



CONNECTING NATIONAL LANDING

Connecting Communities Through Travel Choices



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[Connecting National Landing](#)

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Basic Project Information	
Project Name	Connecting National Landing
Project Sponsor	Virginia Department of Transportation
Was an application for USDOT discretionary grant funding for this project submitted previously?	No
A project will be evaluated for eligibility for consideration for all three programs, unless the applicant wishes to opt-out of being evaluated for one or more of the grant programs	<input type="checkbox"/> Opt-out of Mega? <input type="checkbox"/> Opt-out of INFRA? <input checked="" type="checkbox"/> Opt-out of Rural?
Project Costs	
MPDG Request Amount	Exact Amount in year-of-expenditure dollars: \$97,000,000
Estimated Other Federal funding (excl. MPDG)	Estimate in year-of-expenditure dollars: \$37,000,000
Estimated Other Federal funding (excl. MPDG) further detail	Other Federal funding from Federal Formula dollars: \$37,000,000 Other Federal funding being requested from other USDOT grant opportunities? \$0 From what Program(s)?: N/A
Estimated non- Federal funding	Estimate in year-of-expenditure dollars: \$230,500,000
Future Eligible Project Cost (Sum of previous three rows)	Estimate in year-of-expenditure dollars: \$364,500,000
Previously incurred project costs (if applicable)	Estimate in year-of-expenditure dollars: \$7,500,000
Total Project Cost (Sum of 'previous incurred' and 'future eligible')	Estimate in year-of-expenditure dollars: \$372,000,000

Basic Project Information

INFRA: Amount of Future Eligible Costs by Project Type

1. A highway freight project on the National Highway Freight Network: \$0
2. A highway or bridge project on the National Highway System: \$238,000,000
3. A freight intermodal, freight rail, or freight project within the boundaries of a public or private freight rail, water (including ports), or intermodal facility that is a surface transportation infrastructure project necessary to facilitate direct intermodal interchange, transfer, or access into or out of the facility: \$0
4. A highway-railway grade crossing or grade separation project: \$0
5. A wildlife crossing project: \$0
6. A surface transportation project within the boundaries or functionally connected to an international border crossing that improves a facility owned by fed/state/local government and increases throughput efficiency: \$0
7. A project for a marine highway corridor that is functionally connected to the NHFN and is likely to reduce road mobile source emissions: \$0
8. A highway, bridge, or freight project on the National Multimodal Freight Network: \$0

Mega: Amount of Future Eligible Costs by Project Type

1. highway or bridge project on the National Multimodal Freight Network: \$0
2. A highway or bridge project on the National Highway Freight Network: \$0
3. A highway or bridge project on the National Highway System: \$238,000,000
4. A freight intermodal (including public ports) or freight rail project that provides public benefit: \$0
5. A railway highway grade separation or elimination project: \$0
6. An intercity passenger rail project: \$0
7. A public transportation project that is eligible for assistance under Chapter 53 of title 49 and is a part of any of the project types described above: \$105,100,000
8. A grouping, combination, or program of interrelated, connected, or dependent projects of any of the projects described above \$306,000,000

Basic Project Information

Rural: Amount of Future Eligible

Costs by Project Type

1. A highway, bridge, or tunnel project eligible under National Highway Performance Program: \$0
2. A highway, bridge, or tunnel project eligible under Surface Transportation Block Grant: \$0
3. A highway, bridge, or tunnel project eligible under Tribal Transportation Program: \$0
4. A highway freight project eligible under National Highway Freight Program: \$0
5. A highway safety improvement project, including a project to improve a high-risk rural road as defined by the Highway Safety Improvement Program: \$0
6. A project on a publicly owned highway or bridge that provides or increases access to an agricultural, commercial, energy, or intermodal facility that supports the economy of a rural area: \$0
7. A project to develop, establish, or maintain an integrated mobility management system, a transportation demand management system, or on-demand mobility services: \$0

Project Location	
State(s) in which the project is located	Virginia
INFRA: Small or Large project	Large
Urbanized Area in which project is located, if applicable	Washington, DC (Northern Virginia)
Population of Urbanized Area (According to 2010 Census)	4,517,691 (2,166,805 within VA)
Is the project located (entirely or partially) in Area of Persistent Poverty or Historically Disadvantaged Community?	No
Is the project located (entirely or partially) in Federal or USDOT designated areas	No
Is the project currently programmed in the:	
■ TIP	Yes
■ STIP	Yes
■ MPO Long Range Transportation Plan	Yes
■ State Long Range Transportation Plan	Yes
■ State Freight Plan	No

Table of Contents

Project Description	1
Project Components for Grant Funding	3
Transportation Challenge	5
Project History	6
Project Location	7
Project Parties	8
Grant Funds, Sources, and Uses of All Project Funding	8
Project Outcome Criteria.....	9
Safety	9
State of Good Repair.....	11
Economic Impacts, Freight Movement, and Job Creation.....	11
Climate Change, Resiliency, and the Environment	13
Equity, Multimodal Options, and Quality of Life	14
Innovation Areas.....	15
<i>Project Delivery</i>	<i>15</i>
<i>Application of Near-Miss Technology.....</i>	<i>15</i>
<i>Project Financing.....</i>	<i>15</i>
Benefit-Cost Analysis	16
Project Readiness and Environmental Risk.....	17
Technical Feasibility.....	17
Project Schedule	18
Required Approvals.....	18
<i>Environmental Permits and Reviews</i>	<i>18</i>
<i>State and Local Approvals</i>	<i>18</i>
<i>Environmental Studies.....</i>	<i>18</i>
<i>Statutory Project Requirements</i>	<i>22</i>
Appendix A – Cost Estimates	
Appendix B – Benefit-Cost Analysis Summary	
Appendix C – Letters of Support	
Appendix D – Data Collection and Analysis Plan	
Appendix E – Concept Sketches	

Project Description

The Virginia Department of Transportation is seeking federal grant funding of \$97 million to complete the \$372 million financing plan for the Connecting National Landing project. These transportation improvements will help advance the integrated transportation and land use plan developed by Arlington County in 2010 – the Crystal City Sector Plan, by providing more travel choices for the community.

The award-winning **Crystal City Sector Plan** laid out a 40-year community-based vision to transform Crystal City into a more inviting, lively, and walkable community with more ground-floor retail, better quality office space, and more housing options.

The Plan was adopted following an extensive community-based planning effort that included more than 90 public meetings over four years. It encourages new development by providing density and other incentives, improving streets, sidewalks, and other public infrastructure, upgrading open spaces, and increasing transit options.

The Plan outlines seven key goals for the revitalization of Crystal City:

- Enhance multimodal access and connectivity;
- Incorporate sustainable and green building principles into all urban and architectural design;
- Create a high-quality public realm that strengthens the sense of place;
- Provide a mix of uses balancing office, residential, retail, cultural, and civic uses among several defined neighborhood centers;
- Relate architectural and urban design to the human scale;
- Preserve the integrity of the single-family neighborhood to the west; and
- Ensure Crystal City's long-term economic sustainability.

