



I-81/Halfway Boulevard Freight Connection

MAKING WAY FOR ECONOMIC GROWTH AND SAFETY PROJECT

INFRA APPLICATION ■ RURAL



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APPLICATION TABLE

PROJECT NAME	I-81/HALFWAY BOULEVARD FREIGHT CONNECTION: MAKING WAY FOR ECONOMIC GROWTH AND SAFETY PROJECT
<i>Project Sponsor</i>	Washington County, MD
<i>Was an INFRA application for this project submitted previously? If yes, please include title.</i>	Yes: I-81/Halfway Boulevard Freight Connection.
PROJECT COSTS	
<i>INFRA Request Amount</i>	\$55,000,000
<i>Estimated Federal Funding (excluding INFRA)</i>	\$3,800,000
<i>Estimated Non-Federal Funding</i>	\$47,122,000
<i>Future Eligible Project Cost (sum of previous three rows)</i>	\$105,922,000
<i>Previously Incurred Project Cost (if applicable)</i>	\$0
<i>Total Project Cost (sum of 'Previously Incurred' and 'Future Eligible')</i>	\$105,922,000
<i>Are matching funds restricted to a specific project component? If so, which one?</i>	\$3,800,000 in ARC funds, \$2,172,000 in County funds, and \$1,350,000 in Private funds are dedicated to the Halfway Boulevard component. \$42,600,000 in State funds and \$1,000,000 in County funds are dedicated to the I-81 component.
PROJECT ELIGIBILITY	
<i>Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on the National Highway Freight Network (NHFN)?</i>	\$105,922,000 (100 percent)
<i>Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on the National Highway System (NHS)?</i>	\$105,922,000 (100 percent)
<i>Approximately how much of the estimated future eligible project costs will be spent on components constituting railway-highway grade crossing or grade separation projects?</i>	\$0
<i>Approximately how much of the estimated future eligible project costs will be spent on components constituting intermodal or freight rail projects, or freight projects within the boundaries of a public or private freight rail, water (including ports), or intermodal facility?</i>	\$0
PROJECT LOCATION	
<i>State(s) in Which Project is Located</i>	Maryland
<i>Small or Large Project</i>	Large Project
<i>Urbanized Area in Which Project is Located (if applicable)</i>	INFRA Designation: Rural The Project is located within the Hagerstown MD-WV-PA UZA, population 182,696 in the 2010 US Census.
IS THE PROJECT CURRENTLY PROGRAMMED IN THE...	
<i>TIP?</i>	Yes; HEPMPO Transportation Improvement Program (TIP)
<i>STIP?</i>	Yes; MDOT 2017 Statewide Transportation Improvement Program (STIP)
<i>MPO Long Range Transportation Plan?</i>	Yes; HEPMPO 2045 Long Range Transportation Plan
<i>State Long Range Transportation Plan?</i>	Yes; MDOT 2040 Maryland State Transportation Plan
<i>State Freight Plan?</i>	Yes; Maryland Strategic Goods Movement Plan

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PROJECT DESCRIPTION

PROJECT OVERVIEW

The I-81 corridor in Maryland is the backbone of freight connectivity and efficiency for the region, providing nationally-critical linkages along the East Coast, from Tennessee to New York, and serving as Washington County's primary north-south Interstate highway. Freight traffic in this corridor has grown exponentially in the five-decade period since its construction; further, demand for freight delivery in Maryland is expected to double by 2035. However, I-81 has remained substantively unchanged. Consequently, connectivity, safety, and traffic flow on this important section of the National Freight Highway Network near Hagerstown, Maryland, has suffered. Continued vehicular and truck crashes in the project area highlight the pressing need to address these trends.

Continued growth around the I-81 and I-70 corridors is placing increasing strain on both commuters and trucking in this rural community. The ability to safely and efficiently move people, freight, and goods through this active corridor is vital for national, regional, and local economic competitiveness. These safety and operational concerns demand the targeted infrastructure investments presented in this application.

To this end, Washington County and the Maryland Department of Transportation State Highway Administration (MDOT SHA) are committed to planning and implementing infrastructure investments that ensure that the growth and opportunities in this region do not result in negative impacts to safety, economic outcomes, or quality of life. This project is part of a multistate effort to widen I-81 and provide a vital local highway link on Halfway Boulevard to better connect two major Interstates, which together will improve freight and personal transportation, supporting economic development in Western Maryland and throughout the Appalachian Region. MDOT SHA and Washington County seek to partner with the United States Department of Transportation (US DOT) to complete a package of infrastructure improvements that will improve critical infrastructure and enhance the safe and efficient movement of people, freight, and goods. The Project improves ramp and merge lane configurations for three interchanges on this segment of I-81, including the critical I-70/I-81 interchange. In addition to improving traffic operations, the Project improvements are expected to dramatically reduce the crash rate on a segment of I-81 marked by high truck traffic levels and a troubling safety history.

Together, the improvements provide a link that significantly improves mobility and safety in the region. INFRA funds will unlock the Project's many benefits, including:

- **Reduce the high crash rate on I-81**
- **Reduce travel delay**
- **Provide more reliable travel times**
- **Improve connectivity and resiliency of the road network**
- **Enhance access to a major freight distribution center to improve economic competitiveness**
- **Facilitate local economic development**

This rural safety and accessibility project is designed to stimulate economic growth. *The I-81/Halfway Boulevard Freight Connection: Making Way for Economic Growth and*

Safety Project (the Project) includes two complementary projects components that together provide a much-needed widening and upgrade of a 3.5-mile section of I-81 originally built in the 1960s, and a 0.53-mile Extension of Halfway Boulevard to enhance capacity and better connect Interstate interchanges on I-81 and I-70.

Washington County, Maryland, in partnership with MDOT SHA, requests **\$55 million** in INFRA grant funds, which represents 51.9% of total project costs. These funds will complete the funding package for a \$105.922 million project that confronts existing challenges in our interstate system and prepares for the growing industrial and freight traffic, as well growing development, population, and job opportunities, and traffic volume.

PROJECT NEED

This Project represents a critical investment in one of the most heavily used freight corridors in the United States, and has been the top priority in the Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO) Long-Range Transportation Plan for over 15 years. Only four lanes wide, the Maryland segment of I-81 carries some of the highest freight volumes in the nation by lane mile, falling within the top one percent of all freight corridors. I-81 in the Project area today carries over 77,000 vehicles daily, more than 27 percent of which are trucks. Travel on I-81 and I-70 today accounts for 50 percent of the vehicle miles traveled (VMT) in Washington County. This traffic is expected to grow, with an estimated 70 percent increase in freight tonnage over the next 2 to 3 decades, and a 55-percent increase in traffic.



Frequent crashes result in hours of backlog congestion.

With two major Interstate freight corridors meeting near Halfway Boulevard and an active CSX rail line nearby, the Project area is a growing center of warehouse and distribution facilities (including FedEx, Staples, Lenox, and Sealy), as well as truck repair and service businesses, including Freightliner and two Pilot Travel Centers. Today, I-81 near Halfway Boulevard is supporting nearly twice the level of truck traffic the roads were designed for. At 27 percent, this high volume of truck traffic is exacerbating the weaving, merge, and diverge problems associated with the closely spaced interchanges, contributing to the high and rising crash rate on I-81. The truck-involved crash and fatality rates along I-81 in Maryland are twice as high as the statewide averages for similar roadways. These crashes result in hours of backlog congestion that impact freight deliveries all along the I-81 corridor and bring disruptive levels of through-traffic onto local roads.

TABLE 1 (BELOW):
Key Statistics in the Project Area

Crashes ('12-'18)	Fatalities ('12-'18)	Annual Hrs Delay ('12-'14)	No-Build LOS (Projected)
314	3	>200,000	B-F

The **I-81/Halfway Boulevard Freight Connection Project** will address these needs with two components:

- **I-81 Phase 2:** Widening and modernizing 3.5 miles of I-81, including upgrades to interchanges at US Route 11 (US 11), I-70, and Halfway Boulevard.
- **Halfway Boulevard Extension:** A 4-lane, 0.55-mile divided highway Extension of Halfway Boulevard to meet Maryland State Route 63 (MD 63) approximately 0.4 miles north of its interchange with I-70.

The Project will provide substantial safety, capacity, and operational benefits for traffic on I-81, improve connectivity for regional truck trips, and provide resiliency by creating a new connection between I-81 and I-70 to maintain traffic flow in case of delay or closures due to daily traffic, construction, or a crash near the existing I-81/I-70 interchange. The Project will also address identified deficiencies on I-81, including substandard interchange ramp configurations and insufficient merge lanes.

This Project will significantly benefit freight. I-81, I-70, and Halfway Boulevard are each on the National Highway Freight Network (NHFN), critical to both local and regional truck travel. I-81 is part of the Primary Highway Freight System (PHFS), which includes the most critical highway portions of the US freight transportation system. Halfway



The truck crash rate for I-81 in Maryland is more than twice that of similar roadways in Maryland.

Boulevard is designated as a Critical Urban Freight Corridor, a subsystem of the NHFN that includes public roads in urbanized areas that provide access and connection to the PHFS. A CSX railroad line runs through the Project area, with connections to businesses on and near Halfway Boulevard, making this Project beneficial to distribution centers and other businesses that utilize rail services.

A wide range of freight distribution and truck services are located along Halfway Boulevard, and more are planned, **and** a new 170-space truck parking facility for overnight truck/trailer parking **was recently** constructed adjacent to a Pilot Travel Center. The truck services demonstrate how important this area is for freight, with tens of thousands of though trips daily, as well as substantial locally generated Interstate truck trips.

Extending Halfway Boulevard to meet MD 63 will enable trucks originating on Halfway Boulevard to access I-70 west without having to first travel east to I-81, potentially reducing the mileage traveled on I-70 and I-81. The Extension will similarly provide easier access for trucks coming to the Project area on I-70 from the west. The Halfway Boulevard Extension will also serve as an important alternate route during times when crashes block traffic on this part of I-70.

Transportation Challenges the Project Will Address

The Project will address four primary transportation challenges that inhibit freight movement and safe travel along the corridor in Maryland.

