Improvements to Freight Infrastructure

Description

CSX and Norfolk Southern have ambitious and expensive plans to improve rail infrastructure along the East coast which would greatly increase the capacity for freight movement. Both companies received partial TIGER grant funding for portions of their project (none inside the Washington, DC region) and have state funds committed for portions of their projects. This analysis focuses on the CO_2 reductions from shifting freight transported by truck to trains, thereby removing long-haul heavy duty trucks from the roads. There are other potential benefits, such as improvements in commuter rail service, which were deemed too uncertain to quantify at this time.

Analysis Approach

The approach is to use sketch planning analysis to calculate emissions reductions which result from the removal of long-haul heavy duty trucks from area highways. The projected highway benefits were obtained from presentations from the rail companies to the TPB. All data used in this analysis were provided by CSX and Norfolk Southern. No independent data were available. It is assumed that in order to achieve the full effectiveness from the improvements and the benefits forecasted by CSX and Norfolk Southern, the projects would require full completion. It is possible that partial completion would yield benefits in the region, but there were no data provided to complete such an analysis.

The forecasted benefits were provided graphically at the state level (Maryland and Virginia) for major highway corridors by CSX and Norfolk Southern. The maps are included in Attachment A. CSX forecasts benefits for the National Gateway project using cumulative truck-miles reduced from major highways from 2012-2021. The presentation can be found here: http://www.mwcog.org/uploads/committee-documents/kl5bWV5e20090828104956.pdf. Norfolk Southern forecasts trucks removed from major highways annually for the completed (full-build) project. The Crescent Corridor presentation can be found here: http://www.mwcog.org/uploads/committee-documents/bF5aWVpe20091216131659.ppt.

Table 1 shows the data as provided in cumulative truck-miles for the National Gateway project. To calculate truck-miles reduced in the region from the National Gateway project, the truck-miles reduced by corridor were factored by the proportion of highway miles of that corridor in the region to determine VMT reductions.

Table 1

National Gateway (cumulative 2012-2021)

	Cumulative truck-miles reduced	Highway miles in corridor	Highway miles in DC region	Truck VMT reduced in region
I-270	13,440,000	32	32	13,440,000
I-70	83,520,000	88	28	26,574,545
I-95/I-495 (MD)	15,000,000	82	34	6,219,512
I-66	25,000,000	75	35	11,666,667
I-95 (VA)	36,000,000	98	30	11,020,408

Table 2 shows the data provided by Norfolk Southern for annual trucks reduced by corridor when the Crescent Corridor project is completed. The number of trucks was multiplied by the number of highway miles for each of those corridors in the region to determine VMT reductions.

Table 2

Crescent Corridor (Completion)

	Annual trucks reduced	Highway miles in DC region	Truck VMT reduced in region
I-270	27,000	32	864,000
I-95/I-495 (MD)	173,000	34	5,882,000
I-66	104,000	35	3,640,000
I-95 (VA)	182,000	30	5,460,000

Assumptions

- Full completion for both the National Gateway and Crescent Corridor is 2020. The National Gateway project reduction information was presented cumulatively from 2012 to 2021, and staff assumed a linear increase in benefits to estimate annual benefits in 2020. The Crescent Corridor benefits were presented annually

for full development. It was assumed that the Crescent Corridor project will be completed by 2020.

- The trucks which would be removed from the highway as a result of the projects would be primarily long-haul and thus would travel the entire length of highway in the region. For example, CSX estimates that 140,000 trucks would be removed from I-270 from 2012-2021. This analysis assumes that all of those trucks are traveling the entire length of I-270.
- The CO2 emissions rate for heavy-duty diesel trucks is 1360.4 g/mi

Summary Impact (2020)

	VMT Reductions in 2020 (million truck-miles)	CO_2 Reductions in 2020 (tons CO_2)
National Gateway	12.3	16,687
Crescent Corridor	15.8	23,762

