Truck Delay Impacts of Key Planned Highway Projects in Hampton Roads

the *heartbeat* of HAMPTON ROADS TPO

TRANSPORTATION PLANNING ORGANIZATION

June 2015

T15-06

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TRUCK DELAY IMPACTS OF KEY PLANNED HIGHWAY PROJECTS IN HAMPTON ROADS

PREPARED BY:

the *heartbeat* of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

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REPORT DOCUMENTATION

TITLE:
Truck Delay Impacts of Key Planned Highway Projects
in Hampton Roads

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ABSTRACT
This study builds on the work contained within the 2013 Existing and Future Truck Delay in Hampton Roads study, measuring future truck delay impacts in the next 20 years for six key planned highway projects. This information will be shared with the Freight Technical Advisory Committee (FTAC), which advises the HRTPO Board on freight issues in the region.

This study estimates total weekday truck delay for the region and by corridor in the next 20 years for seven scenarios—a base future roadway network scenario and six additional scenarios containing the base future roadway network and one of the following key planned highway projects:

- I-64 Peninsula Widening (including Segments 1-3 and Fort Eustis Blvd Interchange)
- I-64 Southside Widening (including replacement of High Rise Bridge)
- I-64/I-264 Interchange (including Witchduck Rd Interchange)
- Route 58 (Holland Rd)
- Third Crossing (including Patriots Crossing, Craney Island Connector, and I-664 Widening/Bowers Hill Interchange)
- US 13/58/460 Connector (including SPSA overpass and Hampton Roads Executive Airport Interchanges)

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INTRODUCTION

Hampton Roads is a multimodal region that includes ports, airports, rail, private trucking, shipping and warehouse distribution facilities, as well as a network of road and rail corridors for the delivery of freight, goods, and services. Trucks are the primary mover within this system and are responsible for delivering a majority of what local citizens consume and use on a daily basis – groceries, gas, clothes, and medicine. Roadway congestion adds to the operating costs of companies and shippers, impacting the economic competitiveness of the Port of Virginia, Hampton Roads, and the state of Virginia. In order for Hampton Roads to remain competitive in attracting new business interests and continue to grow economically, its transportation network must facilitate the movement of products using trucks.

According to Federal Highway Administration's (FHWA) Freight Analysis Framework (FAF), the overall tonnage of domestic goods that will be moved into, within, and out of Hampton Roads by truck is expected to increase 65% from 66.9 million tons to 110.1 million tons between 2010 and 2040[1]. The value of those same goods is expected to rise more than 133% from $85.9 billion to $200.3 billion between 2010 and 2040. In 2010, trucks were the predominant mode used to move these domestic goods in terms of tonnage (51%) and dollar value (69%). By 2040, trucks are expected to remain the primary mover of domestic cargo for the region at 51% by tonnage and 60% by dollar value. With trucks being the primary method of transporting domestic freight both today and in the future, the efficient movement of trucks on the regional roadway network is essential to the region's success.

STUDY PURPOSE

In September 2012, The Hampton Roads Metropolitan Organization (HRTPO) staff completed the Hampton Roads Regional Freight Study[2]. In September 2013, HRTPO staff completed the Existing and Future Truck Delay in Hampton Roads study[3], which expanded the analysis of existing truck volumes and delays by location in the 2012 study to include future

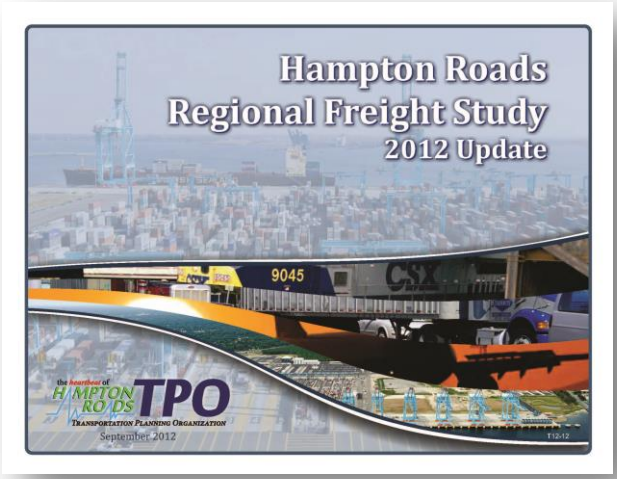
[1] *Hampton Roads Regional Freight Study: 2012 Update*, HRTPO, September 2012, p. 11.