- **Safety and Roadway Crashes**

Crash rates have risen at an alarming rate on Maryland’s 12-mile segment of I-81 due to overall congestion, high truck traffic, and substandard design. Between 2011 and 2017, the number of crashes increased 85 percent along the corridor. Within the Project limits (I-81 Phase 2), total crashes increased 37 percent and truck crashes rose by 34 percent between 2015 and 2017. The truck crash rate for I-81 in Maryland (at 12.1 crashes per 100 million miles traveled in 2012-2015) is more than twice as high as that of similar roadways in Maryland, which average 5.0 crashes per 100 million miles traveled. **As this project awaits a full funding package, crashes continue to negatively impact – or even end – individuals’ lives.**

- **Inadequate Capacity to Carry Growing Freight Demand**

The existing number of lanes cannot accommodate current traffic volume and projected growth through 2045. Currently, the Maryland I-81 corridor is a four-lane facility and carries an average of 19,400 trucks per day, more than one-quarter – 27 percent – of all vehicles. In a 2015 study, the MDOT SHA found that I-81 is the most heavily traversed corridor by trucks in the entire State and will see a 56 percent increase in truck VMT by 2045. Freight moved in tons is expected to increase by roughly 70 percent over the next 25 years, with forecasts indicating approximately 30,000 trucks per day by 2045.

With traffic on I-70 projected to grow as well, the benefit of having an emergency detour route along MD 63 and Halfway Boulevard will increase over time.

On Halfway Boulevard, the presence of I-81, I-70, and CSX is driving continued growth in traffic from existing distribution facilities, and creating demand for new ones,

TABLE 2 (BELOW):
Freight tonnage statistics for the section of I-81 within the Project area.

Freight	Weight (tons)	Weight (Pct.)	Value (\$000,000)	Value (Pct.)
Inbound	2,820,000	1.9	\$2,820	1.0
Outbound	2,660,000	1.8	\$2,245	0.8
Internal	82,000	0.1	\$95	0.0
Through	140,399,000	96.2	\$280,607	98.2
TOTAL	145,962,000	100.0	\$285,767	100.0

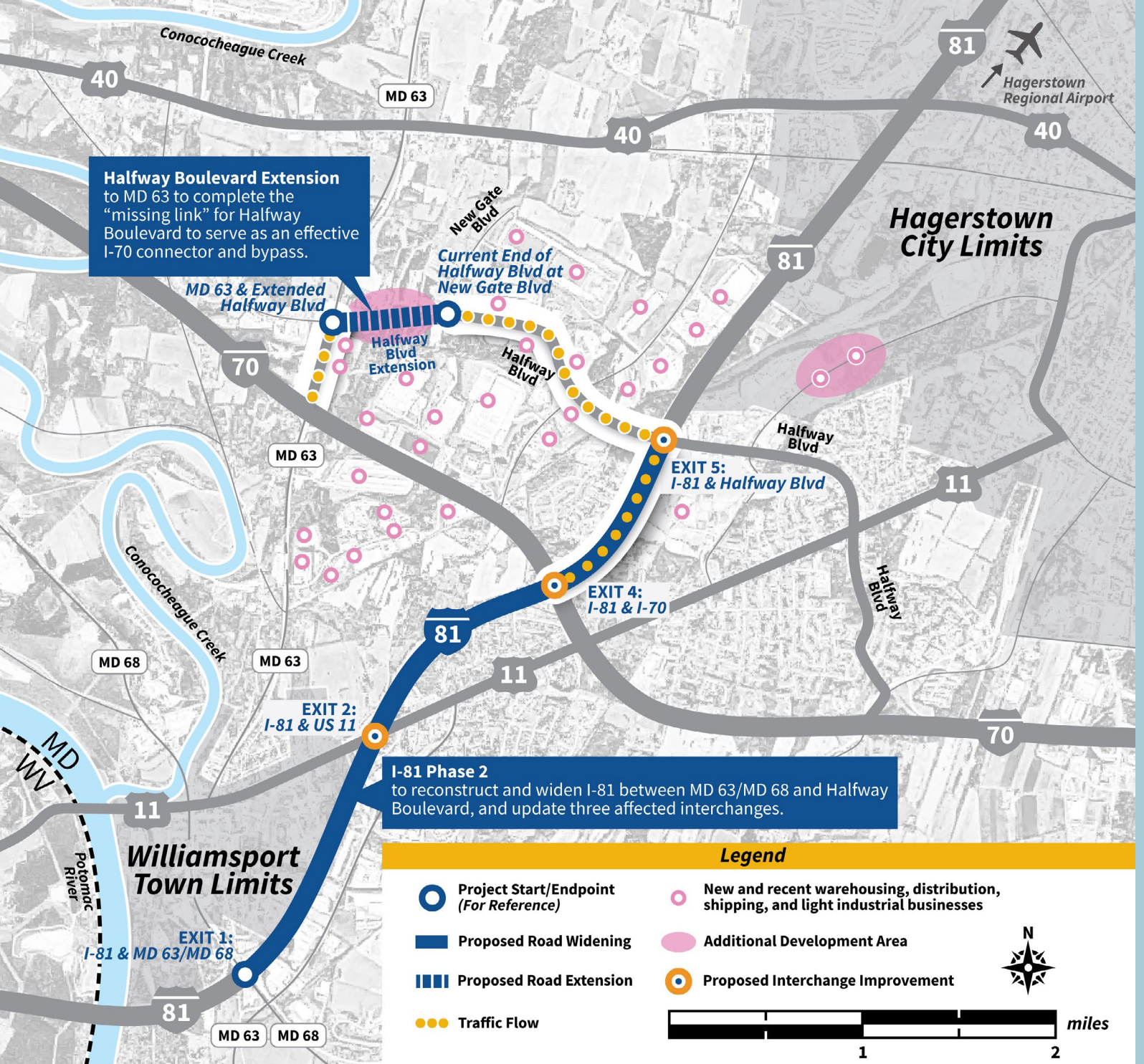


FIGURE 1 (ABOVE):

A map of the Project area, showing the I-81 widening and reconstruction and the Halfway Boulevard Extension in blue. Interchange Improvements are shown in yellow. New and recent warehousing and distribution businesses and additional development in the area are shown in pink.

with one warehouse along New Gate Boulevard recently completing its Phase 3 expansion in 2019. As traffic from these developments grows, it brings new trucking-related development as well, including truck servicing, fueling stations, and overnight truck parking, ensuring that this area will continue to be an important node in the regional and national truck freight network. Increasingly, congestion occurs at the Halfway Boulevard/I-81 interchange as trucks attempt to get on the Interstate network or access amenities.

The Project reduces this problem in two ways: First by increasing capacity on I-81 and improving the Halfway Boulevard interchange; and second by extending Halfway Boulevard west to MD 63 to provide easy access I-70, reducing the demand on the I-81 interchange. These improvements are needed together to improve connections and to maintain Halfway Boulevard as an attractive location for new development and an efficient location for existing warehouse and distribution centers.

- **Traffic Operations**

Increasing truck and vehicle volume has accelerated the problems resulting from existing roadway deficiencies. These deficiencies include substandard interchange ramp configurations and insufficient lengths of merge lanes. Maryland is recognized as having the most dangerous stretch of I-81 in the nation, where there is a concentration of 10 interchanges within just 12.1 miles. The 3.5-mile I-81 component of this Project contains 3 interchanges, including the I-70/I-81 four-leaf clover interchange.

Traffic volumes along I-81 south of I-70 are anticipated to grow by over 35 percent between now and 2045. These volumes are expected to result in several failing merge, diverge, and weaving operations at the US 11 and I-70 interchanges in the absence of any improvements in the corridor. Further, future travel speeds along both northbound and southbound I-81 are expected to decrease significantly between the US 11 and I-70 interchanges. The level-of-service (LOS) along I-81 has already deteriorated with the rise in traffic volume, and the expected LOS for the three interchanges in Phase 2 are D, E, and F by 2040 if no improvements are made.

Operations are also affected by capacity constraints caused by the four-lane configuration. In addition to contributing to regular peak hour congestion, a crash or construction work that blocks a lane of traffic can cause substantial delays. With three lanes in each direction, a single blocked lane of traffic will have a much lower impact on traffic delay.

- **Connectivity**

Halfway Boulevard currently ends just a half-mile from MD 63, which has a direct interchange with I-70 less than one mile to the south. Construction of this new link will eliminate the need for vehicles on Halfway Boulevard – a major truck traffic generator – to travel east to reach I-70 west. Halfway Boulevard is a key connection to truck parking, services and amenities, and other truck origins and destinations. It also provides a detour if a serious incident requires lane closures on the segment of I-70 between the I-81 and MD 63 interchanges, or on I-81 between Halfway Boulevard and I-70. Currently traffic seeking a detour brings truck and other traffic to residential and commercial areas, such as the nearby Valley Mall area, which has experienced significant drops in sales when I-81 is backed up.

PROJECT HISTORY

Halfway Boulevard in Washington County

Washington County built Halfway Boulevard west from I-81 15 years ago. Given limited funding, Washington County could not afford the additional cost to bring the road further west. Connecting this road to MD 63 has been a priority of the County for nearly two decades.

Since the existing Halfway Boulevard was constructed, the area west of I-81 has seen numerous successful developments, including FedEx, Staples, Tractor Supply, and many other distribution facilities and truck service businesses (see Figure 1). Further development is likely, given the area's proximity to a Class I freight railroad and to two major Interstates.

I-81 in Maryland

I-81 Phase 2 is a critical component of a four-phase, 12.1-mile, multi-year project with an estimated total cost of \$386.7 million. The expansion Project in Washington County, Maryland, stretching from Berkeley County, West Virginia, to the border with Franklin County, Pennsylvania, has been a longstanding priority for the State and represents one of the MDOT SHA's largest investments in Western Maryland, and provides both regional and

national connections. Planning activities began in 2001, with the completion of a Purpose and Need Statement and preliminary engineering. More than 15 years later, MDOT broke ground in October 2016 on Phase 1, which is fully funded through a combination of State and Federal formula funds, and an anticipated Winter 2020/2021 completion. **The MDOT SHA is now aggressively preparing to advance Phase 2 through final design to begin construction; INFRA funds would provide the missing piece to advance this important project.**

The MDOT SHA commenced construction on Phase 1 in 2016, and design activities for Phase 2 began in June 2017. The Project is requesting funding for further engineering and construction of I-81 Phase 2, to complement the County's associated design, engineering, and construction of the Halfway Boulevard Extension.