Attachment A

National Gateway – Maryland Highway Impacts

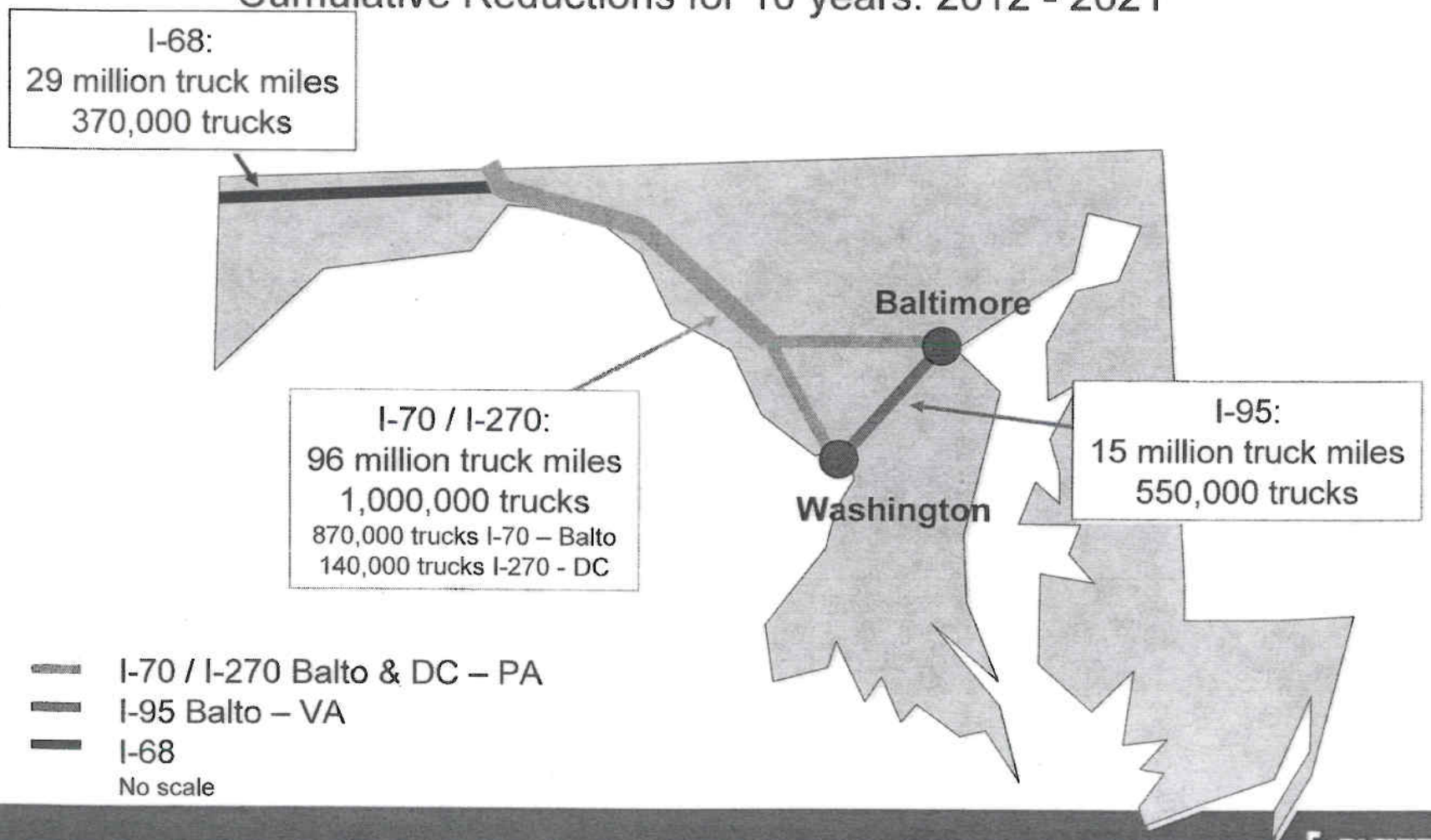
National Gateway – Virginia Highway Impacts