[2] *Ibid.*

[3] *Existing and Future Truck Delay in Hampton Roads: Preparation for Project Prioritization,* HRTPO, September 2013.

Hampton Roads Metropolitan Planning Area

Hampton Roads Regional Freight Study: 2012 Update



truck volumes and delays in Hampton Roads. It used the new truck component and time-of-day capability of the regional travel demand model to forecast truck volumes and congestion to be faced by trucks in the next 20 years. The key performance measure used in these studies was total weekday truck delay by roadway corridor.

This 2015 study builds on the work contained within the 2013 Existing and Future Truck Delay in Hampton Roads study, measuring future truck delay impacts in the next 20 years for six key planned highway projects. This information will be shared with the Freight Technical Advisory Committee (FTAC), which advises the HRTPO Board on freight issues in the region.

This study estimates total weekday truck delay for the region and by corridor in the next 20 years for seven scenarios—a base future roadway network scenario and six additional scenarios containing the base future roadway network and one of the following key planned highway projects:

- I-64 Peninsula Widening (including Segments 1-3 and Fort Eustis Blvd Interchange)
- I-64 Southside Widening (including replacement of High Rise Bridge)
- I-64/I-264 Interchange (including Witchduck Rd Interchange)
- Route 58 (Holland Rd)
- Third Crossing (including Patriots Crossing, Craney Island Connector, and I-664 Widening/Bowers Hill Interchange)
- US 13/58/460 Connector (including SPSA overpass and Hampton Roads Executive Airport Interchanges)

The purpose is to test and measure the impact of each highway project on truck delay for the total roadway network and along major corridors in the vicinity of each project location.

It is important to note that the truck delay analysis contained in this report is not the same as the congestion analysis in the Hampton Roads Congestion Management Process (CMP)[4]. The CMP congestion analysis determines weekday congestion levels by roadway segment for *all* vehicles including trucks. Weekday truck delay in this report is a function of the congestion on a given roadway segment and the number of trucks that use that same segment each weekday. For example, a roadway segment with high congestion levels but very low truck volumes will have low total truck delay due to that volume.

Existing and Future Truck Delay in Hampton Roads (September 2013)

[4] *Hampton Roads Congestion Management Process: 2010 Update*, HRTPO, September 2010.

TRUCK DELAY – 20-YEAR FORECAST BASE SCENARIO

This section discusses the methodology used to forecast truck volumes and calculate future truck delays within Hampton Roads and provides the results of a 20-year forecast base scenario. Subsequent sections of this report will show changes in future truck delays for key planned highway projects when compared to this future base scenario.

TRUCK DELAY METHODOLOGY

For this analysis, HRTPO staff used VDOT's Hampton Roads travel demand model to produce a 20-year forecast of truck volumes, including congested and uncongested speeds by time-of-day and roadway segment. The objective was to estimate future travel conditions for trucks in order to guide transportation planning decisions. Staff ran the model using the latest population, household, and employment forecasts (for the 2040 Long-Range Transportation Plan (LRTP)) and a modified 2040 roadway network (see **Appendix A** for the 2040 LRTP Committed Projects List).

To determine future truck delay impacts, six key committed highway projects (I-64 Peninsula Widening, I-64 Southside Widening, I-64/I-264 Interchange, Route 58/Holland Rd, Third Crossing, and US 460/58/13 Connector) were removed to create the **20-year forecast base scenario**. Each of these six projects were individually added to the 20-year forecast base scenario and re-run in order to compare the truck delay results against the base scenario. Results from the base scenario are provided in this section and results from these additional model runs are shown in subsequent sections.