One of the key improvements identified to realize the community vision was the transformation of Route 1 into an urban boulevard linking Crystal City's east and west neighborhoods. Route 1 between 12th Street S and 20th Street S in the Crystal City area of Arlington County is currently an elevated freeway that forms a barrier between destinations to the east and west. While Crystal City and Pentagon City are evolving from auto-centric places to higher-density, urban places that people can access by a variety of modes—walking, biking, transit, or driving—many stakeholders now desire to convert this half-mile long segment of urban freeway to embrace Route 1 as a city street with storefronts and building entrances. This urban boulevard will knit the urban fabric of Crystal City as part of the larger National Landing area.

A shift in travel behavior is critical to the success of the Route 1 urban boulevard. Connecting National Landing also includes improvements to the Crystal City Metro station and implementation of a robust Travel Demand Management (TDM) plan that is expected to reduce peak period single-occupancy vehicle (SOV) trips by 30%. Connecting National Landing improvements balance vehicle throughput and corridor levels of service with those of environmental sustainability, walkability, and redevelopment potential while considering a safe environment for all users.

- **Multimodal safety and reliability and congestion reduction:** Ultimately, a safe transportation network for people walking, biking, taking transit, and driving benefits the daily quality of life for its users. The Route 1 corridor will serve all users, which is tied to

[Arlington's Vision Zero Plan](#). Lower speeds and traffic volumes will improve safety in the corridor for vulnerable users.

- **State of good repair:** Connecting National Landing will remove two bridge structures from the VDOT inventory along Route 1, reducing long-term maintenance costs. Modifications to the I-395 interchange will remove a bridge that is both structurally deficient and fracture critical while avoiding future replacement or rehabilitation costs, with the added benefit of extending the urban boulevard to the north that will contribute to lower speeds.
- **Economic impacts, freight movement, and job creation:** This project has the potential to spur development with a connected pedestrian grid and supports the movement of area employees, including the new Amazon headquarters, and associated mixed-use development in the area. It increases the accessibility to job centers through the proposed access improvements. Connecting National Landing will create approximately 6.5 acres of excess right-of-way which may result in more than \$10M of developable land.
- **Climate change, resiliency, and the environment:** This project will result in reduced greenhouse gas (GHG) emissions including nearly 200,000 fewer tons of CO₂ and more than 60 fewer tons of NO_x. New transit services, as well as enhanced opportunities for walking and biking, are more environmentally friendly than single-occupant vehicle trips. As presented to the Commonwealth Transportation Board in [December 2021](#), VDOT is committed to implementing a robust Travel Demand Management (TDM) strategy consistent with the results of the ongoing TDM study for this area. Planned improvements to the Crystal City metro station also support the necessary mode shift and provide the corresponding GHG emissions reductions.
- **Equity, multimodal options, and quality of life:** More travel choices will be made available creating more walkable neighborhoods that result in a higher quality of life. The downtown area can become reconnected to create space for public transit, walking, and cycling. Arlington County supports affordable housing options that will provide opportunities for existing and future residents of all income levels. Just recently, Arlington County preserved more than 1,300 affordable apartment homes in the [Barcroft Apartment community](#). A review of transit accessibility along Route 1 showed the potential for nearly 15,000 members of disadvantaged populations (i.e., minority, limited English proficiency, low-income) within a three-mile radius of Connecting National Landing to have better access to the potential economic benefits of this area with this project in place.
- **Innovation areas:** This project provides innovative project delivery, technology, and financing solutions, such as a progressive design-build strategy, a pilot safety project to implement near-miss crash technology in National Landing, and value capture through land sales for either funds or in-kind support (tax increment financing) of Connecting National Landing elements.

This project satisfies all the merit criteria outlined in the federal grant opportunity, especially the priorities of providing economic, state of good repair, environmental, equity benefits, and innovation.

Transforming the grade-separated Route 1 to an at-grade urban boulevard is consistent with the national trend to remove urban freeways to create more vibrant street spaces, healthier environments, and increased economic opportunities. This project includes multiple components to improve multimodal connectivity and accommodations along Route 1 to meet the changing transportation needs of this growing urban activity center.

The following section describes the components of the project. For this project to be successful, the Commonwealth has made large investments designed to alleviate traffic congestion and assist with travel mode shift. Connecting National Landing will successfully achieve the necessary mode shift by designing an at-grade urban boulevard that discourages cut-through traffic while improving access to transit facilities and other multimodal travel options for people living, working, and visiting National Landing. A robust TDM strategy is included in this application to complement the roadway design changes and to accommodate future travel on the corridor. These investments are anticipated to contribute to *a peak period mode shift of 30%, corresponding to a 30% reduction in vehicle miles traveled (VMT) during the peak period along Route 1*. Although additional VMT reductions are expected throughout the rest of the day, the BCA used in this application took a conservative approach and did not include those benefits.

Figure 1 shows an overview of the significant transit and mobility improvements in the National Landing area that are outside the scope of this grant funding request but are interconnected and can be leveraged to recognize the benefits of this grant application. This suite of projects represents the significant investments in the area complementing the environmental and economic benefits of the Connecting National Landing grant request.

Project Components for Grant Funding

Route 1 Urban Boulevard Improvements	<ul style="list-style-type: none"> ■ Transforming the grade-separated Route 1 to an at-grade configuration. ■ Walkable access along Route 1 between 15th Street S and 23rd Street S to buildings, parks, and public transportation facilities (bus, metro, commuter rail, and Reagan National Airport). ■ Wide, high-visibility pedestrian crosswalks and bicycle crossings of Route 1, with pedestrian refuges and shorter crossing distances than exist today. ■ Accommodations for vehicles and buses while providing opportunities for wide sidewalks and other amenities along Route 1 that will embrace future economic development by activating the Route 1 street frontage. ■ Robust TDM program that increases the frequency of existing transit and potentially introduces new services, incentives for multimodal travel, partnerships with large employers, and other strategies to promote multimodal trips.
I-395 Bridge Conversion to At-Grade Intersection	<ul style="list-style-type: none"> ■ The grade-separated bridge from I-395 southbound to Route 1 southbound will be converted to an at-grade intersection. ■ Replaces a structurally deficient, fracture-critical bridge.
Crystal City Metro Station Second Entrance	<ul style="list-style-type: none"> ■ Construct a second at-grade entrance to the underground metro station. ■ Increase ADA accessibility to transit systems.

Background transportation network improvements (not for grant funding) but key to the success of the urban boulevard concept:

■ Potomac Yard Metrorail Station

- Construction has begun to construct a new Metrorail station approximately 1.5 miles south of the Route 1 multimodal improvements.

■ Intermodal Connector from Crystal City to the Ronald Reagan Washington National Airport (DCA)

- Currently in the planning stages, this intermodal connector is intended to link Crystal City with Ronald Regan Washington National Airport to strengthen pedestrian and micromobility connections between the airport and Crystal City.