Crescent Corridor – Maryland Highway Impacts

Crescent Corridor – Virginia Highway Impacts

National Gateway - Maryland Highway Impacts

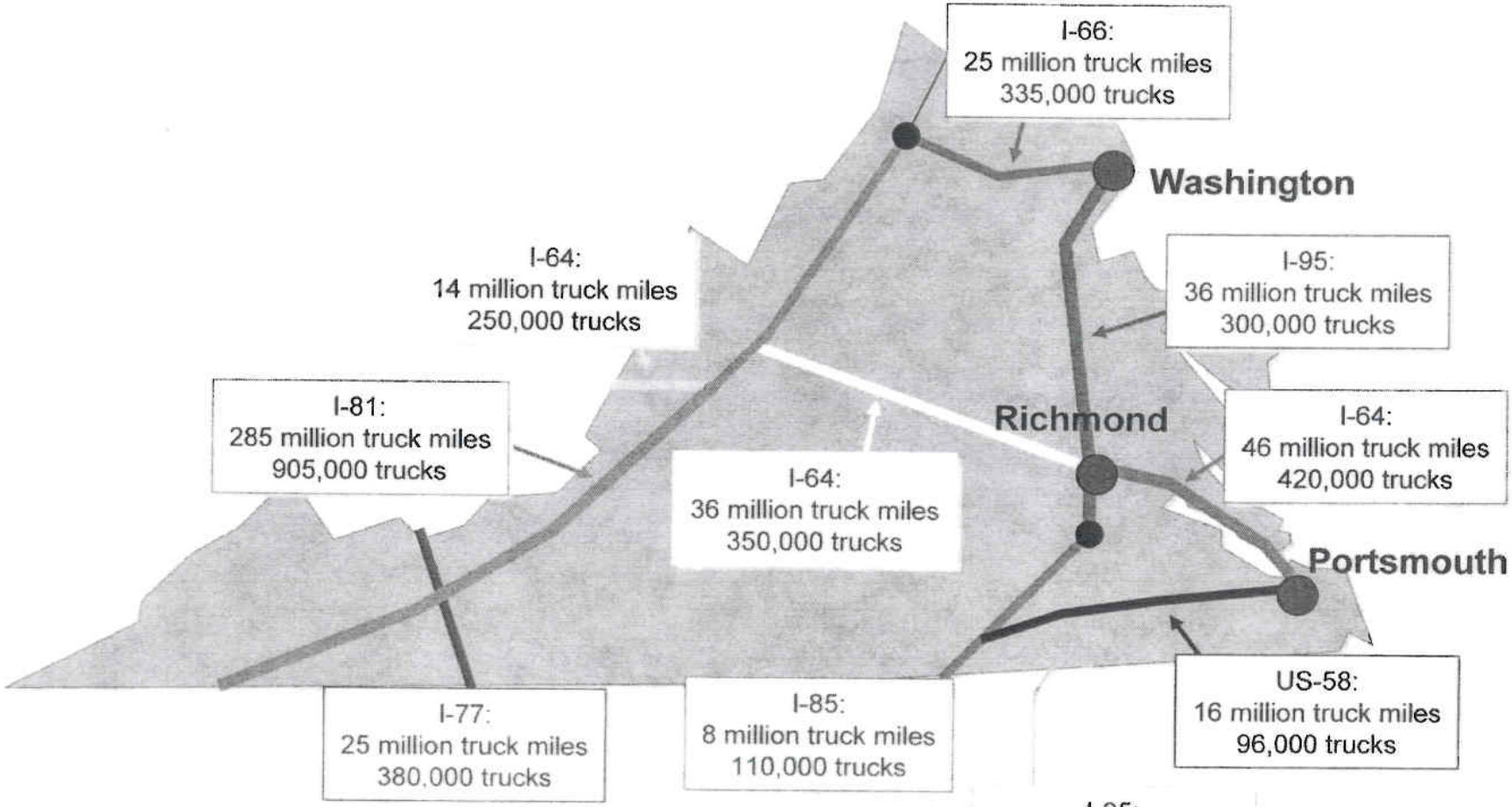
Cumulative Reductions for 10 years: 2012 - 2021