The following seven 20-year forecast scenarios were tested to determine future truck delay impacts of each of the key planned highway projects:

- Base Scenario
- Base Scenario + I-64 Peninsula Widening
- Base Scenario + I-64 Southside Widening
- Base Scenario + I-64/I-264 Interchange
- Base Scenario + Route 58 (Holland Rd)
- Base Scenario + Third Crossing
- Base Scenario + US 13/58/460 Connector

The US 460 recommended Preferred Alternative (Hampton Roads portion extending 17 mile roadway improvement from the Suffolk Bypass to west of Zuni) was also included in the base scenario or tested as part of this analysis—at the time of this study, project details (e.g. interchange locations) were not available to model this roadway project.

In the regional travel demand model, "trucks" are defined as heavy vehicles with three or more axles or pulling a trailer[5], i.e. FHWA vehicle classification classes 6 through 13. Since class 5 trucks (two-axle, six-tire, single-unit trucks) are not included in the model, the 20-year forecast truck volumes and delays in this section may be conservative projections. FHWA vehicle classes 1-4 are motorcycles, passenger vehicles, other single-unit vehicles, and buses respectively.

The 20-year forecast weekday truck volumes were determined using a "change method." The regional travel demand model produced weekday truck volumes for a 2009 scenario as well as the 20-year forecast base

Future Container Growth at the Port of Virginia will Increase Truck Volumes along Corridors such as Hampton Boulevard in Norfolk, Va

[5] *Hampton Roads Model Methodology Report*, Virginia Department of Transportation, DRAFT V0.23, VDOT Project ID: 30681-01-02, December 2013.

scenario described above. The 2009 scenario is based on the 2009 roadway network with 2009 population, household, and employment figures. The 2009 scenario included tolls existing in 2009 and the 20-year forecast base scenario included planning level tolls. The 2009 weekday truck model volumes were subtracted from the 20-year forecast weekday truck model volumes to produce a "change." This "change" in truck volume was added to the 2010 existing truck counts to produce the 20-year forecast weekday truck volumes. The 2010 existing truck volumes were determine using VDOT truck counts and estimates from 2009 to 2011[6].

For some roadways in Hampton Roads, trucks are prohibited at all times or during specific hours due to political decisions, bridge limitations, or other reasons. For this analysis, roadways with existing truck restrictions were assumed to have the same restrictions for the 20-year forecast. The list of truck-restricted roadways included in the regional travel demand model runs for this analysis is provided in **Table 1**[7].

Truck Delay Definition

Congested truck travel is measured by truck delay—the difference between an "ideal" travel time for a truck on a given roadway segment and the "actual" travel time. The "ideal" travel time is determined by the length of the travel segment divided by the free flow travel speed or uncongested speed. The "actual" travel time is determined the length of the travel segment divided by the modeled travel speed or congested speed. Total truck delay is determined by multiplying the delay for a given travel segment by the truck volume (number of trucks) as shown in the equation below.

$$\textbf{Total Truck Delay} = \left(\left(\frac{\textit{Truck Volume x Segment Length}}{\textit{Segment Modeled Travel Speed}}\right) - \left(\frac{\textit{Truck Volume x Segment Length}}{\textit{Segment Free Flow Travel Speed}}\right)\right)$$

Within the regional travel demand model, average congested and uncongested travel speeds[8] by roadway segment were produced for the 20-year weekday forecast for 4 time periods: AM Peak (6:00 am to 9:00am), midday (9:00 am to 3:00 pm), PM Peak (3:00 pm to 6:00 pm), and night (6:00 pm to 6:00 am). These speeds were used to calculate total truck delay for each time period and summarized to produce the total weekday truck delay. Total weekday truck delay is summarized by roadway segment to represent the total delay during an average weekday (24-hour).