I-81 in the Region

Widening and modernizing of I-81 is a priority throughout the MPO region and in neighboring states, as it is critical for economic development. West Virginia DOT widened their segment of I-81 recently and Virginia has state legislation in place to find means to fund their 200+ miles of I-81. Pennsylvania is also interested in widening I-81, but given the difficulty in finding funding, it will likely wait until Maryland's section is completed.

PROJECT COMPONENTS

The Project comprises two coordinated, complementary components that work together to address the persistent and growing challenges described. Built together, the impact of the components is greater than the sum of the two parts; either built on its own does not deliver the benefits to the same extent as when built together along the same time frame. The synergistic benefits of the components working together result in a relationship where both reinforce the benefits to truck and vehicular traffic on the highway and access to the Halfway Boulevard areas of development. The components were conceived and pursued together because they serve the same purpose and will deliver benefits that are related to one another. The components are detailed below and depicted in Figure 1.

I-81 Phase 2 Widening:

- Reconstruct and improve interchanges along 3.5 miles of I-81 in Maryland from 2,000 feet north of MD 63/MD 68 to 1,000 feet north of Halfway Boulevard.
- Expand the Interstate from four to six through lanes with construction of two new travel lanes (one southbound and one northbound).
- Improve interchanges at the three Interstate exits within Project limits: the US 11 interchange in Williamsport, and the interchanges at I-70 and Halfway Boulevard southwest of Hagerstown.
- Install traffic control upgrades.
- Implement stormwater management improvements and install noise barriers as required.

Halfway Boulevard Extension:

- Extend Halfway Boulevard 2,800 feet (0.53 miles) westward from existing endpoint near New Gate Boulevard to meet MD 63.
- Create a four-lane divided roadway, designed with a thick pavement section and wide turn radii to handle the expected heavy truck traffic.

“I along with my family are personally in support of this project because on May 3, 1998 my father, a volunteer firefighter was operating at a multi-fatal collision just south of this location when he was struck and killed by an inattentive driver. Too many families have suffered the loss of a family member along this section of Interstate Highway. Any form of improvement in the corridor would benefit safety as well as commerce.”

Joe-Kroboth

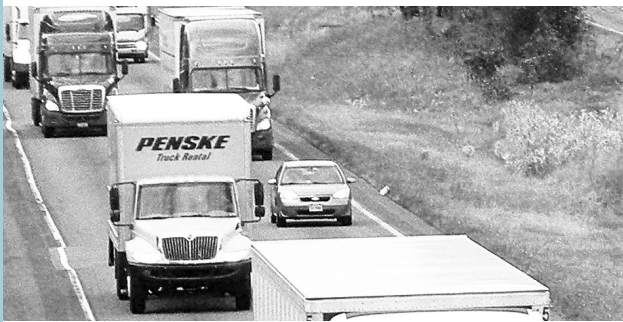
son of Captain Kroboth from the Volunteer Fire Co. of Halfway.

NATIONAL, REGIONAL, & LOCAL SIGNIFICANCE

Washington County is a rural county in the eastern panhandle of Maryland, bordering Pennsylvania, Virginia, and West Virginia. The improvements brought by this Project provide benefits to freight travel across a multistate region, as well as providing substantial local benefits.

National Significance

Major highway corridors are defined as those that carry at least 8,500 trucks per day or more than 50 million tons per year.¹ The Maryland I-81 corridor carries an average of 19,400 trucks per day, and I-70 in the Project area carries 11,100 trucks per day, with a total weight of nearly 146-million tons. I-81, or locally named the Maryland Veterans Memorial Highway, is a continuous north-south highway extending from Canada to Tennessee designated as a major freight corridor on the National Highway Freight Network. I-81 is a major connector linking Virginia, West Virginia, Maryland, and Pennsylvania, and is heavily used as a long-distance truck bypass around the congestion of I-95 and other coastal routes, delivering freight throughout the region. This highway is also part of the Strategic Highways Network, as it has been identified as critical to the Department of Defense's domestic operations, emergency mobilization, and peacetime operations. Due to its proximity to Washington, DC, and other major metropolitan areas along the East Coast, this corridor's ability to handle emergency evacuations due to terrorism or natural disaster is crucial.



Connectivity to National Highway Freight Network

I-81 is vital for the distribution of raw materials and finished goods between Appalachia and some of the largest consumer markets in the Northeast. Products like gravel, sand, wood products, non-metal mineral products, plastics, animal feed, foodstuffs, pharmaceuticals, machinery, motorized vehicles, and furniture are moved along I-81, comprising an estimated **10 percent of the nation's gross domestic product with a gross value of more than \$1.85 trillion.**

Several major North American distribution facilities are located near the I-81 corridor, such as the Nova Bus Manufacturing and Headquarters and Prevost Manufacturing and Headquarters in Quebec, Canada, to the Volvo Group Powertrain Manufacturing and Technology facility in Hagerstown, Maryland, to the Mack Trucks World Headquarters in Greensboro, North Carolina. More specifically, within the Project area are Tractor Supply Company, Sealy Mattress, FedEx, Home Depot, Fives Landis, and many other companies.

I-81 is also important to intermodal freight traffic, providing access to the Virginia Inland Port, which is located approximately 60 miles south of the Project area along I-81.

One of the Nation's Freight Backbones:

I-81 is essential to moving freight from Canada to Tennessee: Thousands of regional jobs in MD, WV, and PA are dependent on I-81 moving freight through Western Maryland.

The Project will benefit this multistate and international freight traffic by adding one lane in each direction to manage the growing traffic, and by increasing safety in the Project area along I-81 with a high crash rate.

National Benefits to Long Distance and Through Travelers

During peak hours, all through travelers on I-81 will benefit from the reduction in crashes, the increased travel speeds, and the reduction of crash-related delay brought by the construction of an additional lane in each direction. Businesses that move freight and manage logistics along the East Coast, Appalachia, and the Midwest are therefore also primary end users for the Project.

1. Freight Management and Operations: Major Freight Corridors. USDOT Federal Highway Administration.

Local freight companies and truckers will further benefit from the connectivity provided by the Halfway Boulevard Extension, with long distance truck trips originating on or destined for Halfway Boulevard having shorter trips to/from I-70 west of MD 63. Some of these same benefits will also accrue to some of the long-distance through traffic that may exit the Interstate and stop to buy fuel, food, or to take a required rest break, **often staying overnight.**

Regional and Local Significance

As noted above, I-81 is a major thoroughfare through neighboring states and the Appalachian region, and a key link for this largely rural, low-income area to get products to market. It is also critical to the economy of the multistate region, which includes Washington County, West Virginia's Eastern Panhandle area, and part of Pennsylvania. The regional and local benefits of the I-81 improvement are discussed below, followed by the benefits of the Halfway Boulevard Extension component.

Efficient Access to Truck Services

The Project improves access to the many services for Interstate trucks that pass through the Project area – the crossroads of I-81 and I-70. As a logistics center that attracts and generates thousands of truck trips every weekday, the Project area has become an important service center for the tens of thousands of long-distance through-trucks as well. In addition to a Pilot Travel Center and a recently-completed secure truck parking and rest area, there are several truck repair facilities, convenience stores, and other truck-oriented businesses on Halfway Boulevard. There is also a Pilot Travel Center on MD 63 near the I-70 exit with parking for 84 trucks, and an average daily use of 76 trucks per day.

The location and availability of rest breaks has become critical to truck driver productivity. Truck drivers spend almost an hour a day looking for truck parking to comply with Federal Hours of Service (HOS) regulations, adding up to an estimated \$5,000 per year in losses for drivers. Having safe, reservable parking spaces at this busy freight location is important, and this Project will provide easier access to the new rest facility, including faster trip times on I-81, a shorter trip to/from I-70 west, as well as more reliable trip times should there be a lane-blocking event on either Interstate.

Increasing Capacity and Improving Safety

I-81 is the most heavily trafficked freight route in Maryland's State highway system, with weekday vehicle miles traveled by trucks expected to grow by 56 percent by 2040, **supporting major interstate commerce.** Improvements to I-81 will provide numerous benefits in the larger Hagerstown/Eastern Panhandle region and will become increasingly needed as traffic grows. I-81 is a critical commuter corridor connecting employees from rural areas to employment centers in Hagerstown, Martinsburg, WV, Chambersburg, PA, and other cities, and it is subject to daily congestion, as well as frequent backlog congestion from the high number of crashes.

The proposed widening and interchange upgrades realized through the INFRA investment will substantially increase freight volume capacity, lessen delay, and are expected to reduce the number of crashes in the I-81 corridor by at least 40 percent. **These improvements complement the existing efforts to improve I-81 in the region, including the recently completed expansion of I-81 in West Virginia, and the ongoing \$93 million project by the MDOT SHA to widen 1.3 miles of I-81 south of the current Project.** Although not yet funded,



“This project will improve our operational efficiency and mobility needs as well as address critical safety concerns we have for our employees.”

Marcus Minkkinen

VP Operations, Powertrain Production,
Volvo North America

MDOT SHA plans to complete the final 7.3 miles of I-81 corridor widening and improvement in two future phases, from Halfway Boulevard north to the Pennsylvania State line.

Improving Commute Times

Washington County residents, businesses, and those who commute through the project area are among the primary end users for the Project. The County's 2016 population of 150,292 is concentrated around Hagerstown and along I-81, as well as smaller pockets living in the areas of Smithsburg and Boonsboro. From 2006 to 2016, the region's **overall population increased by approximately 10 percent, with an increase of 4.2 percent for Washington County.** The City of Hagerstown has grown by an additional 10 percent since the turn of the century and is now Maryland's sixth largest city, supporting economic growth in Western Maryland and adjacent states. Of the more than 66,000 jobs in Washington County, 13,000 workers drive in from Pennsylvania and West Virginia, most along the I-81 corridor. I-81 is also used for outbound commuters, with 10,000 workers commuting to neighboring states.

In addition to the everyday peak hour congestion on these roads, regional commuters must also deal with lengthy backups caused by crashes on I-81 or I-70 in the Project area. With the Project, the number of crashes on I-81 is expected to decrease dramatically, and the Halfway Boulevard Extension will provide a needed detour around lane-blocking crashes should they occur on I-81 or I-70 in the Project area.