Updated with Phase II Study results

National Gateway - Virginia Highway Impacts

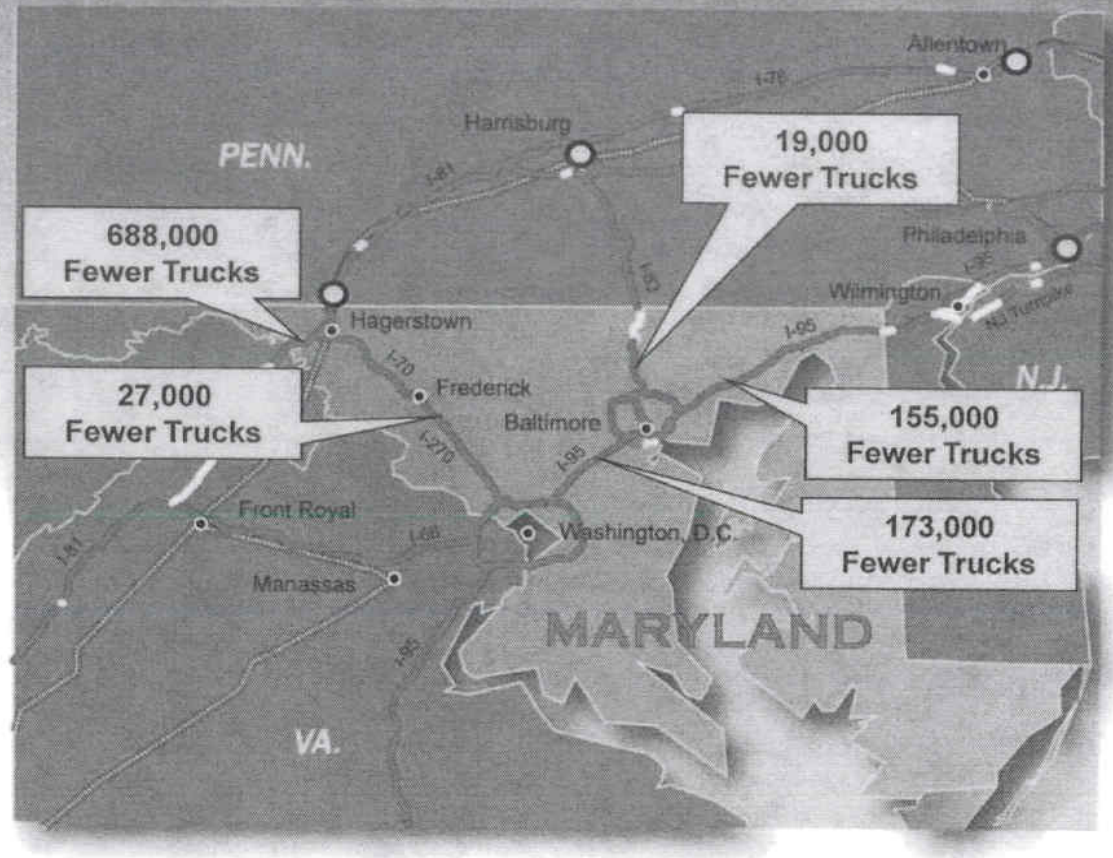
Cumulative Reductions for 10 years: 2012 - 2021



No scale

Updated with Phase II Study results

Clean, Green Relief for Congested Roads



Projected 2020 Interstate Highway Congestion

(Source U.S. Department of Transportation) *

- Not Congested (LOS A, B)
- Approaching Congestion (LOS C)
- Congested (LOS D, E, F)
- Norfolk Southern Crescent Corridor