Known Restrictions due to Lack of Regulation

Jurisdiction	Route Name	Location	Time of Restriction
Chesapeake/Virginia Beach	Elbow Road	Butts Station Road to Indian River Road	all times
Chesapeake	George Washington Hwy	Cedar Road to I-64	all times
Norfolk	Hampton Boulevard	Redgate Avenue and International Terminal Blvd	4 pm to 6 am
Norfolk	Colley Avenue	Colley Bay and Front Street	all times
Norfolk	Granby Street	East Ocean View Avenue and Main Street	4 pm to 6 am
Norfolk	Church Street	Granby St and Brambleton Avenue	4 pm to 6 am
Norfolk	Jamestown Cresent	Hampton Boulevard and Colley Bay	all times
Suffolk	Nansemond Pkwy	Wilroy Road and Chesapeake CL	all times
Suffolk	Pughsville Road	Shoulders Hill Road and Chesapeake CL	all times
Suffolk	Town Point Road	Respass Beach Road and Portsmouth CL	all times
York	Richneck Road	Newport News CL to Fort Eustis Blvd	all times

Restrictions due to Bridge Limits

Jurisdiction	Route Name	Crossing
Chesapeake	22ND STREET	SEABOARD AV & NS RAILWAY
Chesapeake	BELLS MILL ROAD	MILL CREEK
Chesapeake	FENTRESS AIRFLD RD	POCATY CREEK
Chesapeake	GEO. WASHINGTON HW	DISMAL SWAMP CANAL
Chesapeake	GEO. WASHINGTON HW	YADKINS RD & NS RAILWAY
Chesapeake	LAKE DRUMMOND CAWY	LEAD DITCH
Chesapeake	MILITARY HIGHWAY	SOUTH BR ELIZABETH RIVER
Chesapeake	MOUNT PLEASANT ROAD	CHESAPEAKE & ALBEMARLE CANAL
Chesapeake	ROUTE 0017	DEEP CREEK
Isle of Wight	Carrsville Highway	Rte. 632 & CSX Railway
Newport News	WASHINGTON AVE.	NNS & DD (PRIVATE) RWY
Suffolk	LAKE PRINCE DRIVE	LAKE PRINCE
Suffolk	TURLINGTON RD.	BR.KILBY CREEK-SPILLWAY
York	MERRIMAC TRAIL	QUEENS CREEK

Other Restrictions

Jurisdiction	Route Name	Location
York	Battle Rd	Old York-Hampton to GW Memorial Hwy
Williamsburg	John Tyler	VA 199 to Jamestown Rd
Newport News	Eastwood	Warwick to Colony
York/James City/Williamsburg	Colonial National Historical Parkway (all)	
Newport News	41st St	Roanoke to Chestnut
Norfolk	Robin Hood	Sewells Point to Azalea Garden
Isle of Wight (Smithfield Town)	Main St	VA 10 Bypass to Church

Table 1 – Truck-Restricted Roadways in Hampton Roads Source: VDOT

[6] *Existing and Future Truck Delay in Hampton Roads: Preparation for Project Prioritization,* HRTPO, September 2013, p. 9.

[7] *Hampton Roads Model Methodology Report*, Virginia Department of Transportation, DRAFT V0.23, VDOT Project ID: 30681-01-02, December 2013, pg 84.

[8] Includes only recurring congestion (peak hour/capacity). Model does not include non-recurring congestion (unexpected delays/incidents).