Supporting Economic Development through Partnership

The County has identified the Extension of Halfway Boulevard to MD 63 as an essential link for economic development. It will assist with traffic flow and reduce travel time, two factors important to business retention, and to continued business development along the Halfway Boulevard corridor. Most businesses in the Project area are related to long-distance freight transportation and depend on access to I-70 and I-81. These include over five million square feet of warehouse and distribution centers, three gas stations/travel centers, Freightliner Repair, Rice Tire, and other businesses.

The I-81/Halfway Boulevard Freight Connection Project has strong constituent and business advocacy at the local and regional levels. The I-81 Corridor Coalition is a consortium of stakeholders dedicated to improving the safety, continuity, and efficiency of commercial and personal travel along the I-81 corridor. This regional partnership comprises state departments of transportation, metropolitan and regional planning organizations, non-governmental organizations, and private entities located across six states. The widening of I-81 throughout the corridor enjoys support from key stakeholders because of its impact on economic growth in the region. Grassroots efforts from local officials and the public have led the MDOT SHA and the Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO) to reprioritize funding in the HEPMPO long-range transportation plan to advance this Project. Widening I-81 has been identified as the top priority for the MPO region for nearly 20 years and is the transportation priority for Washington County.

“These improvements to I-81 are critical infrastructure investments that will help citizens here in Washington County, across Western Maryland, and all across our State go about their daily lives in a faster, more efficient, and safer manner.”

Governor Larry Hogan
State of Maryland

Further, I-81 is a recognized catalyst for economic development in the County. Improvements to safety and travel time on I-81 will directly impact the competitiveness of existing businesses, and the attractiveness of the region to businesses looking to locate or expand their facilities. The Halfway Boulevard Extension will benefit existing and future businesses in the immediate Project area by reducing travel distance to I-70 west by one to three miles, saving up to four minutes. As I-70-bound traffic diverts to MD 63, the Project may also reduce the delays currently experienced by trucks entering I-81 at Halfway Boulevard.

The Project will also open 180 acres for development. The private developer, Bowman Development Corporation, which is donating right-of-way and contributing to the construction of the Halfway Boulevard Extension, is

building a 450,000-square foot facility on the site surrounding the Halfway Boulevard Extension. The facility will be a combination of warehouse and manufacturing that will capitalize on the existing truck traffic feeding from the linkage between I-81 and I-70. The total value of the expected development is \$48 million, including the warehouse/manufacturing building, a retail/convenience store, and new roads and other site work.

PROJECT LOCATION

The Project is entirely in Washington County, Maryland, part of the State's 6th Congressional District, within the Hagerstown, MD-WV-PA Urbanized Area (UZA), which is considered rural for the purposes of the INFRA grant. The Hagerstown UZA had a 2010 Decennial Census population of 182,696. Geospatial coordinates are 39.63 latitude, -77.79 longitude.

The I-81 Phase 2 Corridor Expansion begins on I-81 from 2,000 feet north of MD 63/MD 68 to 1,000 feet north of Halfway Boulevard, a distance of 3.5 miles. The Halfway Boulevard Extension extends from New Gate Boulevard (the current northwestern terminus of Halfway Boulevard) 0.55 miles west to MD 63, approximately 0.4 miles north of the MD 63 interchange with I-70.

As shown in Figure 1, the Project will improve the following I-81 interchanges:

- **Exit 2:** US 11
- **Exit 4:** I-70
- **Exit 5:** Halfway Boulevard

Hagerstown

Hagerstown, MD is the largest city in the HEPMPO area. The center of the region, Hagerstown is nicknamed "Hub City" for its position at the crossroads of I-81 and I-70, and the CSX, Norfolk Southern, and Winchester & Western Railroads. Hagerstown is also the commercial and industrial hub for a tristate area that includes Western Maryland, South Central Pennsylvania, and the Eastern Panhandle of West Virginia.

The County benefits from its convenient location in the heart of the Appalachian region, where excellent rail service and the national highway network provide access to 50 percent of the nation's population overnight. Additionally, the Hagerstown Regional Airport off I-81 services about 50,000 passengers per year. Approximately 20 business and industrial parks, including 2 technology parks, are concentrated in the Hagerstown and Williamsport areas with easy access to I-81 and I-70, as shown in Figure 1. Nearly 2,180 acres are ready for commercial and industrial development, and approximately 6 million square feet of office, commercial, warehouse, and manufacturing space are in use or available for sale or lease along Halfway Boulevard alone.

The availability of industrial and office properties, combined with easy access to Maryland's busiest freight highway, I-81, position Washington County for continued growth and development that is anticipated in the short- and long-term horizon. Currently, Washington County has more than 71,045 workers at its 3,450 companies and is anticipating strong and stable growth with the availability of developable land along I-81. The Greater Hagerstown region is a fast-growing area, with growth of 4.9 percent between 2010 and 2016 according to the US Census. It is a major employment center for the surrounding rural region, with nearly half of all workers commuting in from neighboring states. Local businesses such as the FedEx Mid-Atlantic distribution sites and Volvo Trucks powertrain manufacturing plant depend heavily upon free-flow access to both I-81 and I-70 for efficient supply chain management.

PROJECT PARTIES

Washington County, Maryland, and MDOT SHA are joint applicants that will work in partnership, with grant funds going to MDOT SHA, due to the agency's extensive experience managing and executing similar large, grant-funded projects and is therefore prepared to ensure the work complies with all state and federal requirements. A private developer is also contributing right-of-way as part of an in-kind project contribution. The delivery and oversight of the Project components is described below.

Washington County

Washington County will oversee the completion of the engineering design work for the Halfway Boulevard Extension. The new road will be delivered by Washington County using competitively bid contracts. Washington County is fully qualified to carry out this work, having constructed similar roads, including the existing portion of Halfway Boulevard.

MDOT SHA

MDOT SHA is entrusted with guiding the safe, efficient mobility of all those who live, work and travel in Maryland. As one of the Maryland Department of Transportation (MDOT) Transportation Business Units (TBUs), MDOT SHA is guided by MDOT's mission statement to be a "customer-driven leader that delivers safe, sustainable, intelligent, and exceptional transportation solutions in order to connect customer's to life's opportunities." MDOT SHA has a proven track record for grant oversight and implementation, and therefore will be responsible for grant implementation, including day-to-day management, coordination among project partners, quality control, and project evaluation

MDOT SHA will execute the construction of improvements to I-81, including interchanges, approaches, and associated work such as stormwater management facilities and noise barriers. The Project Management Plan for I-81 (including Phase 1, which is underway) is included in the Appendix. MDOT SHA will also complete engineering design work (partially completed), and any needed acquisition of right-of-way.

Private Developer: Bowman Development Corporation

A private developer, Bowman Development Corporation, currently owns the right-of-way for this component of the Project and will donate it to the County as part of the Project. Engineering design work (partially completed) will be carried out by the developer under the oversight of Washington County. The developer, as part of its in-kind contribution, will provide site grading for the Halfway Boulevard Extension, build improvements at the new road's intersection with MD 63, and facilitate links to other roads in its new development.

The Project includes a lengthy list of project supporters across a range of stakeholder groups, including elected officials from across the local, state, regional, and federal level; economic development groups, private businesses, and professional associations. The full list of Letters of Support can be found in the Appendix.

GRANT FUNDS: SOURCES AND USES OF PROJECT FUNDS

This application requests \$55 million in INFRA grant funds for the Project with a total cost of \$105.9 million. Non-federal funds from the State, local, and private sources account for 44.5 percent of project costs. INFRA (51.9 percent) and other federal funding from the Appalachian Regional Commission (ARC) (3.6 percent) account for the remaining 55.5 percent. Table 3 presents the funding sources and uses.

TABLE 3 (BELOW):
Project Funding Summary and Element and Source

	I-81 Improvements (\$)	Halfway Blvd Extension (\$)	Total Amount(\$)	Total Percentage (%)
INFRA Grant Request (<i>Federal</i>)	\$55.0 million	-	\$55.0 million	51.9 %
Appalachian Regional Commission (<i>Federal</i>)	-	\$3.8 million	\$3.8 million	3.6 %
MDOT (<i>State</i>)	\$42.6 million	-	\$42.6 million	40.2 %
Washington County	\$1.0 million	\$2.172 million	\$3.172 million	3.0 %
Private	-	\$1.35 million	\$1.35 million	1.3 %
TOTAL	\$97.6 million	\$8.322 million	\$105.922 million	100.0 %

ARC has awarded two Local Access Road grants to Washington County for the Halfway Boulevard Extension portion of the Project, totaling \$3.8 million. These funds do not require a non-Federal match. However, the County is contributing \$3.522 million in County and Private funds for this Project component. Documentation of the commitments for these funds is available in the Appendices.

While widening I-81 has been a top priority for 20 years, the barrier to getting this Project built is funding, given that County and State resources are limited. MDOT covered the cost of Phase 1 with some assistance from West Virginia. After many years, Phase 1 is currently under construction. **Without this grant, it is not known how many years it will take MDOT to fill the remaining funding gap. During this time, growing traffic will only worsen the safety and congestion problems on I-81.**

PROJECT COSTS

Spending by Project component is shown in Table 4. A detailed cost estimate for each component is available in the appendices. These cost estimates are based on Preliminary Engineering, and include reasonable contingency factors appropriate to the scope of each component. For the I-81 component, a Financial Plan and Project Management Plan have been developed to identify and mitigate potential cost and schedule problems. The Financial Plan uses a 25 to 40 percent contingency for early engineering.

■ TABLE 4 (BELOW):

Uses of Project funds as distributed between the various Project activities and components.

Project Activity	I-81 Phase 2 (\$)	Halfway Boulevard Extension (\$)	Project Total (\$)
Land, Rights-of-Way, Appraisals	\$1,900,000	<i>Donated</i>	\$1,900,000
Architectural, Engineering and Design	\$12,849,050	\$100,000	\$12,949,050
Project Inspection Fees	\$12,767,041	\$250,000	\$13,017,041
Construction	\$61,454,636	\$6,972,000	\$68,426,636
Subtotal	\$88,970,727	\$7,322,000	\$96,292,727
Contingencies	\$9,629,273	<i>Included in Above</i>	\$9,629,273
TOTAL	\$98,600,000	\$7,322,000	\$105,922,000

The appendices also include the results of a Federal Highway Administration (FHWA) Cost Estimate Review (CER) for widening all of I-81 in the State of Maryland. The CER workshop was conducted with a review team consisting of FHWA, MDOT SHA, and consultants to verify the accuracy and reasonableness of the cost estimates and schedule, and to develop a probability range for the cost estimate that represents the Projects' current stage of development. The results were used as the basis for setting the baseline total cost in the Initial Financial Plan.

