**REPORT OF THE DEPARTMENT OF TRANSPORTATION AND FREDERICKSBURG AREA METROPOLITAN PLANNING ORGANIZATION**

# I-95 Corridor Traffic Congestion Evaluation (Chapter 741, 2016 Acts of Assembly)

**TO THE GENERAL ASSEMBLY OF VIRGINIA**

# HOUSE DOCUMENT NO. 4

**COMMONWEALTH OF VIRGINIA**
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Tim McLaughlin
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Paul Agnello
FAMPO Administrator

December 21, 2018

Members of the General Assembly

Dear Ladies and Gentlemen:

Chapter 741 of the 2016 Acts of Assembly directed the Virginia Department of Transportation (VDOT) and the Fredericksburg Area Metropolitan Planning Organization (FAMPO) to conduct a joint evaluation of traffic congestion occurring in the George Washington Regional Commission on Interstate 95 between mile marker 145 in Stafford County and mile marker 125 in Spotsylvania County, and an evaluation of alternative solutions to address traffic congestion, which may include but not limited to the extension of the I-95 Express Lanes further south. The legislation further stated that the results of such evaluation shall be submitted to the General Assembly as an executive summary and submitted no later than the first day of the 2019 Regular Session of the General Assembly.

VDOT and FAMPO conducted a two-phased study to meet the requirements of the legislation. The 2016 Phase I study objective was to develop a 2040 master plan for I-95 between mileposts 145 and 125 that considered existing and future weekday and weekend travel conditions. Phase 1 relied on macroscopic analysis using the region's travel forecasting model.

The 2018 Phase 2 effort was undertaken to provide a detailed microscopic (VISSIM) operations analysis of the I-95 corridor to reveal potential choke points and operational problem areas not known at the macroscopic level. The results of the microscopic corridor analysis informed the project development process for near-term actions as well as the longer-term corridor planning process.

A final report was published for each phase and is posted on FAMPO's website. The attached document includes an executive summary of each phase of the study and links to the final reports on the FAMPO website.

If you have any questions or need additional information, please let me know.

Sincerely,

Paul Agnello

Paul Agnello
FAMPO Administrator

Attachment

**Final Report for CHAPTER 741—EXECUTIVE SUMMARY**

## I-95 Corridor Traffic Congestion Evaluation

Chapter 741 of the 2016 Acts of Assembly directed the Virginia Department of Transportation (VDOT) and the Fredericksburg Area Metropolitan Planning Organization (FAMPO) to conduct a joint evaluation of traffic congestion occurring in the George Washington Regional Commission on Interstate 95 between mile marker 145 in Stafford County and mile marker 125 in Spotsylvania County, and an evaluation of alternative solutions to address traffic congestion, which may include but not limited to the extension of the I-95 Express Lanes further south. The legislation further stated that the results of such evaluation shall be submitted to the General Assembly as an executive summary and submitted no later than the first day of the 2019 Regular Session of the General Assembly.

FAMPO secured a consultant and, together with a study Advisory Committee, collaborated and conducted a two-phased study, which is summarized below. The first phase focused only on highway improvements and was documented in the Phase 1 report. The second phase included both highway and transit/Transportation Demand Management (TDM) studies. The corridor study was documented in the I-95 Phase 2 Corridor study report and the Transit/TDM study was documented in the I-95 Transit/TDM report. All three studies are summarized and provided below.

Within the FAMPO region, the I-95 corridor currently experiences severe and recurring traffic congestion from Quantico to Massaponax during weekdays, and more widespread delays on weekends. Future regional growth in population, employment, tourism activity, and freight movement will result in worsening conditions within the corridor.

## Phase I Executive Summary

This study was commissioned as a part of the continuing, cooperative, and comprehensive planning process in the FAMPO area. The timing of this study activity was particularly important in the context of the 2016 application deadline for the Commonwealth of Virginia's Smart Scale program opportunity. It was an expressed intent of this study to identify individual projects for submission to this program.

This technical report documents the results of the first phase of study in the I-95 corridor within the FAMPO area. This Phase I study objective was to develop a 2040 master plan for I-95 between mileposts 145 and 125 that considered existing and future weekday and weekend travel conditions. The resulting master plan recommendation was/will be phased into smaller projects for consideration in Smart Scale or other grant/funding programs. A second phase of study followed this effort, covering a larger geographic area and including recommendations related to alternative modes of travel. For the Phase II study, a revised version of the regional travel forecasting model was available, as well as the use of recently collected anonymous location data from StreetLight[1].

[1] *StreetLight Data* is a proprietary dataset that aggregates navigation data and GPS data from connected devices and provides indexes of travel flows to any geography input by the user.

An Advisory Committee was established for the study to oversee and provide feedback on work products. The Advisory Committee was comprised of representatives from various stakeholder groups that typically participate in planning and programming of local and regional transportation improvements. The membership of this Advisory Committee can be found in Section 1.2 of the report. The Advisory Committee met six times during the study, from February 2016 to August 2016.