* The DOT estimates that congestion will increase significantly by 2035

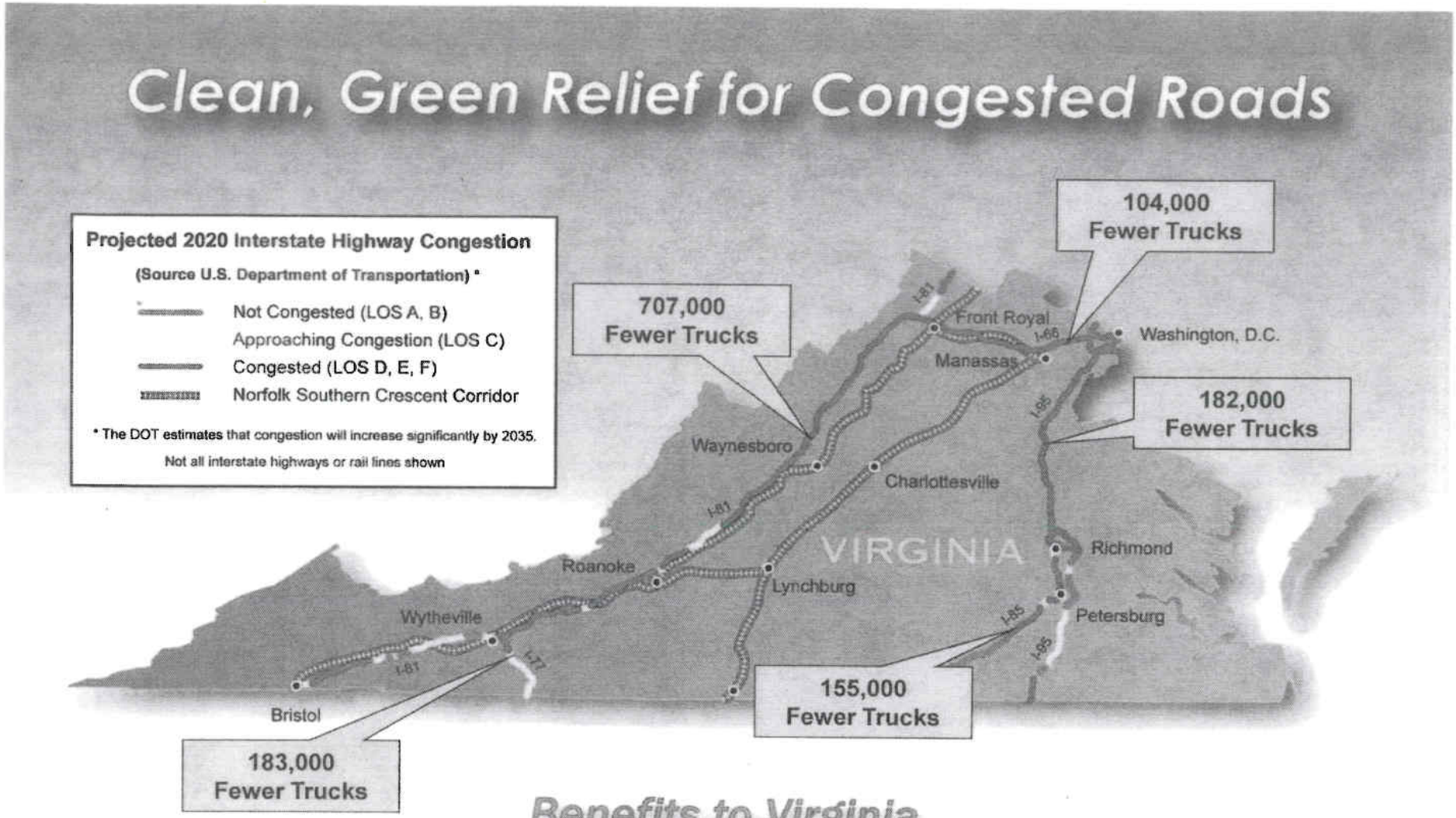
Not all interstate highways or rail lines shown

Crescent Corridor Terminals

Benefits to Maryland

884,000	Annual Trucks Diverted
4 Million	Gallons of Fuel Saved
46,000	Reduced Tons of CO_2
$ 2 Million	Pavement Savings
$26 Million	Congestion Savings
$ 4 Million	Safety Savings

Clean, Green Relief for Congested Roads



Benefits to Virginia

878,000	Annual Trucks Diverted to Rail
35 Million	Gallons of Fuel Saved
385,000 Tons	Reduced Tons of CO_2
$19 Million	Pavement Savings
$99 Million	Congestion Savings
$30 Million	Safety Savings