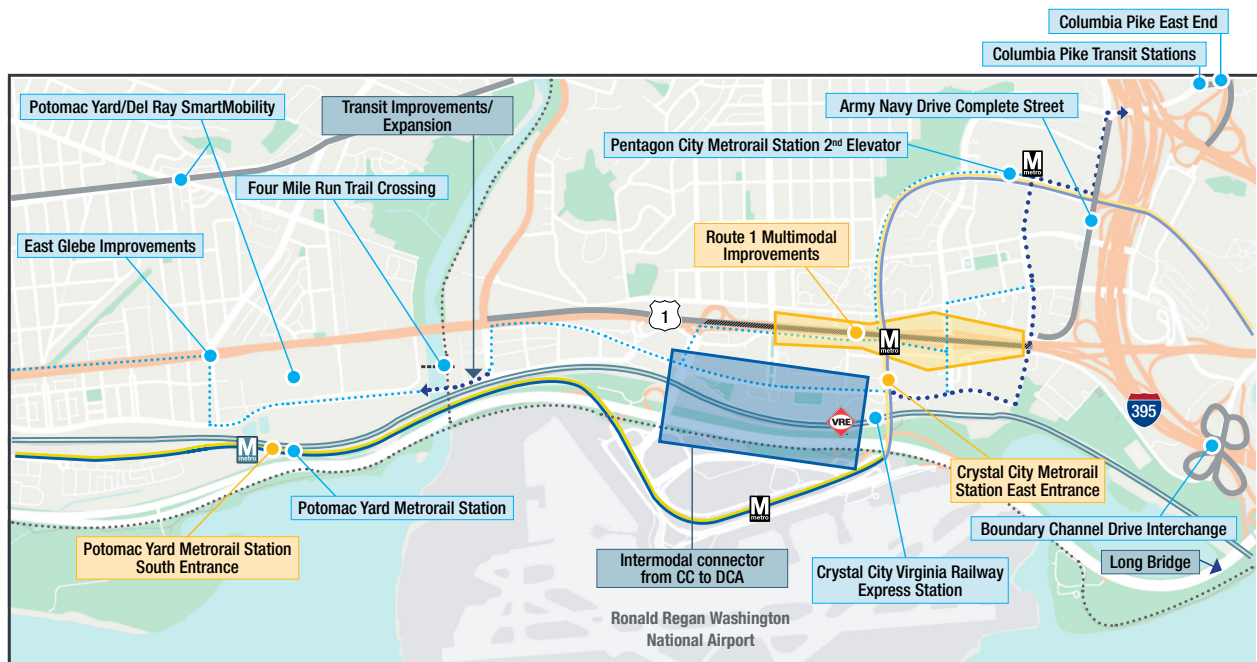
■ Transitway Extension to Pentagon City

- The Transitway will serve local travel demand within the corridor, including Amazon's HQ2 headquarters, enhance connections to Metrorail and improve connections to Columbia Pike. It will provide needed transportation capacity to support anticipated infill residential and office development in Crystal City and Pentagon City, particularly PenPlace, Pentagon Centre, and Metropolitan Park.

■ Virginia Rail Express (VRE) Crystal City Station

- In the final design stage, these station improvements to the VRE station include adding capacity and the relocation of the station. This station has the potential to be connected to the Intermodal Connector between Crystal City and DCA.

Figure 1 Local Projects



Existing Infrastructure

- Above Ground Metro
- Below Ground Metro
- Virginia Railway Express (VRE)
- Metroway Bus Route
- Pedestrian/Bike Trail
- M Existing Metro Station

Proposed Investments to Support Amazon's New HQ

- Projects Funded in Part with New State Support
- Projects Funded Primarily by Localities*
- Roadway Improvements
- Route 1 Improvements
- New Metroway Bus Route
- New Pedestrian/Bike Trail
- M New Metro Station

*Includes some already existing commitments of state and federal funds

Transportation Challenge

Support booming economic development in the area from the new Amazon headquarters and other new developments, address safety concerns for vulnerable roadway users, increase transportation options, and reduce greenhouse gas emissions.

Route 1 (Richmond Highway) is a major north-south arterial and part of the National Highway System. Regionally, Route 1 is a primary arterial road connecting Washington, D.C., Arlington County, the City of Alexandria, and southern suburbs including Fairfax and Prince William counties. Route 1 carries more than 45,000 vehicles per day in the Crystal City and Pentagon City areas.

With Arlington County's successful implementation of land use plans and multimodal transportation improvements, Crystal City and Pentagon City **have attracted major new development projects, including Amazon's second headquarters (HQ2)**. In late 2018, with the announcement of an agreement to bring Amazon's new corporate headquarters to Crystal City, the Commonwealth of Virginia identified improvements to Route 1 as part of a transportation incentive package to be partially funded by the Commonwealth. These improvements are necessary to support the travel demands of new workers and residents associated with the HQ2 development as well as future spin-off development. However, these improvements rely on a fundamental shift away from single-occupant vehicles (SOV) to other multimodal options. Although Route 1 was identified as a priority, the Commonwealth's commitment to Amazon extends beyond just improving safety, accessibility, and the pedestrian experience crossing Route 1. The project components of Connecting National Landing will address the following goals:

- **Safety:** *Connecting National Landing improves multimodal safety for pedestrians, bicyclists, micro-mobility modes, transit, and vehicles along and across Route 1.* Safer streets mean fewer injuries—but also more healthful, active travel. Ultimately, a safe transportation network for people walking, biking, taking transit, and driving benefits the daily quality of life for its users. The Route 1 corridor will serve all users and is tied to [Arlington's Vision Zero Plan](#). Lower speeds and reduced traffic volumes will improve safety in the corridor for all users.
- **Multimodal accessibility and accommodation:** *Connecting National Landing increases multimodal accessibility and accommodation along and across Route 1.* More travel choices will be made available through travel demand management strategies, which will create more walkable neighborhoods resulting in healthier communities. Rather than rebuilding a high-speed interstate ramp at I-395, the downtown area can become reconnected to create space for public transit, walking, and cycling.
- **Transit effectiveness:** *Connecting National Landing makes transit more accessible, reliable, and convenient.* Accommodating multimodal travel choices is critical to the success of the Route 1 corridor and the efficient operation of National Landing. VDOT is committed to implementing a robust TDM strategy that is consistent with the results of the ongoing TDM study. Additionally, adding a second entrance to the Crystal City Metro Station will directly improve transit accessibility and reliability.
- **Vehicular operations:** *Connecting National Landing maintains an appropriate level of vehicular operation and accommodation along Route 1 and on intersecting streets: 15th Street, 18th Street, 20th Street, and 23rd Street.* Acceptable levels of service for vehicular operations will be maintained through the TDM program implementation. A mode shift of 30% is expected to reduce future peak period Design Year 2040 traffic volumes below the 2019 volumes.

- Environmental:** *Connecting National Landing preserves, protects, and enhances the built, natural, visual, and social environments.* Not only will an at-grade solution promote more walking and biking trips, but the new transit service will also provide for more environmentally friendly trips. This project will result in reduced greenhouse gas (GHG) emissions with a predicted CO2 reduction of nearly 150,000 metric tons and over 45 metric tons of NOx reduction. New transit services and a robust TDM program allow for more environmentally friendly than single-occupant trips.
- Urban fabric:** *Connecting National Landing integrates Route 1 within the context of Crystal City and Pentagon City as a multimodal urban boulevard design consistent with the context of the surrounding existing and future built environment.* This project has the potential to spur development with a connected pedestrian network, supports the movement of Amazon employees, and improve access to associated mixed-use developments in the area while reducing vehicle dependency. It also increases accessibility to job centers with the proposed access improvements. The Route 1 urban boulevard project will create approximately 6.5 acres of excess right-of-way which could result in more than \$10M of developable land.