Washington County and MDOT understand that cost overruns on either component of the Project will be their responsibility. Further, construction contracts typically are structured to shift the risk of cost overruns to the construction contractor.

PREVIOUSLY INCURRED EXPENSES

Previously incurred expenses on I-81 Phase 1, and the \$5 million in design and environmental work for I-81 Phase 2 are not included in the \$105.9 million total Project cost. The I-81 Phase 1 cost is \$93 million, some of which was contributed by West Virginia Department of Highways to cover the expense of the bridge over the Potomac River separating the two states. The value of the right-of-way cost of the Halfway Boulevard Extension is also not included in the \$105.9 million Project cost.



In 2019, a serious truck crash between two tractor trailers in the Project area on I-81 southbound between Halfway Blvd and I-70 closed both lanes of I-81 southbound traffic for two hours.

V MERIT CRITERIA

In partnership, Washington County and MDOT SHA are seeking INFRA funding because of the high burden of the cost of widening I-81 on the County and the State, particularly given that over 90 percent of the freight traffic in the County is through-traffic, neither originating in nor destined for Washington County. Washington County officials and business groups have put in great effort over the years to commit local funding, secure the ARC grant, and include Private contributions as part of the funding package.

Support for National or Regional Economic Vitality

This Project will contribute to economic vitality by providing national, regional, and local benefits for the movement of freight and people. Specifically, the project will address known weaknesses in the transportation system, detailed below, as it will:

Improve Safety on I-81

- Reduce Crash-Related Travel Delay and Impacts to Business Operations
- Benefit Traffic Operation from I-81 Improvements
- Improve Access to/from I-70 via Halfway Boulevard
- Foster Economic Development

Improve Safety on I-81

Crashes cause an undue burden on all road users. In addition to fatalities, injuries, and property damage, highway crashes also create traffic delay, and increase the cost of insurance for the movement of people and goods.

At **15 percent**, crashes that occur on Maryland's stretch of I-81 represent a disproportionate number of crashes in Washington County. The unacceptable level of crashes is partially due to a concentration of 10

interchanges in a 12.1-mile span within Maryland, including 3 interchanges in the 3.5-mile segment part of this Project. Current design standards recommend at least two miles between interchanges. Further, **the roadway does not meet modern design standards for limited access highways**. An additional safety concern is the high overall traffic volumes, and particularly the high truck volumes. The four-lane I-81 was originally designed to handle 15 percent truck traffic, and current truck volumes are approaching twice that number. I-81 in Maryland averages about 71,300 annual average daily traffic (AADT) with truck volumes accounting for 27 percent of all traffic. Portions of I-81 near Halfway Boulevard have even higher truck percentages. This high volume of truck traffic exacerbates the weaving, merge, and diverge problems associated with the closely spaced interchanges. The MDOT SHA has specifically found that weave problems exist at the I-70 and Halfway Boulevard interchanges, resulting in a high number of rear-end truck crashes and sideswipe crashes.

High truck volumes lead to greater risk for serious crashes that can cause fatalities and injuries, as well as resulting in hours of backlog congestion. On I-81, almost 20 percent of all crashes are related to trucks. I-81's 2013-2018 truck-related crash rate of 13 crashes per 100 million vehicle-miles is substantially higher than the 2013-2018 statewide average rate for similar roadways (5 crashes per 100 million vehicle-miles).

This rate has been increasing in recent years, as shown in Table 5. The fatal crash rate on I-81 has, on average, been substantially higher than the 2012 statewide average of 0.3 fatal crashes per 100 million vehicle-miles. Alcohol and surface conditions were not considered factors in any of these crashes.

TABLE 5 (BELOW):

Crash rates on Maryland's section of I-81 compared to statewide crash rates at the bottom.

Year	Crash Rate (Crashes per 100 million VMT)	Truck Crash Rate (Crashes per 100 million VMT)	Fatal Crash Rate (Crashes per 100 million VMT)
2012	35.0	9.3	0.8
2013	34.0	9.7	0.8
2014	43.7	17.8	0.8
2015	40.8	11.7	0.0
2016	48.3	12.1	0.0
2017	50.2	20.1	0.0
2018	52.8	19.7	0.0
2018 STATEWIDE RATE	44.3	5.0	0.3

Based on crash data between 2012 and 2018, there were 371 reported crashes that occurred on I-81 within the Project area, including 3 fatal crashes and 375 injury crashes resulting in 171 injured persons. **The number of crashes averages 62 per year.**

The Project will improve safety on I-81 by widening and modernizing I-81 and the three interchanges in the Project area. The expected reduction in crashes is anticipated to align closely with the recently realized reduction of crashes along I-81 in West Virginia. In 2011, West Virginia completed widening I-81 from four lanes to six lanes. The project resulted in an 80 percent reduction of crashes along the corridor over a four-year period when compared to the previous four years.

The realized safety benefits in West Virginia are a strong indicator that Maryland will experience a similar crash reduction. However, to be conservative, the Benefit-Cost Analysis (BCA) only assumes half of that benefit, i.e., a 40 percent drop in crashes, to account for the fact that West Virginia's section of I-81 was in worse condition overall before the expansion project was undertaken. **A 40 percent reduction in crashes would lead to an estimated reduction of 1,624 crashes on I-81 in the Project area in the first 20 years after construction is complete.**

Reduce Crash-Related Travel Delay

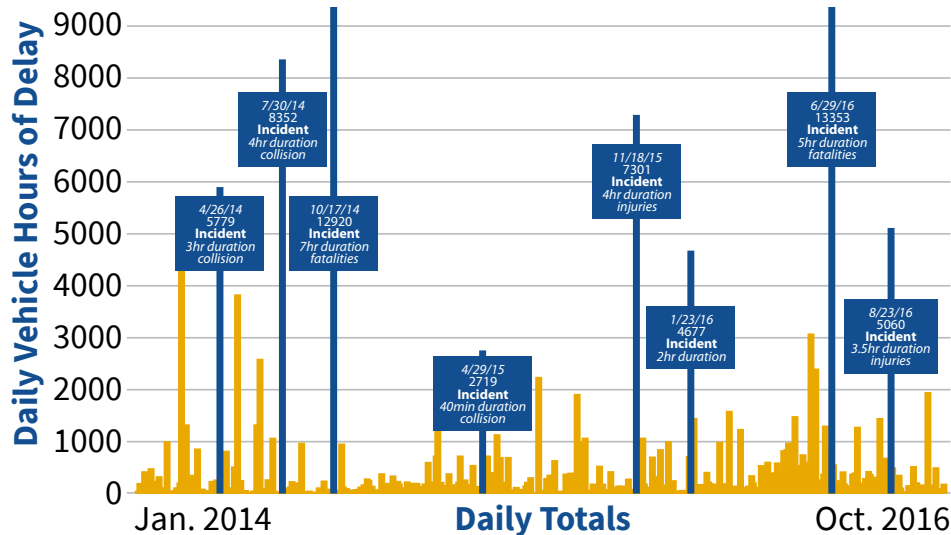
Crashes, in addition to causing fatalities, injuries, and property damage, also cause a great deal of travel delay on heavy-traffic roads such as I-81. When a severe crash occurs along I-81 and causes a closure of a lane or the roadway, lengthy vehicle backlogs occur and impact thousands of travelers. The existing local roadway network near the Project provides detours that are slow, lengthy, or travel through areas of Hagerstown that are not suited for large volumes of truck traffic. This includes residential areas as well as retail commercial areas.

The reliability of travel times along I-81 in Maryland has become a significant problem for motorists and freight carriers. Based on available INRIX travel time data, nearly 200,000 hours of vehicle-delay occurred along this roadway corridor between January 2014 and October 2016. As illustrated in Table 2, traffic delays fluctuate substantially, both by hour and day, making it difficult for motorists to anticipate or avoid traffic congestion. Traffic incidents have been identified as a root cause of substantial delays.

“When an accident occurs on I-81 in Maryland, it causes retail and restaurant sales to drop from 17 to 28 percent for the day depending on the length of time the accident backlogs traffic.”

Julie Rohm

General Manager, Valley Mall,
Hagerstown



■ FIGURE 2 (ABOVE):

INRIX daily vehicle hours of delay and major crashes on the Maryland section of I-81.

An important benefit of the Project is its ability to reduce crash-related delay. Travel time savings will result from the following Project effects:

- An expected reduction in crashes on I-81 due to widening and modernization of the roadway and interchanges.
- Adding a new lane in each direction on I-81 means that when a crash blocks one or two lanes, the remaining capacity of I-81 will be much better able to handle traffic backlog.
- The new connection provided by the Halfway Boulevard Extension will provide a safer, more direct detour for incidents that occur on segments of I-81 and I-70 between the I-70/MD 63 interchange and the I-81/Halfway Boulevard interchange.

As assessed in the BCA, the annual benefit of reducing crash-related delay is estimated at 568,908 hours over the 20 year analysis period.

Benefits Traffic Operations from I-81 Improvements

The Washington County travel demand model was used to assess improvements in travel times, speed, and LOS on I-81. Benefits of the two Project components are discussed separately due to limitations in the County traffic model.

Managing Growth in Demand on I-81

In 1989, overall volumes along the I-81 corridor ranged from approximately 30,000 to 50,000 AADT. Now, three decades later, the volume on I-81 averages 71,300 AADT. The MDOT SHA's statewide travel demand model projects AADT to be as high as 110,000 vehicles by 2040, representing a growth of nearly 40,000 total vehicles per day. This is supported by FHWA's Freight Analysis Framework (FAF) forecasts, which foresee truck traffic on I-81 in Maryland to increase by more than 50 percent over the next 30 years to reach nearly 30,000 trucks per day by 2045. With this expected increase in both through freight traffic and other traffic types, it is critical to increase capacity in this corridor.

