40-year period of analysis, spanning from 2020 to 2060. The trucking cost reductions are expressed in 2017 dollars. The toll scenario used is the variable tolling with auto annual pass option, with a 15 cents per mile daytime truck toll rate and 7.5 cents per mile nighttime truck toll rate. Any truck toll is an increase in the transportation costs for the trucks that use I-81. The reduction in truck transportation costs are netted out of this increase to generate a net change due to the improvements and the introduction of tolling. The final results are shown in **Table 4**.

Table 4. Economic Impacts Analysis Final Results (in millions)

Share of Transportation Cost Reduction Accruing in Virginia	Share of Toll Impacting Virginia	Net Reduction in Truck Transportation Cost (\$2017)
\$3,419	\$2,303	\$1,116

Based on the measures explained above, throughout the 40-year span of the analysis, the net reduction in truck transportation costs for trucks that serve industries in Virginia is approximately \$1.1 billion or a transportation cost reduction to a toll cost ratio of 1.49. In addition, the analysis indicates that by deploying \$2.04 billion of capital and operational improvements along the I-81 corridor:

- ➔ Annual vehicle hours of delay will be reduced, on average, by more than 6 million
 - ✓ Trucks will capture more than 3.6 million vehicle hours of annual delay reductions
 - ✓ Reductions related to construction of capital improvements are responsible for more than 90% of these results; operational improvements and reductions due to fewer accidents account for remaining share
- ➔ Annual statistical crashes are anticipated to be reduced, on average, by almost 450 crashes across the entire corridor
 - ✓ Approximately 29% of the reduction in annual statistical crashes (representing almost 130 crashes) involve an injury

As directed in Chapter 743, the net change in transportation costs were then transformed into direct economic impacts to the logistics, manufacturing, and agriculture industries within Virginia.

The economic impacts are measured in terms of:

- ➔ **Industry output:** broadest measure, refers to total volume of sales
- ➔ **Value added:** measured as the difference between the amount a company spends to acquire inputs and value of its goods at the time they are sold
- ➔ **Employment:** includes labor income (employee compensation and proprietary income) and jobs (number of jobs created in a year, expressed as job-years)

The analysis involved the estimation of three types of effect, for each of the above impacts. These are referred to as direct effect, indirect effect, and induced effect.

- ✓ **direct effect** – refers to the economic activity occurring as a result of direct spending or hiring by businesses or agencies located in the study area (e.g., number of people employed in industries such as logistics, manufacturing, and agriculture that are affected by improvements and tolling along I-81)
- ✓ **indirect effect** – refers to the economic activity resulting from purchases by local firms who are the suppliers to the directly affected businesses or agencies (e.g., spending by suppliers of industries such as logistics, manufacturing, and agriculture that are affected by improvements and tolling on I-81)
- ✓ **induced effect** – represents the increase in economic activity, over and above the direct and indirect effects, which is associated with increased labor income that accrue to workers—of industries such as logistics, manufacturing, and agriculture that are affected by improvements and tolling along I-81 and all their suppliers—and is spent on household goods and services purchased from businesses within the impact area

These effects (see **Table 5**) are summed to create the total economic impact.

Table 5. *Estimated Economic Impacts*

LOGISTICS					MANUFACTURING				
<i>Impact Metric</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>Impact Metric</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>
Output	\$7.46	\$3.65	\$3.13	\$14.2	Output	\$218.82	\$64.55	\$42.93	\$326.3
Value added	\$3.30	\$2.15	\$1.84	\$7.3	Value added	\$78.30	\$34.63	\$25.25	\$138.2
Labor income	\$2.70	\$1.34	\$1.01	\$5.0	Labor income	\$33.12	\$21.92	\$13.79	\$68.8
Employment	53.9	22.0	21.9	97.8	Employment	466.4	332.2	299.7	1,098.3

AGRICULTURE					ALL-SECTORS (Economy-Wide)				
<i>Impact Metric</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>Impact Metric</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>
Output	\$12.85	\$4.51	\$2.81	\$20.2	Output	\$968.12	\$343.88	\$385.36	\$1,697.4
Value added	\$4.35	\$2.29	\$1.65	\$8.3	Value added	\$582.59	\$206.94	\$231.90	\$1,021.4
Labor income	\$2.43	\$1.22	\$0.90	\$4.6	Labor income	\$359.99	\$127.87	\$143.29	\$631.2
Employment	159.9	29.7	19.6	209.2	Employment	5,893.7	2,093.5	2,346.0	10,333.1

Note: Monetized values are in millions of 2017 dollars./Employment values are in job-years.

It is expected that throughout the 2020-2060 period of analysis the total output of all industries across Virginia will increase by approximately \$1.7 billion because of the net truck transportation cost reductions (i.e., compared to a situation where neither improvements nor tolling occur). Out of that amount, approximately \$326.3 million corresponds to output increases in the manufacturing sector, \$14.2 million to the logistics sector, and \$20.2 million to agriculture.

Next Steps

The following actions will be undertaken by the study team, CTB, and General Assembly:

- ➔ The CTB will be asked to adopt the I-81 Corridor Improvement Plan at their December 5, 2018 action meeting
- ➔ The recommended improvements package and the report will be finalized and the draft final report will be posted on the public website on December 21, 2018. This report will include:
 - \$2B capital improvement package
 - \$43M operational improvement package
 - Funding options recommended for consideration by the General Assembly
 - Economic impact analysis results
 - Truck parking study results
 - Additional recommendations for improvements in the corridor
- ➔ The I-81 Corridor Improvement Plan will be submitted to the General Assembly by January 9, 2019
- ➔ The General Assembly will consider the Plan submitted by the CTB