Project History

VDOT is committed to transforming Route 1 into a multimodal urban boulevard thereby providing transportation options for all roadway users. To date VDOT has spent \$4M on the Route 1 Multimodal Improvements Study to support this project; Arlington County has spent \$3.5M on the Crystal City Metro entrance project for land use and transportation has occurred in the National Landing area since 2010. **Table 1** details milestones that have led to the development of the Connecting National Landing improvements that are included in this grant application.

Table 1 Project Milestones

Year	Milestone
2010	Crystal City Sector Plan was adopted after more than 90 public meetings in four years. This plan includes transforming “Jefferson Davis Highway (Route 1) into an asset of the overall multimodal transportation network.”
2014	Crystal City Station Access and Second Entrance Study completed in February 2014.
2016	Arlington County added the metro station second entrance into the Transit Development Plan and Capital Improvement Plan.
2018	Amazon announces its second headquarters in Crystal City.
2019	The conceptual design for the second entrance to the Metro Station report was completed in November 2019.
2020	Reimagine Route 1 was published in September 2020 by the National Landing Business Improvement District to summarize the “bold vision” for transforming Route 1.
2021	Route 1 Multimodal Improvements Feasibility Study Phase 1 completed.
2022	Route 1 Multimodal Improvements Feasibility Study Phase 2 continues.

Project Location

The project area is a 0.75-mile segment along Route 1 from I-395 to 23rd Street S in the Crystal City area of Arlington County. Regionally, Route 1 is a primary arterial road connecting Washington, D.C., Arlington County, the City of Alexandria, and southern suburbs including Fairfax and Prince William counties. National Landing area comprises Crystal City, Potomac Yard, and Pentagon City. The Route 1 corridor is within Crystal City, approximately 0.3 miles east of Pentagon City and approximately 1.5 miles north of Potomac Yard, making it a critical transportation corridor of the National Landing area. The project location is shown in **Figure 2**. Route 1 within the project limits is currently a six-lane grade-separated principal arterial as identified in the VDOT functional roadway classification map.

Although the project area is not located in an Area of Persistent Poverty, a Historically Disadvantaged Community, nor a Federally designated community development zone, a review of StreetLight origin-destination data showed nearly 50% of trips through the study area originated from census tracts meeting these definitions.

Figure 2 Project Location



Project Parties

The Virginia Department of Transportation (VDOT) is the lead applicant for this grant application with the support of Arlington County. VDOT has a long history of strategically and effectively utilizing federal transportation funds, exhibited most recently with the use of \$165 million in federal FASTLANE grant funding on the [Atlantic Gateway project](#). VDOT successfully embraces partnership to achieve significant outcomes and has worked with the following entities to advance this project:

- Arlington County
- Washington Metropolitan Area Transit Authority
- National Landing Business Improvement District
- Amazon

Grant Funds, Sources, and Uses of All Project Funding

The improvements identified in Connecting National Landing are estimated to cost \$372 million. VDOT is committed to the success of this project and has incurred the following expenses to date outlined in **Table 2**.

Table 2 Previous Incurred Cost

Task	Incurred Cost
Route 1 Multimodal Improvements Study	\$4,000,000
Crystal City Metro Station Second Entrance	\$3,500,000

Connecting National Landing includes a network of components to meet the overall project goal of improving multimodal connectivity and accommodations along Route 1. The future project component eligible costs are outlined in **Table 3**.

Table 3 Project Funding Sources (in millions)

Task	Federal Grant	Other Federal	State/Local	Total Cost (Rounded)
Route 1 Urban Boulevard	\$44		\$136	\$180
TDM Strategies <i>*Not Eligible for Grant Funding</i>			\$22	\$21.5
I-395 Southbound Ramp Conversion	\$39		\$19	\$58
Crystal City Metro Station Second Entrance	\$14	\$37	\$54	\$105

The Route 1 urban boulevard improvements include converting the urban freeway to two at-grade intersections, pedestrian and bicycle accommodations, and landscaped medians through the corridor. The detailed cost estimate, including a 40% total contingency for this the Route 1 urban boulevard project, is included in **Appendix A**. The cost estimate for the I-395 bridge conversion is based on Concept 4 of the proposed ramp replacement concepts that are included in **Appendix A**. The Crystal City Metro Station second entrance cost estimate is also included in **Appendix A**. The estimated total project costs eligible for the federal grant are summarized in **Table 4**.

Table 4 Cost Summary

Project Component (Cost Estimate Year)	Total Amount (Nominal) (Cost Estimate Year)	Total Amount (Real) (2020)
Route 1 Urban Boulevard	\$177,300,000	\$131,800,000
I-395 Bridge Conversion	\$58,000,000	\$47,800,000
Crystal City Metro Second Entrance	\$105,100,000	\$88,000,000
Total	\$340,400,000	\$267,600,000

Project Outcome Criteria

Safety

Connecting National Landing will enhance safety by reducing the number, rate, and consequences of fatal and serious injury crashes among transportation users along the Route 1 Corridor by lowering speeds and shifting single-occupant vehicles (SOV) trips to other modes of travel. This project takes a multi-pronged approach to reducing crashes and improving safety.

- Lowering speeds by converting the grade-separated highway to multiple at-grade intersections
- Shifting travel to non-SOV modes which will lower crash rates
- Protecting vulnerable roadway users
- Implementing a near-miss pilot program

Most travel on Route 1 in the project area is currently completed by SOVs. The multimodal improvements included in Connecting National Landing, like pedestrian zones and bicycle facilities, will enhance safe and healthy alternatives to SOV travel in addition to protecting non-motorized travelers. Crash data summarized in the [Route 1 Multimodal Improvements Study](#) were reviewed in preparation of this application to identify trends to supporting the recommended improvements. A summary of the crash severities identified in the Route 1 study area from north of 12th Street to south of 26th Street is shown in **Table 5**. Based on an evaluation of this data, a majority of the crashes occur in the northbound direction near the I-395 interchange ramp area and in the southbound direction between 12th Street S and 15th Street S. Additionally, crashes are concentrated at signalized intersections, especially at the 20th and 23rd Street intersections. Seven crashes involving pedestrians or bicyclists occurred at the 23rd Street S intersection. The detailed existing conditions crash analysis can be found in the existing conditions report linked on the [Route 1 website](#).

Table 5 Study Area Crash Severity Summary

Year	Severity				Total
	Fatality	Severe Injury	Visible Injury	PDO	
2015	0	1	9	25	35
2016	0	2	11	19	32
2017	0	0	6	10	16
2018	0	0	7	15	22
2019	0	0	5	12	17
2020 ¹	0	0	2	1	3
Total	0	3	40	82	125

¹ Crash data for 2020 was only collected between January 1, 2020, to February 28, 2020, due to COVID-19

To address the safety challenges at the intersection of Route 1 and 23rd Street it is important to reduce vehicular speeds from the I-395 interchange area through 12th Street to 23rd Street is crucial. Connecting National Landing includes a multifaceted approach to improving safety for motorized and non-motorized users—one proven strategy to improve safety is to reduce vehicular speeds. Converting the grade-separated urban freeway to two at-grade intersections at 15th and 18th streets is designed to lower speeds and improve safety for vehicles and vulnerable roadway users.