Level of Service

Freight movement needs reliable traffic operations with minimal delays. Currently existing warehousing businesses along Halfway Boulevard complain that during many hours of the day, their trucks are delayed getting onto I-81 and I-70 at nearby interchanges. With 56 percent growth in traffic volumes expected by 2040, this delay will only worsen.

The LOS on the Phase 2 segment currently ranges from B to D and is projected to deteriorate to B to F by 2040 under

the No Build scenario. This decrease in service levels is due to increased volumes leading to increased truck-to-auto friction, causing degradation of the I-81 merges and diverges. Several notable, high-traffic areas are projected to operate poorly (LOS E), or to fail (LOS F), under the 2040 No Build conditions, as shown in Table 6.

TABLE 6 (BELOW):*Projected Levels of Service (LOS) for I-81 Phase 2 compared to existing and No Build scenarios.*

Facility (Weave, Diverge, or Merge)	2016 PM Existing LOS	2040 PM No Build LOS	2040 PM Phase 2 LOS
I-81 NB Diverge to I-70	C	D	E
I-81 SB Merge from I-70	D	F	D
I-81 NB Diverge to US 11	B	D	B
I-81 NB Merge from US 11 EB	B	B	B
I-81 NB Merge from US 11 SB	B	C	C
I-81 SB Diverge to US 11	B	F	D
I-81 SB Merge from US 11	C	E	C
I-81 NB Diverge to MD 68	B	B	B
I-81 NB Merge from MD 68	B	C	B
I-81 SB Diverge to MD 68	B	B	B
I-81 SB Merge from MD 68	B	B	A

Currently, the I-81 merge lanes from I-70 operate at a deficient LOS D during evening peak travel hours. Without the Project, these lanes will drop to LOS F; with the Project they will be at LOS D at 2040 traffic volumes. With the Project, several of the previously identified LOS degradations under 2040 No Build are mitigated to acceptable levels of service, expanding capacity for freight movement, and reducing travel times for all users.

Not surprisingly, the Project's improvement in LOS is associated with higher travel speeds and correspondingly reduced travel times. With the completion of the I-81 Phase 2 improvements, travel speeds improve in both directions of the I-81 mainline corridor compared to the 2040 No Build conditions, as shown in Table 7.

TABLE 7 (BELOW):*Projected average travel speeds for I-81 Phase 2 compared to existing and No Build scenarios.*

I-81 Segment	2017 EXISTING (mph)		2040 NO BUILD (mph)		2040 PHASE 2 (mph)	
	AM	PM	AM	PM	AM	PM
I-81 NB: Between MD 68 Ramps	63	64	57	59	65	64
I-81 NB: MD 68 to US 11	61	63	52	56	64	63
I-81 NB: Between US 11 Ramps	60	62	60	58	62	61
I-81 NB: US 11 to I-70	58	63	57	53	59	58
I-81 SB: I-70 to US 11	61	52	47	63	52	63
I-81 SB: Between US 11 Ramps	64	58	57	64	64	61
I-81 SB: US 11 to MD 68	66	59	59	64	64	64
I-81 SB: Between MD 68 Ramps	66	64	64	65	65	65

With the completion of Phase 2, the model shows speeds nearly all return to the 2017 existing conditions through the implementation of Phases 1 and 2. Along certain segments, the new six-lane facility will increase speed by more than ten miles per hour, expediting the movement of freight through the corridor. The MDOT SHA's modeling results address recurring delay, which includes typical daily peak period traffic congestion. Non-recurring delay, including the impacts of traffic incidents discussed above, is not considered in the modeling.

The BCA calculated a total travel time savings of 3.2 million hours during the 20-year analysis period.

Improve Access to/from I-70 via Halfway Boulevard

To enhance economic competitiveness, it is important to have improved travel speeds and travel time reliability on major freight routes such as I-81. Improved access to the truck rest areas on Halfway Boulevard also improves truck driver productivity, as drivers can more easily estimate their arrival times.

The Project's connectivity improvement will reduce travel distance and travel time for vehicles traveling from I-70 west to destinations on Halfway Boulevard, and to nearby roads such as New Gate Boulevard and Hopewell Road. A similar benefit will occur for westbound traffic from the Project area. The mileage saved is between 0.9 miles (e.g., for businesses along Hopewell Road), and 2.6 miles (for destinations further west, such as Sealy Mattress). Reduced mileage to and from the new rest area is estimated at 1.0 miles.

Given the large number of trucks heading to and from this area from I-70 west of MD 63, the BCA estimates a total of 29,701 hours and 597,839 miles saved each year. The reduced miles provide benefits in terms of reduced fuel use, reduced emissions, and avoided wear and tear on vehicles and roads, making freight trips more efficient overall.

Foster Economic Development

The Project will directly lead to \$48 million in local economic development benefits tied to the planned Bowman Development Corporation development immediately adjacent to the proposed Halfway Boulevard Extension. Economic development benefits will also accrue to businesses located in the immediate Project area, and all along the I-81 corridor, with improved transportation efficiencies from travel time savings and VMT reduction.

For the MPO region, improving mobility along the I-81 corridor and enhancing the connectivity of the County and local road network are top priorities. Improving traffic operations in the I-81 corridor will make commuting easier and expedite other business and non-business travel. A transportation system that operates well is more attractive for new businesses to locate and increases the likelihood that existing businesses will expand.

The connectivity benefits of the Halfway Boulevard Extension make trips shorter and travel times shorter and more reliable, and provide resiliency for situations where I-70, I-81, or other roads are backed up due to construction needs or crash management. Put together, the two components of this Project provide important transportation efficiency benefits for the Project area, including 12.5 million fewer vehicle-miles traveled, and 3.2 million hours of travel time saved during the BCA's 2025-2044 analysis period.

The number of recent, under construction, and planned warehouse and distribution facilities around the Project area amply demonstrate its economic vitality and potential for growth (see Figure 1). Beyond the Bowman development, new development continues to expand in the project area. In August 2019, the Hagerstown Planning Commission approved preliminary plans for the NorthPoint development's plan to develop 190 acres to a business center that includes multiple warehouse distribution facilities generating approximately 1,500 jobs. This \$132 million investment will develop 2.2 million square feet. With the completion of the Project's I-81/Halfway Boulevard/I-70 loop, existing and future development in this area will be able to provide more competitive freight services, lowering the costs for delivering goods all along the I-70 and I-81 corridors. This will ensure a more stable and growing employment base in this rural area. However, without the Project, the utility of this area will decrease, as the growing number of trucks spend more time in delayed conditions waiting to enter I-81.

Leveraging of Federal Funding

MDOT and Washington County have worked for nearly two decades to pull together the funding for the I-81 Corridor and for the Halfway Boulevard Extension, and these efforts to leverage federal funding are described separately below. The non-Federal match for the INFRA grant is \$47.12 million, or 44.5 percent.

State Funding

Widening I-81 in Maryland was identified as a priority for the multistate region 20 years ago. Three years ago, MDOT developed a Finance Plan and a Project Management Plan to ensure that the 12-mile, \$386.7 million Project could be completed.

Phase 1 is under construction, with \$93 million committed to date. For Phase 2, MDOT has spent \$5 million for Project design costs, and worked with Washington County to secure additional funds to support construction. The State also participates as part of the multistate I-81 Corridor Coalition, which seeks to coordinate efforts along the corridor. I-81 Phase 2 continues to have significant support, as evidenced by the MDOT SHA's \$42.6 million commitment of State funding.

Maryland was one of the first in the nation to create a Transportation Trust Fund, an integrated account dedicated to funding the State's transportation needs. The Maryland Transportation Trust Fund is indexed to the Consumer Price Index and a sales and use tax equivalent rate that is annually adjusted as a percentage of retail price. Indexing the Fund to inflation provides a more stable non-Federal revenue stream.

Despite this ongoing investment, Maryland's transportation needs continue to outpace available funding. As a result, the MDOT SHA has considered other alternatives for funding its transportation needs, including use of a public-private partnership (P3) delivery model for I-81. The MDOT SHA determined that Phase 2 (as well as the entire, four-phase Project) is not an ideal candidate for P3 because there is not sufficient private sector market appetite. The limited number of lane miles constrain the Project's financial feasibility and the rate of return that would be acceptable to potential concessionaires. The MDOT SHA found that projects with greater than 30 lane miles are more suitable to P3.

Instead, the MDOT SHA chose the Design-Build delivery method to maximize its scarce dollars. Design-Build decreases the schedule for delivery since design/engineering and construction are managed under one procurement. The MDOT SHA estimated that the procurement time-savings will accelerate the Project by 12 to 18 months. Design-Build also provides opportunities for innovation to address congestion and constructability concerns along mainline I-81 and at the interchange ramps.

Appalachian Regional Commission (ARC) Funding

MDOT has also supported Washington County in securing funding from the ARC. The ARC grant program is designed to further economic progress in distressed Appalachian counties throughout 13 states. The grants are used to support business development and entrepreneurship, education and training, healthcare, and physical infrastructure.

ARC understands the importance of this critical freight corridor through Appalachia and has awarded two Local Access Road grants to Washington County for the Halfway Boulevard Extension portion of the Project, totaling \$3.8 million. These funds do not require a non-Federal match, as shown in the award notification letters in the appendices. However, the County is contributing \$3.522 million in County and Private funds for this Project component.

County and Private Funding

For the Halfway Boulevard Extension, Washington County has been working since at least 2000 to find funding to strengthen and better connect its roadway network despite limited funding availability. Washington County developed a program, Making Connections, to leverage development interests in the creation of needed transportation infrastructure. The program was successful in securing \$1.35 million from the private company Bowman Development Corporation, which is contributing to the construction of the Halfway Boulevard Extension, as well as donating right-of-way valued at \$0.5 million. The County is also contributing \$1 million to assist with the non-Federal match for widening I-81.

Potential for Innovation

Innovation Area #1: Technology

In a recent Trucker Path survey, 85 percent of drivers cited parking as the number one cause of stress at work. 70 percent of truckers have had to violate Hours of Service (HOS) regulations to find parking and 96 percent have admitted to parking in areas not designated for trucks. In addition, 48 percent of drivers spend an hour or more a day finding safe truck parking, reducing productivity and costing truck drivers nearly \$5,000 a year in lost wages².