In consultation with the Virginia Department of Transportation (VDOT) and other members of the Advisory Committee, a No-Build Alternative was developed. This alternative represents the existing conditions, plus the planned and programmed projects that are reasonably foreseeable. This No-Build Alternative constitutes the baseline condition with which all build alternatives are compared in this study. The future No-Build Alternative includes the following planned and approved improvements:

- 95 Express Lanes extension project from MP 145.0 to MP 142.5 (UPC 108315)
- Fourth southbound general purpose (GP) lane from Exit 143 to Exit 140 (UPC 13558)
- Exit 140 – Stafford Courthouse - interchange reconstruction (UPC 13558)
- Route 630, Courthouse Road widening (UPC 4632)
- I-95 Southbound Rappahannock River Crossing (collector-distributor lane) project between Exits 133 and 130 (UPC 101595)
- Route 3 Highway Safety Improvement Program (HSIP) project at I-95 Exit 130 (UPC 107715)

The Preferred Alternative recommended in the Phase 1 report assumes and includes all elements of the No-Build Alternative, noted above. Beyond the no-build assumptions, the preferred alternative includes:

- Extend reversible I-95 Express Lanes to just south of US 17 (Exit 133)
- Provide Northbound I-95 C-D Lanes between Exits 130 and 133 (Northbound Rappahannock River Crossing Project)
- Add fourth northbound lane on I-95 between Exits 133 and 136
- Provide new stand-alone full access interchange at Route 620, Harrison Road, in Spotsylvania County (Approx. MP 128)
- Construct fourth southbound general purpose lane between Exits 130 and 126
- Construct fourth northbound general purpose lane between the new Harrison Road access point and Exit 130
- Remove the fourth southbound lane from Exit 143 to Exit 140, which was shown in the No-Build Alternative
- Widen Route 620, Harrison Road to four lanes to east and possibly more than four lanes to west

Final Report for Phase I I95 Corridor Study

**Phase II Executive Summary**

## Corridor Study

As part of the continuing, cooperative, and comprehensive planning process in the FAMPO area, this Phase 2 corridor study was commissioned as a follow-on effort to the Phase 1 effort of 2016. The timing of this study activity is particularly important in the context of the 2018 application deadline for the Commonwealth of Virginia's Smart Scale program opportunity. It is an expressed intent of this study to inform and support project submissions to this program.

This technical report documents the results of the second phase of study in the I-95 corridor within the FAMPO area. The 2016 Phase I study objective was to develop a 2040 master plan for I-95 between mileposts 145 and 125 that considered existing and future weekday and weekend travel conditions. Phase 1 relied on macroscopic analysis using the region's travel forecasting model. The 2018 Phase 2 effort was undertaken to provide a detailed microscopic (VISSIM) operations analysis of the I-95 corridor to reveal potential choke points and operational problem areas not known at the macroscopic level. The results of the microscopic corridor analysis informed the project development process for near-term improvements by 2030, as well as the longer-term corridor improvements by 2045.

The Advisory Committee met eight times during the course of the study from June 22, 2017, to April 9, 2018.

The I-95 corridor in the FAMPO area receives much attention due to its standing as one of the most congested interstate corridors in the nation. Since the Phase 1 Study was published and even during the early months of the Phase 2 effort, significant decisions were made in terms of infrastructure investments along I-95 in this area. The origin of these projects can be traced to the Smart Scale process or actions of then-Governor McAuliffe's administration. Listed below are the most regionally-significant improvements that are now considered approved and funded.

- I-95 Southbound Rappahannock River Crossing project (revised design) between Exits 133 and 130 (UPC 101595)
- Extension of the I-95 Express Lanes "Fred Ex" project from Exit 143 to Exit 133 (UPC 112046)
- I-95 Northbound Rappahannock River Crossing project between Exits 130 and 133 (UPCs 105510, 112520, 113936)
- I-95 Southbound off-ramp at Exit 126 and Southpoint Parkway (UPC 110914)

The projects listed above, along with other local spot improvements already identified, made up the new no-build (later re-termed "no build plus") assumption for the purpose of this Phase 2 study. This no-build scenario was tested under 2030 and 2045 traffic conditions to identify weekday and weekend choke points. While the Phase 1 effort only relied on macroscopic planning-level models, this Phase 2 study incorporated the use of microscopic traffic operations modeling to more precisely identify trouble spots that may still exist after the hypothetical implementation of the future no-build scenario. The Phase 2 effort included a transit element which included a larger

geographic area, and a highway element that remained focused on the most congested segments of I-95 in the FAMPO area.