Following Arlington County’s Vision Zero Action Plan, the Route 1 urban boulevard project is dedicated to constructing a complete street where human life and health are prioritized by allocating space for multiple travel modes. This project will provide safer transportation options for vulnerable roadway users, as defined by FHWA, by giving separate space for walking, biking, and other transportation modes. These users are expected to increase as growth happens in the area from the 25,000 jobs created by Amazon; 7,800 new residential units, and a 400% increase in dining, shopping, and entertainment options as noted in the [National Landing Business Improvement District \(BID\)](#).

The proposed improvements are anticipated to reduce high crash areas along the corridor, most notably at the I-395 merge area and at the 23rd Street intersection. A detailed crash prediction analysis of the proposed improvements and their estimated potential crash reduction is available in the Future Build Conditions Report on the [Route 1 website](#). By lowering the speed limit, future crashes are expected to improve in terms of number and severity.

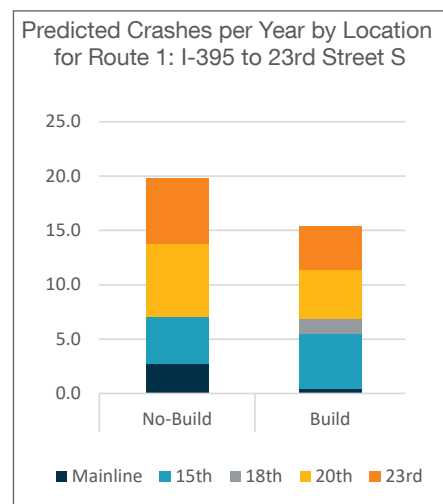


Figure 3 Future Crash Comparison to No Build

State of Good Repair

This project is consistent with [VDOT's Transportation Asset Management Plan](#), and addresses current and projected vulnerabilities. If left unimproved, these vulnerabilities will threaten future transportation network efficiency, mobility of goods, mobility and accessibility of people, and economic growth. Connecting National Landing will significantly reduce long-term maintenance costs by replacing a structurally deficient, fracture-critical bridge on the interstate system.

At-grade roadways are easier and less costly to maintain than ones with bridge structures. The conversion of Route 1 to an urban boulevard will remove two bridges on the national highway system. Conversion of the I-395 southbound ramp (highlighted in **Figure 4**) to an at-grade intersection will remove a structurally deficient bridge from the national highway system. The removal of these bridges will avoid future replacement or rehabilitation costs, while also extending the urban boulevard to the north contributing to lower travel speeds.

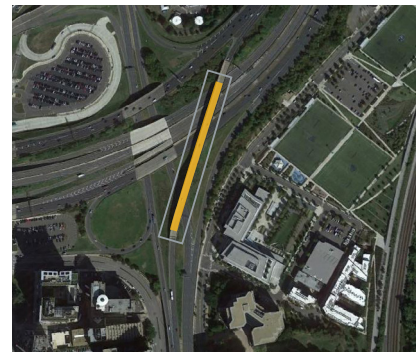


Figure 4 I-395 Southbound Ramp

Economic Impacts, Freight Movement, and Job Creation

Connecting National Landing improves multimodal transportation systems that incorporate affordable transportation options such as public transit to improve mobility of people and goods, improves access to employment centers and job opportunities, improves economic strength by increasing the economic productivity of land, capital, or labor, and supports integrated land use, economic development, and transportation planning to improve the movement of people and goods and local fiscal health. It accomplishes all of this by providing multimodal access, increasing access to the WMATA rail system and capacity of the metro station entrance, and reducing barriers to multimodal travel.

The National Landing area comprised of Pentagon City, Crystal City, and Potomac Yard is quickly expanding economic development with over \$8 billion in private investments in the pipeline according to the National Landing BID. It is anticipated that the area will include 7,800 new residential units, 550 new affordable housing units, over 25,000 jobs from Amazon alone, and a 400% expansion in commercial space. The Route 1 urban boulevard and the Crystal City Metro entrance will support this expansion by providing transportation options ultimately helping the United States compete in a global economy by encouraging the location of important industries, such as Amazon and future innovations and technology in the U.S.

Increased accessibility will allow residents to travel to job centers without the need for an SOV. The multimodal improvements will provide low-cost transportation alternatives through active transportation and transit improvements. These travel modes will offer reliable access to National Landing employment centers.

The Crystal City Sector Plan outlines steps to ensure integrated land-use, economic development, and transportation plans are taken into consideration for all projects in Crystal City. Connecting National Landing takes major steps to achieve these goals outlined in the plan.

The Route 1 urban boulevard improvements will create approximately 6.5 acres of excess right-of-way that can support development. An analysis showed that the land could be valued at more than \$3 billion (as identified in a study prepared by HR&A in 2021). The excess right-of-way is shown in **Figure 5**. This additional potential excess right-of-way provides more acreage for development adjacent to the future multimodal urban boulevard.

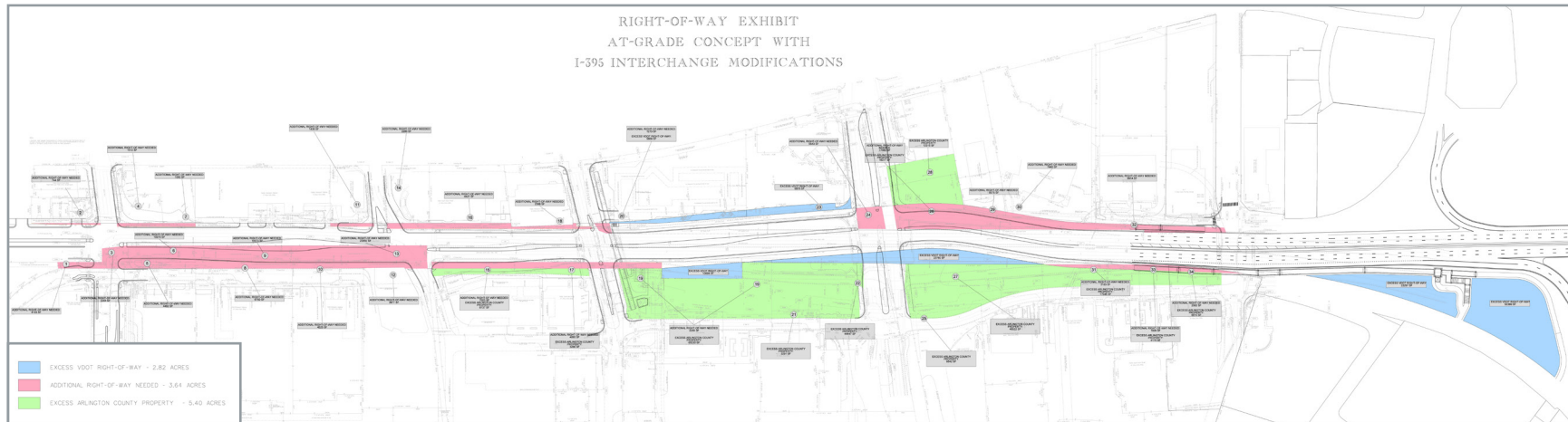


Figure 5 Excess Right-of-Way

Climate Change, Resiliency, and the Environment

The project will improve air quality by reducing greenhouse gas emissions through increased non-SOV travel along Route 1. These greenhouse gas emission reductions are expected to be nearly 150,000 metric tons of CO₂ and more than 45 metric tons of NO_x. The Commonwealth has made and is committing in this grant application to make additional investments to shift peak period travel modes by 30% along Route 1 to make the improvements in this project a success. Connecting National Landing will add active transportation options and increased access to transit options that are inherently beneficial to environmental quality.