2 Truck Parking Report. Trucker Path, July 2018.

This Project will improve access to a new, secure, 24-hour truck parking facility on Halfway Boulevard. For a small fee, drivers can reserve a spot in this 170-space lot, using their smart phones to gain entry to the facility. With shorter, more reliable travel times to this facility, long-distance truck drivers will be able to increase their productivity while staying within their FMCSA hours of service limitations.

MDOT SHA will also deploy several new innovations, including:

- Enhanced information available along the corridor (and throughout Pennsylvania, Maryland, and West Virginia) will enable enhanced travel information sharing opportunities. This project will include specific information about real-time conditions - in particular during the construction phases but longer term also - and push out to common trucker information tools such as Waze, Drivewyze, and SiriusXM (in addition to existing MDOT SHA tools such as DMS and 511). While congestion can be reported through crowdsourced methods in Waze, only MDOT SHA and its contractors can push out real-time information on lane closures during construction and/or specific weather conditions as they occur in real time.
- MDOT SHA will also incorporate information for this corridor in future connected vehicle Roadway Information Messages (RIM) that will be developed and pushed out in the near future, certainly during the lifetime of this project. These messages, utilizing SAE J2735 formatted data, will be readable as future connected vehicle applications become available during the decade. This project will incorporate the deployment of two or more connected vehicle roadside units utilizing dual-mode dedicated short range communications (DSRC) and cellular vehicle-to-everything (C-V2X) capable of broadcasting to whatever devices might become more prevalent in five years during the peak of construction on this project.

“Interstate 81 improvements are crucial to support safe and efficient travel, and promote economic development in Washington County.”

Jeff Cline

Washington County Commissioner President



This Project improves access to a new, secure, 24-hour truck parking facility recently constructed on Halfway Boulevard.

Innovation Area #2: Project Delivery

The I-81 component of the Project will showcase innovations in environmental review and permitting and experimental project delivery. The Project planning phase concluded with a FONSI document approved by FHWA and concurrence from the environmental review/permit agencies. However, the MDOT SHA is interested in participating in USDOT’s new environmental and permitting approach. The MDOT SHA has identified the Phase 2 of the I-81 corridor widening Project as a candidate for delivery

utilizing the Design-Build delivery method and is committed to doing so if this grant is awarded. MDOT SHA will use Special Experimental Projects Number 14 (SEP-14) tools in concert with the Design-Build project delivery method to speed the pace of Project Construction.

Washington County will bid out most of the construction of the Halfway Boulevard Extension.

Innovation Area #3: Innovative Financing

Washington County built Halfway Boulevard approximately 15 years ago; available funding precluded connecting to MD 63; however, the County planned to complete this connection when development grew along the new road. Now the privately-owned Bowman Development Corporation understanding that a new road would open a large area for development, as well as providing an important link in the County road network. Building on the local and state project partnership, Bowman is donating the right-of-way for the road Extension to the County. Bowman

also contributed \$1,350,000 towards the construction of the road (\$750,000 as cash, and the rest as in-kind site clearance and other construction work).

Additional Opportunities for Innovation

Beyond the three previously identified innovation areas, this project offers opportunities to innovate in the additional areas of operations and stakeholder engagement. The lessons learned from this project may offer the industry peers lessons learned to continue to improve the nation's effective, efficient project development, delivery, and operations.

Innovation in Operations

MDOT SHA has a history of successful Transportation Systems Management and Operations (TSM&O), exercised through its Coordinated Highways Action Response Team (CHART) Program. For nearly three decades, the CHART program has grown and increased its utility through comprehensive incident management, traffic management, and emergency management. The foundation of good management begins with awareness - often realized through detection (to monitor flow), CCTV surveillance (to verify incidents and initiate a response), and road weather information systems (to monitor and detect changes in road weather conditions).

Key operational enhancements included in this project:

1. Incorporation of enhanced traffic flow detection and traffic controller upgrades along Halfway Boulevard to help MDOT SHA more actively manage real-time conditions on this important arterial.
2. Implement Adaptive Traffic Signal System capability along the Halfway Boulevard corridor and explore the potential for freight signal priority to more actively manage recurring congestion and incorporate broader timing plans that can be implemented in response to incidents and/or congestion along I-81 and/or I-70.

Innovation in Stakeholder Engagement

This project will align with the new rural focused ROUTES (Rural Opportunities to Use Transportation for Economic Success) program. The three main activities of that program are:

1. Collecting input from stakeholders on the benefits rural projects offer for safety and economic benefits, as well as the type and degree of assistance rural projects require
2. Providing user-friendly information to rural communities to assist them in understanding and applying for DOT discretionary grants
3. Improving DOT's data-driven approaches to better assess needs and benefits of rural transportation infrastructure projects.

The collaboration will include a peer exchange with neighboring states (West Virginia, Virginia, Pennsylvania) and the I-81 Corridor Coalition. Incorporating a workshop or activity to engage the coalition or regional partners opens the door to new opportunities in exploring innovations in truck parking and routing as it relates to the project. Innovative communications and outreach will connect with locals and through-traffic.

The Project provides improved access for truck drivers traveling on I-81 and I-70 to reach repair services, fueling stations, and safe rest areas near Halfway Boulevard. Our stakeholder outreach will explore innovative ideas such as signage or including that info in a feed, project site, or app.

Performance and Accountability

Performance

All operations and maintenance on Maryland's State highways are performed by the MDOT SHA, including long-term rehabilitation type work. With over 17,000 lane-miles to operate, the MDOT SHA is keenly aware of the critical need to maintain its system to safely and effectively move people and freight.

The Halfway Boulevard Extension will be operated and maintained by Washington County, which is responsible for the existing segments of Halfway Boulevard. Estimated operating and maintenance costs for the Project are detailed in the BCA Report in the appendices.



Accountability

The MDOT SHA is confident in its ability to deliver Phase 2 of the I-81 corridor widening on-time and on-budget. It is willing to condition construction funding upon meeting specific planning, engineering, and procurement deadlines. Table 8 shows how the MDOT SHA will structure conditions on the funding.

TABLE 8 (BELOW):
Funding timeline and conditions for the Project.

Activity	Date	Percent Award Forfeited
Notice to Proceed	April 30, 2021	5 percent (\$2.75 million)
Substantial Completion	October 31, 2023	5 percent (\$2.75 million)
TOTAL AWARD SUBJECT TO ACCOUNTABILITY GOALS		10 percent (\$5.5 million)

VI PROJECT READINESS

With an INFRA grant in place, I-81/Halfway Boulevard Freight Connection project is poised to implement crucial safety and congestion remediation and increase travel time reliability in this vital economic corridor. **MDOT SHA and Washington County have the technical and financial capacity to undertake this project quickly and meet all milestones: INFRA funding will provide the final missing piece to unlock this project’s positive impacts.**

Financial Feasibility

MDOT is responsible for building, operating, and maintaining a safe and seamless transportation network that links Maryland with the rest of the country and the world. MDOT directs and oversees the planning, construction, and operation of Maryland’s highways, transit, maritime, rail, and aviation facilities, as well as the Maryland Motor Vehicle Administration. The Transportation Business Units (TBUs) are funded by a common funding source: Maryland’s Transportation Trust Fund.

The Transportation Trust Fund is separate from the state’s general funds and its revenues are dedicated to improving and operating Maryland’s transportation network. The five TBUs and the Maryland Transportation Authority all work together to assist each other in the development of a seamless transportation system designed to fuel Maryland’s economy and enhance its citizens’ quality of life.

The Maryland Department of Transportation has developed a \$16.325 billion 6-year program. The MDOT FY2020 to 2025 6-year consolidated transportation program (CTP) dedicates over \$6.585 billion to MDOT SHA’s capital program, with approximately, \$4.507 billion committed to safety, congestion relief, and community enhancements. Despite this significant investment, the transportation needs around the state continue to outpace available resources. The INFRA funding request would allow MDOT SHA to accelerate this project and continue momentum from planning to design and construction.

Technical Feasibility

In June 2016, the MDOT SHA issued a Project Management Plan (PMP) for the entire four-phase I-81 Project. The PMP provides a detailed description of the management systems and processes that will guide the full range of

“As the largest real estate developer in Washington County, Bowman Development is greatly affected by the I-81 widening Project. The success of our development will depend on the continued efficient and safe traffic flow on I-81.”

Donald Bowman

Owner and Chairman of the Board,
Bowman Development Corporation

Project activities to ensure Project completion, as well as organizational roles and responsibilities and key staff. A copy of the Project Management Plan is included in the appendices.

Halfway Boulevard will be constructed using standard designs and materials. The right-of-way is privately held, and the owner, Bowman Development Corporation, has agreed to donate it. There are no steep grades or any engineering difficulties expected with this 2,800-foot Extension. Washington County has experience with projects of a similar scope and size.

Project Schedule

This project is ready to advance. The MDOT SHA will have all necessary pre-construction activities completed by December 21, 2020 and intends to obligate an INFRA investment for the construction of I-81 Phase 2 by October 22, 2020.

The MDOT SHA has demonstrated a significant capacity to deliver projects utilizing the Design-Build delivery method on over 45 projects valued at over \$900 million. Additionally, four Design-Build contracts for the InterCounty Connector Mega-project, valued at over \$1.5 billion, were delivered by the MDOT SHA.

I-81 Phase 1 design activities began in 2013, were completed in March 2016, and the MDOT SHA began construction in October 2016, with anticipated completion in Winter of 2020-2021. A statewide priority, the MDOT SHA is now actively advancing Phase 2 through the design and engineering process, and fully anticipates advertising a contract on Phase 2 in December 2021.

While design on Phase 2 officially commenced in June 2017, the completed design and construction documents for Phase 1 will provide the MDOT SHA with efficiency during Phase 2. A Project schedule for I-81 Phase 2, including an anticipated contract award timeframe, is displayed in Table 9.

Final design and the environmental and permitting process for the Halfway Boulevard Extension is expected to be completed in time to begin construction in Spring or Summer 2020. Construction should be complete no later than Fall 2021.

■ TABLE 9 (BELOW):
Schedule for the Project's various activities.

Project Activity	Timeline
Design-Build Advertisement (RFQ)	December 2020
Proposals Due	January 2021
Notice to Proceed	April 2021
Substantial Completion	Fall 2023

Required Approvals

Planning and environmental review for the entire Maryland I-81 corridor expansion is complete; final design for Phase 2 will be initiated once notice of award is received.