Regarding the ability for the no-build scenario to accommodate 2030 and 2045 traffic, several additional highway improvements were identified as part of the Phase 2 Study effort. The recommendations below fall into two categories: primary, and secondary. Primary Recommendations are those that received sufficiently detailed study in this effort and are shown to be critical to the operational success of the I-95 corridor in this study area by the year 2045. The Primary Recommendations are reflected in Figure ES-2 of the report and listed below:

- A fourth general purpose (auxiliary) lane northbound between exits 126 and 130
- A fourth general purpose (auxiliary) lane southbound between exits 130 and 126
- A fifth southbound deceleration lane for the I-95 off-ramp to Exit 126
- Ramp improvements at Exit 136
- Ramp improvements at Exit 133
- Widening I-95 northbound from three to four GP lanes between the GP/CD merge (Truslow Road area) and Exit 136

Secondary Recommendations represent ideas that are expected to improve travel and / or community access but require additional study and stakeholder outreach before conclusive choices and decisions can be made. The Secondary Recommendations include:

- New full access interchange near MP 131 connecting I-95 to Carl D Silver Pkwy & Gordon W Shelton Blvd
- New full access at existing Route 620, Harrison Road overpass (MP 128) to include select widening of Harrison Road to accommodate increased traffic demand
- Improved access at Exit 126 (Route 1) to include elements often referred to as the Super Ramp among other improvements
- Widen the I-95 general purpose lanes from 3-lanes to 4-lanes northbound from Exit 136 to Exit 143 and southbound from Exit 143 to Exit 133[2]

As part of the Phase 1 master plan recommendations, a new I-95 access point was shown at Harrison Road and no mention was made of access changes at other locations. As discussed previously, many changes have occurred in the corridor since that time. Phase 1 listed the new Harrison Road access as Priority 4 which was the lowest priority compared to other more urgent needs. Since that time several of the more urgent needs from the Phase 1 study have been selected for funding. As a result of these changes, the I-95 Phase 2 study team reassessed and considered several options for improved I-95 access and the preliminary findings were shared with the Advisory Committee.

Considering the abbreviated information described above, the three identified access improvements showed the greatest ability to significantly improve community access to and from the interstate and provide much-needed relief to overburdened existing interchanges in the study area. As any new or improved interstate access concept can be very costly, there is continued

[2] This widening recommendation, if implemented during the term of the Amended and Restated Comprehensive Agreement relating to I-95, could potentially be deemed a compensation event under the ARCA.

interest in further studying these three locations to determine the most cost-effective action for the region.

Regarding the potential widening of I-95 to an 8-lane facility in Stafford County, the preliminary investigation indicated that such a widening would likely mitigate recurring congestion expected by the year 2045, but as with the interstate access proposals, more detailed operations analysis would be needed to definitively justify the action.

Final Report for Phase 2 I-95 Corridor Study

**Transit/TDM Study**

As part of the continuing, cooperative and comprehensive planning process in the FAMPO area, the Transit/TDM study was commissioned to include a multimodal effort to identify alternative solutions to address traffic congestion as a follow-on effort to the Phase 1 effort of 2016. The timing of this study activity is particularly important in the context of the 2018 application deadline for the Commonwealth of Virginia's Smart Scale program opportunity. The study effort informed and supported project submissions to this program. Additionally, the Transit/TDM study developed potential projects for funding consideration in the I-395 Commuter Choice Program, which is scheduled to start in 2019.

This technical report documents the results of the Transit/TDM study effort. The study effort relied on macroscopic analysis using the region's travel forecasting model and the state's StreetLight dataset. The results of the macroscopic analysis informed the project development process for near-term improvements by 2030 as well as longer-term improvements by 2045.

The Advisory Committee met seven times during the course of the study from February 9, 2017 to November 1, 2017.

The I-95 corridor in the FAMPO area receives much attention due to its standing as one of the most congested interstate corridors in the nation. Since the Phase 1 Study was completed, a regionally-significant improvement for VRE in FAMPO was funded in Smart Scale Round 2 in addition to the highway improvements referenced in the I-95 Phase 2 highway summary:

- Brooke and Leeland Platform expansions, Pedestrian/Bike improvements, and Leeland Commuter parking expansion (UPCs 111883, 111884, and 111885)
- Crossroads Maintenance and Storage Facility improvements (UPC 111886)

The study evaluated two potential scenarios for transit investment. Scenario one focused on creating a new publicly funded commuter bus service from FAMPO to Northern Virginia and Washington, DC. Scenario two focused on enhancing existing VRE and Vanpool service. Both scenarios included increasing FRED feeder bus service to VRE stations. Scenario one was forecast to generate an additional 675 riders/day by 2045 compared to the scenario two, but at more than double the capital cost and with a higher operating cost. As a result, scenario two was considered the preferable option. Commuter parking lot needs were also evaluated for both scenarios. Lastly,

several bicycle/pedestrian improvements for commuter parking lot needs and VRE stations were identified to increase mobility for first mile/last mile connections.

The primary VRE feeder bus project recommendations were:

- New FRED transit service from North Stafford Commuter lots and Aquia Town Center to Quantico and Quantico VRE Station
- Enhanced FRED feeder bus service to the Brooke, Leeland, Fredericksburg, and Spotsylvania VRE stations

The primary commuter parking needs are shown in Figure 35, in the report, and include:

- Fredericksburg Train Station (AMTRAK/VRE)
- Leeland VRE Station
- Brooke VRE Station
- Fredericksburg West (Central Park area)
- Stafford County Southeast (Business 17 and Rte. 3 areas)
- Caroline County (Ladysmith and Bowling Green areas)

Final Report for Phase 2 I-95 Transit/TDM Study