Arlington and VDOT are committed to environmental sustainability; the Crystal City Sector Plan includes a specific policy about environmental standards stating that Arlington County will “design, construct, and manage all public and private spaces, streets, infrastructure, and buildings to help the Crystal City Plan meet selected certification standards under the United States Green Building Council’s (USGBC) LEED Neighborhood Development program.” Another document reviewed for this project is the [Livability 22202 Action Plan](#), developed by various Crystal City civic associations, that identifies an action to foster environmental sustainability. The Action Plan directs projects in the Arlington County 22202 zip code to include a healthy tree canopy to improve air quality and natural open space. The Action Plan also prioritizes extending the multimodal transportation network with a specific need identified to “design and implement better and safer connections across Route 1.”

The transportation sector is one of the largest contributors to greenhouse gas emissions. Transforming the grade-separated Route 1 urban freeway to at-grade intersections with pedestrian and bicycle accommodations will encourage more walking and biking trips. Pedestrian zones will be lined with trees and are expected to create an urban tree canopy that encourages travelers to walk or bike. The transformation of Route 1 to an urban boulevard is also expected to reduce future peak period year 2040 VMT to be equal to or less than year 2019.

Connecting National Landing will move people in a variety of modes that will increase the use of lower-carbon travel. One of the project goals is to preserve, protect, and/or enhance the built, natural, visual, and social environment. This project is expected to reduce greenhouse gas emissions through active transportation options and the promotion of increased ridership with the new entrance to the Crystal City Metro Station.

The Route 1 urban boulevard includes \$21.4M to implement TDM solutions which will contribute to a reduction in greenhouse gas emissions. Due to eligibility requirements, while the TDM is a key component of the Route 1 urban boulevard, no grant funds are requested for this component. VDOT is committed to implementing the results of the ongoing Route 1 Multimodal Improvements Feasibility Study Phase 2 Travel Demand Management (TDM) recommendations. In addition to the urban boulevard design, the TDM strategies will support mode shift from SOV to a variety of other transportation options such as transit, ridesharing, walking, and/or biking. The Route 1 Multimodal Improvements Study predicted year 2040 pedestrian volumes would double at 18th Street. TDM strategies may include education, access, or incentives to switch modes to a more environmentally friendly alternative that also decreases congestion. Additionally, the second entrance to the Crystal City Metro station will support the mode shift goal by providing additional capacity for the ingress and egress from a notoriously congested Metro stop.

Finally, the improvements outlined in the [VDOT Route 1 Multimodal Improvements Study](#) will reduce the amount of paved surface that reduces stormwater runoff. A stormwater management assessment feasibility study was completed by VDOT for the project area and concluded that the existing system is adequate to drain the area of the project and that the proposed improvements will improve the current conditions. The at-grade design will reduce the overall flow as compared to existing conditions due to the significant reduction in impervious areas. Due to this reduction, the design is not anticipated to require major BMP facilities. The water quality and quantity needs can be met through the mix of reducing impervious areas for water quantity and purchasing nutrient credits to meet the water quality requirements.

Equity, Multimodal Options, and Quality of Life

Connecting National Landing seeks to address automobile dependency as a barrier to success by reinventing the Route 1 corridor. The construction of bicycle and pedestrian infrastructure, as well as a renewed focus on multimodal travel options, will increase affordable and accessible transportation choices by creating new connections and opportunities for underserved communities. A review of transit accessibility along Route 1 showed the potential for nearly 15,000 members of disadvantaged populations (i.e., minority, limited English proficiency, low-income) within a three-mile radius of Connecting National Landing to have better access to the potential economic benefits of this area with this project in place. The project will improve transportation options to essential services along the Route 1 corridor—there are two daycare centers, three medical offices, two physical therapy offices, and over twenty restaurants that will benefit from improved transportation options in the area. There are twenty bus stops in the vicinity of the project area and the Crystal City Metro entrance that people cannot currently walk or bike to across Route 1.

The urban density of the surrounding area is anticipated to decrease auto-centric travel, especially with the announcement of Amazon's second headquarters in Crystal City. The HQ2 development will create demand for more transportation options and leave the existing Route 1 facility vulnerable to extreme congestion with increasing travel demand. New and/or expanded multimodal access through pedestrian, bicycle, transit, and other micro-mobility transportation options is essential to the future safety and capacity of the corridor. Critical to the success of these multimodal options will be the inclusion of affordable housing within National Landing. Amazon has already committed more than \$380M to preserve and create up to [1,300 affordable homes](#) in Arlington.

Connecting National Landing multimodal improvements have engaged diverse communities and integrated their feedback into the planning and development of this project. The Crystal City Sector Plan was adopted in 2010 after more than 90 public meetings over four years. The Route 1 Multimodal Improvements Study has an extensive public engagement plan that started in December 2020 and is expected to be completed by December 2022. The public engagement plan includes community meetings, opportunities for virtual and mail-in comments, and strategic partnerships with community stakeholders in all phases of this project. The second entrance to the Crystal City Metro Station has incorporated public involvement since February 2021 that included question and answer sessions, a Washington Metropolitan Area Transit Authority Compact public hearing, and an Arlington County board meeting.

Redesigning Route 1 to include at-grade intersections removes the physical barrier to walking and biking and strengthens National Landing community connectivity.

The reallocation of roadway space will create a place where the community will want to connect. Wide sidewalks, benches, tree canopies, and lighting will contribute to placemaking for the unique character of National Landing, which creates healthier and more walkable neighborhoods resulting in a higher quality of life.

Innovation Areas

This project incorporates innovation in delivery, finance, and technology. It provides multiple innovative solutions, such as a progressive design-build strategy, a pilot safety project to implement near-miss crash technology in National Landing, and value capture through land sales for either project funds or in-kind support of National Landing elements.

Project Delivery

This project is being delivered using an innovative contracting method known as Progressive Design-Build (PDB) which facilitates involvement of the design-build team during the earliest stages of project development, ensuring they are part of the project team developing design solutions. This contracting method promotes the greatest amount of collaboration between the three key players in a construction contract – the owner, the designer and the contractor. The progressive design-build process results in the expedited project delivery due to short procurement time, avoidance of the duplication of preliminary engineering efforts and use of early work packages during the final design development process.