Environmental Permits and Reviews

The MDOT SHA uses the Streamlined Environmental/Regulatory Process for the Project planning phase of the I-81 corridor study. The Project planning phase concluded with a FONSI document approved by FHWA, concurrence from the environmental review and permitting agencies on a preferred/selected alternative, and a corridor permit for wetland/waterway impacts. Any changes during subsequent phases of the Project will likely require only a re-evaluation of the NEPA document and an update of the corridor permit.

The MDOT SHA followed the regulatory requirements of the National Environmental Protection Act (NEPA) in preparing environmental review documentation for the I-81 corridor expansion program in Maryland. Agency

concurrency on the Purpose and Need was received in October 2001, and an EA was completed on September 15, 2004.

MDOT issued a FONSI/4(f) Evaluation document for the Project in February 2010. A reevaluation document was completed for Phase 1 in 2016, which enabled Phase 1 to be advertised for construction and to begin work in October 2016. MDOT SHA is ready to complete an environmental reevaluation for Phase 2 expeditiously following funding availability upon grant award, which is necessary prior to FHWA approving a reevaluation. Copies of the EA and FONSI are included in the appendices.

This Project presents an opportunity to mitigate existing environmental impacts from the original construction of I-81. The existing runoff on this segment of I-81 drains to median inlets and is conveyed to outfalls into roadside ditches and streams. The Project will add stormwater management facilities at the I-70 and Halfway Boulevard interchanges. In addition, median areas will be evaluated to try and maximize the impervious surface runoff treatment using grass swales and bioswales. Mitigation to wetlands and forests that are impacted by the Project is also being investigated.

Halfway Boulevard has completed coordination with the State Historical Preservation Officer and the Maryland Department of Natural Resources. Additionally, Washington County has performed a traffic noise analysis and wetlands and waterways review of the Extension project area. The alignment of the road was altered to avoid sensitive resources. Coordination letters are included in the appendices.

State and Local Approvals

The MDOT SHA will complete the permit and approval process for I-81 Phase 2 by 2022. The permits received for Phase 1, which should be similar to those required for Phase 2, include: Maryland Department of Environment (MDE) E&S Approval; MDE SWM Approval; NPDES Permit for Storm Water Associated with Construction Activity; MDE Non-Tidal Wetland Permit; MDE Water Quality Certification; US Army Corps of Engineers Permit; and the Maryland Department of Natural Resources Roadside Tree Permit. As noted above, Washington County has begun, and in some cases finished, coordination with State resource agencies regarding the Halfway Boulevard Extension.

Federal Transportation Requirements Affecting State and Local Planning

As noted above, both components of this Project have long been in the transportation planning documents for the MPO and the State of Maryland. Specifically, one or both components are included in the following:

- HEPMPO Transportation Improvement Program (TIP)
- MDOT 2017 Statewide Transportation Improvement Program (STIP)
- HEPMPO 2045 Long Range Transportation Plan
- MDOT 2040 Maryland State Transportation Plan
- Maryland Strategic Goods Movement Plan

Assessment of Project Risks And Mitigation Strategies

Both components of this Project are extensions of previous work done by the MDOT SHA (I-81 Phase 1) and Washington County (the existing Halfway Boulevard). Both use standard designs and materials and are therefore low-risk projects.

I-81 Component

Project risks for the I-81 improvements are discussed in the Project Management Plan and the Financial Plan documents completed for I-81 Phases 1-4, which are in the appendices. In addition, risk mitigation strategies have been fully delineated in detail for Phase 1 and will serve as a foundational baseline for developing the more formal risk mitigation strategy for Phase 2. The Phase 1 risk mitigation strategy is available upon request.

Halfway Boulevard Component

Given the nature and limited scope of the Halfway Boulevard Extension, the potential for construction and environmental risks are low. One other potential risk is not receiving the funding or promised site clearance work

from the private developer if, for example, there is an economic change that would make the overall development project unprofitable or difficult to finance, or in the event the developer experiences a significant change in financial situation. However, this risk is also low. Bowman Development Corporation is stable; it is one of the largest developers in Washington County, and it is involved in numerous projects of a similar size.

The interest in developing this property, from both local government and the developer, has continued for a number of years. Bowman currently owns the land, and similar adjacent land uses are thriving and expanding, so it is unlikely that the developer would not move forward with their development project if the INFRA grant is awarded, and similarly unlikely that they would fail to contribute to the Halfway Boulevard Extension, which is integral to the development project.

VII LARGE PROJECT REQUIREMENTS

I-81 is a major freight route as evidenced by the extraordinarily high truck volumes, most of which is through-travel originating from and destined to other states. Almost entirely contained within the Federally designated Appalachian Region, I-81 is a vital route for the distribution of raw materials and finished goods between Appalachia and some of the largest consumer markets in North America. I-81 also serves as a long-distance truck bypass around major areas of urban congestion. A 2012 study published by the I-81 Corridor Coalition examined the economic significance of I-81 to the Appalachian Region and identified I-81 as a critical asset supporting national and global commerce.

The fact that over 90 percent of the freight movements in Washington County, Maryland are through-movements also attests to the importance of this area to the national network. With a growing number of crashes and increasing congestion – including substantial crash-related delay – it is important that capacity and other improvements be made to this segment of I-81 as soon as possible, continuing the widening work begun in West Virginia and currently underway in Maryland, just south of the of the Project area.

In addition to travel time savings and safety benefits, the Project also provides improved access for truck drivers traveling on I-81 and I-70 to reach repair services, fueling stations, and safe rest areas near Halfway Boulevard.

Locally, the Project is needed to allow the continued success of this area as a warehouse, distribution, and truck services center. Improving capacity on I-81 and upgrading interchanges will help commuter traffic and reduce the delays experienced by trucks entering I-81. Further, the new connection of Halfway Boulevard to MD 63 and I-70 will reduce travel times to and from the Project area. Given the area's access to two major Interstates, as well as to a Class I railroad, this Project will allow the area to continue to grow and succeed as a freight distribution center.

“I-81 is the economic lifeline of our quad-state region to include Frederick County, Virginia; Berkeley County, West Virginia; Washington County, Maryland; and Franklin County, Pennsylvania... four counties, four states, forty miles”

L. Michael Ross
President Franklin County Area
Development Corporation
(Pennsylvania)

VIII BENEFIT-COST ANALYSIS

A benefit-cost analysis (BCA) was conducted for the *I-81/Halfway Boulevard Freight Connection: Making Way for Economic Growth and Safety* for submission to the U.S. Department of Transportation (U.S. DOT) as a requirement of a discretionary grant application for the INFRA 2020 program. The analysis was conducted in accordance with the benefit-cost methodology as outlined by U.S. DOT in the 2020 Benefit-Cost Analysis Guidance for Discretionary Grant Programs. The period of analysis corresponds to 25 years and includes 5 years of construction and 20 years of benefits after operations begin in 2025.

The capital cost for this Project is expected to be \$105.9 million in undiscounted 2019 dollars. At a 7 percent real discount rate, these costs are \$76.7 million in 2018 dollars. Net operations and maintenance costs are projected to average less than \$0.1 million per year in undiscounted 2018 dollars in the long term. Over the entire 20-year operations period, these costs accumulate to \$0.6 million in undiscounted 2018 dollars, or savings of \$0.1 million when discounted at 7 percent. Finally, net rehabilitation and replacement cost savings are expected to total \$16.7 million in 2018 dollars over this same period, or \$11.3 million when discounted at 7 percent.

The Project is expected to generate \$133.8 million in 2018 dollars in discounted benefits using a 7 percent discount rate. The expansion of the Interstate 81 Highway and the construction of the Halfway Boulevard will reduce the number of crash incidents within the project segment, reduce congestion due to under-capacity, and reduce vehicle miles traveled due to shorter trips for trucks and passenger vehicles. **This leads to an overall project Net Present Value of \$57.2 million and a Benefit Cost Ratio (BCR) of 1.75. As such, the Project is expected to generate economic benefits that outweigh its costs.** The overall project benefit matrix can be seen in Table 10.

As Table 10 shows, travel time savings and the reduction in crashes produce the greatest quantified benefits, illustrating the Project’s focus on facilitating economic competitiveness and improving safety for vehicle users and pedestrians. The travel time savings includes in-vehicle travel time savings for truck drivers, as well as drivers and passengers of autos. A reduction in travel time translates into more time available for work, leisure, or other activities. The reduction in crashes due to under-capacity will mean fewer incidents of property damage and injuries for vehicle users.

TABLE 10 (BELOW):
Project Impacts and Benefits Summary, Monetary Values in Millions of Discounted 2018 Dollars

Merit Criteria	Benefit	Monetized Value (with 7% Discount Rate)
Economic Competitiveness	Travel time savings	\$20.7
	Vehicle operations & maintenance savings	\$ 4.2
Safety	Crash reduction	\$ 97.1
Environmental Protection	Emissions reduction	\$ 0.2
State of Good Repair	Facility operations & maintenance / rehabilitation savings	\$ 0.2
Agency Cost Savings	Reduced agency operational costs	\$11.5
Total Benefits		\$133.8
Total Capital Costs		\$76.7
Benefit-Cost Ratio		1.75

LIST OF APPENDICES

All appendices are housed on the MDOT website and can be accessed at the URL below, as well as accessed individually in the hyperlinks for each appendix below:

<http://mdot.maryland.gov/INFRA>

- **Appendix 1:** Benefit-Cost Analysis Report
- **Appendix 2:** I-81 Cost Estimate
- **Appendix 3:** I-81 FHWA Cost Estimate Review Final Report
- **Appendix 4:** I-81 Financial Plan
- **Appendix 5:** CTP, TIP, and LRTP – I-81 and Halfway Boulevard
- **Appendix 6:** I-81 Phase 2 Tech Project Engineering Drawings
- **Appendix 7:** Halfway Boulevard Project Engineering Drawings
- **Appendix 8:** Project Management Plan for I-81
- **Appendix 9:** EA and FONSI for I-81
- **Appendix 10:** Halfway Boulevard Environmental Documentation
- **Appendix 11:** Letters of Financial Commitment
- **Appendix 12:** Letters of Support

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