Application of Near-Miss Technology

VDOT has successfully used Innovation and Technology Transportation Fund (ITTF) dollars to conduct pilot projects and proposes to implement near-miss crash technology in National Landing using ITTF dollars again. Near-miss crash technology involves using video analytics to track near-miss crashes and record other critical data. Tracking this data, especially for pedestrians and cyclists, can provide insights on improvements to bring Arlington County closer to achieving its vision zero plan. This pilot program will be modeled after the successful implementation of [traffic-cam monitoring](#) in Bellevue, WA. The [Video-based Network-wide Conflict and Speed Analysis to Support Vision Zero in Bellevue \(WA\) the United States](#) concluded that intersection conflicts, or near-crash events, were an accurate predictor of where future crashes will occur. Bellevue used Transoft solutions to implement video-based analytics to help predict, diagnose, and address roadway safety challenges. The Connecting National Landing near-miss project will be followed up with a technology evaluation to address identified safety issues. The project's data collection plan is outlined in [Appendix D](#), per the Mega data collection requirements outlined in the Notice of Funding Opportunity.

Project Financing

VDOT will also promote innovation through project financing. Value capture through land sales and/or a density bonus, which is an incentive-based tool to permit developers to increase the maximum allowable development on a site in exchange for either funds or in-kind support for specified public policy goals, will be applied in this area. Arlington County created a Tax Increment Financing Area (TIF) for Crystal City, Potomac Yard, and Pentagon City in 2010 as an implementation tool for the Crystal City Sector Plan. Since that time, the TIF has served as an important means of paying for infrastructure improvements that further the revitalization of National Landing. Arlington County has committed to use \$6.4 million of tax increment financing toward the Crystal City Second Metro Entrance project component.

Additionally, the Crystal City Metro Entrance is being delivered as part of a public-private partnership between Arlington County and JBG SMITH. This collaborative arrangement is consistent with the Public-Private Education Facilities and Infrastructure Act of 2002 (PPEA). Funding for this project is being provided by state grants, regional funds, and local commercial real estate tax revenues dedicated to transportation.

Benefit-Cost Analysis

A benefit-cost analysis (BCA) was prepared to demonstrate how a modest investment in the corridor will create real and long-term benefits for the region. The benefits of the project consist of:

- A decrease in peak period traffic volumes and congestion, as a direct result of strategic, targeted, and specific TDM strategies that will shift mobility preferences from personal vehicle to carpool/ vanpool, shared mobility, walking, bicycle, and transit options
- Long term health and fitness benefits associated with a greater emphasis on active transportation
- An additional decrease in peak period traffic due to the improved transit accessibility with the proposed second entrance
- A reduction in the likelihood and severity of vehicle, pedestrian, and bicycle crashes, related to reduced traffic volumes and travel speeds along the Route 1 corridor and the removal of a challenging ramp merge area along Route 1
- A decrease in mileage dependent vehicle emissions and mobile source water runoff, which can reduce the impact of climate change
- An increase in the use and safety of multimodal mobility options
- A reduction in annual inspection, maintenance, rehabilitation, and repair costs for substandard bridge structures that are approaching the end of their useful life
- Greater community connectivity and cohesion through the removal of a grade separated facility
- An increase in area property values, commercial retail activity, and development potential due to increased walkability, reduced congestion and delay, and enhanced connectivity

In order to focus the methodology of this BCA on real and measurable changes associated with the project, the affected population considered in the analysis are the residents, employees, and visitors of Crystal City.

All roadway users will benefit from improved connectivity and access and reduced congestion. Additionally, the community surrounding the corridor will benefit from the improved economic competitiveness of the area, quality of life improvements, and health and recreation benefits.

The BCA considered an analysis period between 2023 and 2052, which considers the period during which initial project costs will be expended and during which 23 to 27 years of operation will be achieved (depending on project component).

The benefit-cost ratio (BCR) for this network of improvement is 2.99 assuming a 7% discount rate. The substantial positive impacts of the project in 2020 dollars and assuming a 7 percent discount rate are monetized at \$536M in benefits. The results of the analysis are summarized in **Table 6** and the detailed benefit-cost analysis is included in

Appendix B.

The BCA demonstrates the economic merit of the project with key considerations under each project outcome criteria.

Table 6 Benefit Cost Analysis Summary

Item	Undiscounted	7% Discounted
Benefits	\$1,387,281,186	\$535,750,580
Costs	-\$267,621,292	-\$179,102,601
Overall B/C Ratio	5.18	2.99
Net Present Value	\$1,119,659,894	\$356,647,978

Benefits of the project that are not quantified, but no less important in elevating the safety, opportunity, and development potential of Connecting National Landing:

- **Fuel consumption:** Mode shift from single-occupancy vehicles (SOVs) to active transportation modes will result in less fuel consumption travelers. Each 1% shift from automobile to active travel typically reduces fuel consumption 2-4% and can lessen the risks of climate change based on case study research.
- **Reduced household transportation user costs:** Households in auto-dependent communities devote 20% of household income more to transportation than communities with complete streets. The project will enhance transportation choice, emphasizing low cost alternatives for short trips.
- **Improved equity:** The combined benefits of the project will allow different populations (children, elderly, and economically, socially, or physically disadvantaged people) to fairly use and share in public resources by increasing accessibility, connectivity, and affordability. More than 50% of older Americans who do not drive stay home on a given day because they lack transportation options.
- **Non-peak period mode shift:** Additional VMT-dependent benefits that occur outside of the peak period.

Project Readiness and Environmental Risk

Technical Feasibility

Connecting National Landing has included extensive studies to understand the best improvements and their effects on the surrounding community. The completed studies include the Route 1 Multimodal Improvements Phase 1 Study, the Crystal City Station Access and Second Entrance Study, and the Crystal City Metrorail Station Second Entrance Conceptual Design and Feasibility Study. The Route 1 Multimodal Improvements Phase 2 Study, which includes an evaluation of the TDM plan, was started in December 2021 and is expected to be completed by February 2023. From these studies, the recommended improvements are included in this project. A detailed list of the work associated with this project is outlined below. **Appendix E** includes a scroll plot of the conceptual roadway design plans and concept sketches for the Crystal City Metro entrance.

- At-grade Crystal City Station access and second entrance
- Pedestrian zones along Route 1
- Street trees and landscaping
- Bicycle facilities
- Removing turn lanes from targeted intersections
- Removing two Route 1 bridges
- Removing one I-395 bridge
- Constructing an at-grade ramp terminal from I-395 southbound to Route 1

Project Schedule

VDOT is dedicated to meeting the obligation and construction date requirements of this grant application. The obligation of funds will be completed by September 30, 2025, and construction is anticipated to start before March 30, 2027, for all project components.

Crystal City Metro Station Second Entrance Schedule

Task	Date
Develop 30% Design Drawings	May-October 2022
Approve Guaranteed Maximum Price (GMP)	October 2022
NEPA Approval	April 2023
Final Design	October 2022 – September 2023
Construction	May 2023 – August 2025

Route 1 Urban Boulevard & I-395 Bridge Conversion Schedule

Task	Date
Refined Concept Design	August 2022
Procurement of Progressive Design-Build Contract	January - July 2023
Proof of Concept/NEPA Approval	July 2024
Project Development/Approval of Plans	December 2025
Final Design and Construction	January 2026 – December 2029

Required Approvals

Environmental Permits and Reviews

Connecting National Landing anticipates all environmental approvals and permits for the construction of the project to begin by the dates outlined in the project schedule.

State and Local Approvals

- In March 2022 Crystal City Metro Station’s second entrance sought approval from the Arlington County Board for the at-grade entrance.

Environmental Studies

- Stormwater Management Assessment Report for Route 1

Assessment of project risks and mitigation strategies

Risk Category	Risk Name	Description	Probability of Occurrence	Severity of Impact	Mitigation Strategies
Management	Program Management	Implementing this large multi-modal program will compete with other state transportation programs and projects for executive oversight and project management resources	High	Moderate	The Commonwealth of Virginia and the Virginia Department of Transportation have a long history of delivering complex projects on time or early and within budget. They will use proven contract language that aligns contract interests of the contractor and owner, and their experienced contract staff as they come off other projects being completed to expertly manage the project to successful completion.
Financial	Loss of Public Funding	Unanticipated circumstances may reduce portions of the public funding stream	Low	Moderate	Multiple public funding sources leveraged help reduce the impact of the loss of any funding source. MPDG grant is critical to the success of this project.
Environmental	Environmental	Completion of the NEPA process and obtaining permits could potentially result in delays	Low	Low	The project has defined and agreed on a schedule and process for NEPA compliance. Work has been initiated with permitting agencies to reduce delays. The footprint of the project along the existing alignment is smaller in proposed than existing and enhances the natural features and environment along the corridor making this a least impact project from conception.

CONNECTING NATIONAL LANDING

Connecting Communities Through Travel Choices

Risk Category	Risk Name	Description	Probability of Occurrence	Severity of Impact	Mitigation Strategies
Construction	Business Disruption	Businesses located near the project site could be impacted by construction activities and congestion	Low	Low	A project phasing plan and a plan to maintain access during construction have been developed and will continue to be refined during the final design. The successful maintenance of traffic developed by the study team gives high confidence to this not becoming an issue. Most buildings face away from Route 1 today.
Maintenance of Traffic		Existing highway traffic must be maintained during construction which will complicate the delivery process	High	High	A detailed MOT plan which allows for the continuous flow of traffic northbound and southbound at all times with a minimum of 6 travel lanes has already been developed as a part of the active Route 1 study. Additionally, VDOT has a successful history of completing major highway projects with similar complexity such as I-66 and I-495.
Safety	Emergency Vehicles	Construction activities could impact the efficiency of evacuations, if needed during construction	Low	Moderate	Due to the proposed MOT plan two-way traffic patterns are to be maintained at all times and allow for emergency vehicles to operate the corridor and respond in a timely manner. Measures will be incorporated to allow for incident management.

CONNECTING NATIONAL LANDING

Connecting Communities Through Travel Choices

Risk Category	Risk Name	Description	Probability of Occurrence	Severity of Impact	Mitigation Strategies
Operations & Maintenance	Stormwater	Management of stormwater post-construction will be substantial	Moderate	Low	Measures will be incorporated into the design to address stormwater management issues. The resulting benefits of the outcome are immense. The stormwater system upgrades to the system will increase resiliency, reliability, and redundancy.

Statutory Project Requirements

23 U.S.C. 117 INFRA	49 U.S.C. 6701 Mega	23 U.S.C. 173 Rural	Connecting National Landing
(1) The project will generate national, or regional economic, mobility, or safety benefits	(1) The project is likely to generate national or regional economic, mobility, and safety benefits	(1) The project will generate regional economic, mobility, or safety benefits	<p>This projects supports the regional economic development of the Amazon headquarters, residential developments, and commercial developments in the National Landing area. Safety in the area will be increased by lowering vehicle speeds and reducing VMT while increasing access to multimodal travel options.</p> <p>INFRA – Yes Mega – Yes Rural – N/A</p>
2) The project will be cost effective	(3) The project will be cost effective	(3) The project will be cost effective	<p>This project results in substantial positive impacts in 2020 dollars and assuming a 7 percent discount rate are monetized at \$536M in benefits. The predicted benefit-cost ratio is 2.99.</p> <p>INFRA – Yes Mega – Yes Rural – N/A</p>
3) The project will contribute to 1 or more of the national goals described under Section 150	No statutory requirement	(3) The project will contribute to 1 or more of the national goals described under Section 150	<p>This network of projects will contribute to reducing traffic crashes, maintaining the highway infrastructure in a state of good repair, and will assist in reducing congestion on highways.</p> <p>INFRA – Yes Mega – N/A Rural – N/A</p>

CONNECTING NATIONAL LANDING

Connecting Communities Through Travel Choices

23 U.S.C. 117 INFRA	49 U.S.C. 6701 Mega	23 U.S.C. 173 Rural	Connecting National Landing
4) The project is based on the results of preliminary engineering	No statutory requirement	(4) The project is based on the results of preliminary engineering	<p>The following activities have been completed as of the date of application submission:</p> <ul style="list-style-type: none"> ■ Topographic Surveys ■ Metes and Bounds Surveys ■ Geotechnical Investigations ■ Hydrologic Analysis ■ Utility Engineering ■ Traffic Studies ■ Financial Plans ■ Revenue Estimates ■ General estimates of the types and quantities of materials ■ Feasibility Study <p>INFRA – Yes Mega – Yes Rural – N/A</p>
5) With respect to related non-federal financial commitments, 1 or more stable and dependable sources of funding and financing are available to construct, maintain, and operate the project, and contingency amounts are available to cover unanticipated cost increases	(4) With respect to non-federal financial commitments, 1 or more stable and dependable sources are available to construct, operate, and maintain the project, and to cover cost increases	No statutory requirement	<p>Please refer to Grant Funds Section for a table of funding sources and project components. Detailed cost estimates are included in Appendix A. This project has multiple funding sources because it is widely supported in Virginia. The Letters of Support are included in Appendix C</p> <p>INFRA – Yes Mega – Yes Rural – N/A</p>

CONNECTING NATIONAL LANDING

Connecting Communities Through Travel Choices

23 U.S.C. 117 INFRA	49 U.S.C. 6701 Mega	23 U.S.C. 173 Rural	Connecting National Landing
6) The project cannot be easily and efficiently completed without other Federal funding or financing available to the project sponsor	(2) The project is in significant need of Federal funding	No statutory requirement	<p>If the project is not awarded there would be a gap in funding sources to complete all the components of this multimodal project. Adjustments in scope, schedule, and cost would have to happen in order to carry the project forward.</p> <p>INFRA – Yes Mega – Yes Rural – N/A</p>
7) The project is reasonably expected to begin no later than 18 months after the date of obligation of funds for the project	(5) The applicant have, or will have, sufficient legal, financial, and technical capacity to carry out the project	(5) The project is reasonably expected to begin not later than 18 months after the date of obligation of funds for the project	<p>Please refer to the project schedule section for a schedule for all the project components.</p> <p>INFRA – Yes Mega – Yes Rural – N/A</p>



Appendix A

Cost Estimates



Appendix B
Benefit-Cost Analysis Summary





Appendix C

Letters of Support



Appendix D

Data Collection and Analysis Plan



Appendix E

Concept Sketches