Hampton Roads High Profile Corridors – 20-Year Forecast Base Scenario

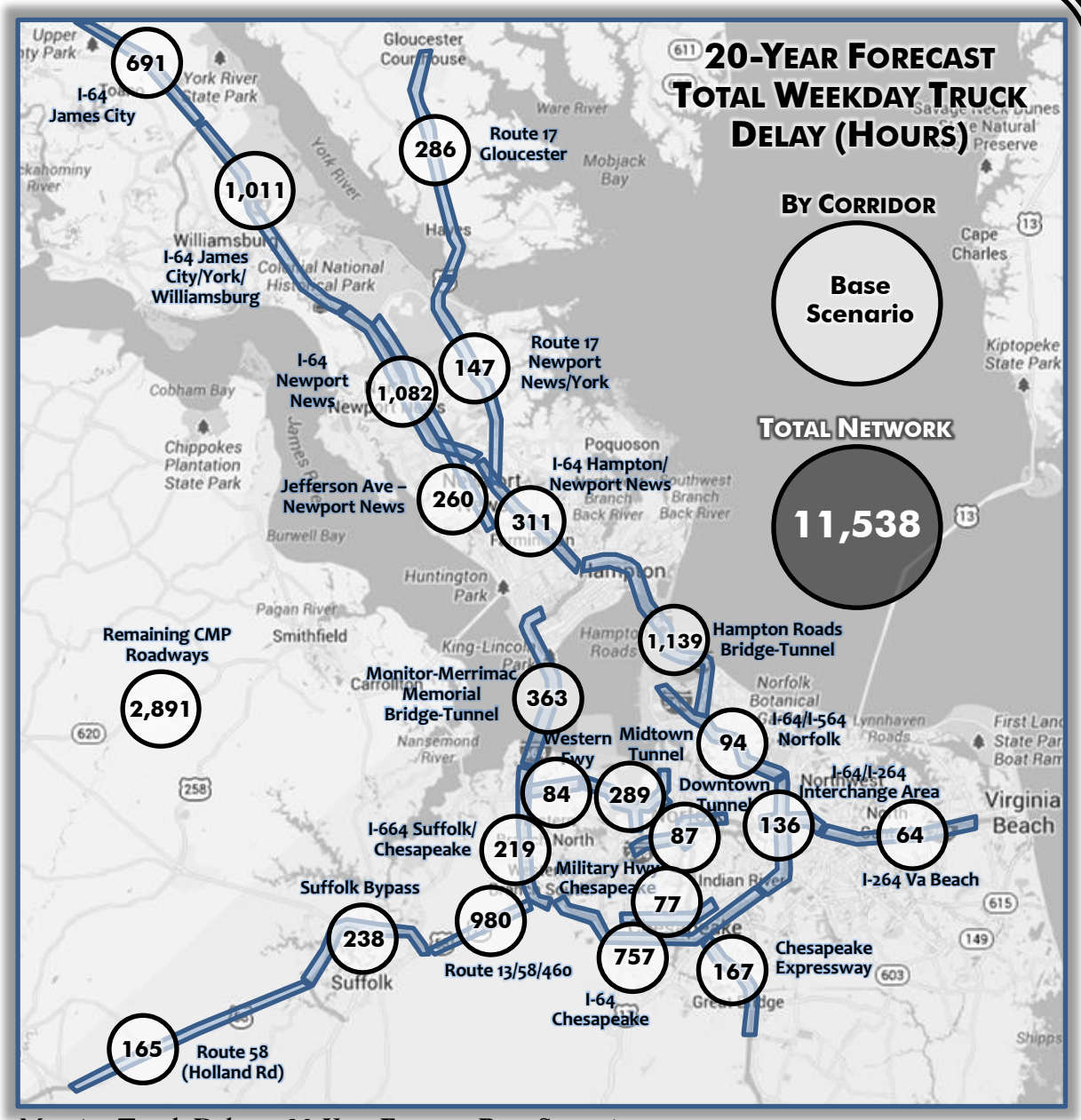
The amount of 20-year forecast total weekday truck delay was calculated for the entire Hampton Roads Congestion Management Process (CMP) roadway network[9] comprised of interstates, freeways or other expressways, principal arterials, minor arterials, and some collectors—approximately 1,600 centerline-miles or 19% of all roadways in the region. All roadways in Hampton Roads (including neighborhood streets) are approximately 8,500 centerline-miles.

As part of this study, 22 high profile corridors were analyzed in detail, including the region's water crossings and their approaches (**Map 1**). Future truck delay for an average weekday is summarized for all CMP roadway segments within each high profile corridor by the 4 time periods as well as by average total weekday (**Table 2**, following page).

From the 22 high profile corridors (**Map 1, Figure 1, Table 2**), the 5 corridors that are projected to have the highest amount of truck delay each weekday in the future for the 20-year forecast base scenario are:

1. Hampton Roads Bridge-Tunnel – 1,139 hours
2. I-64 – Newport News – 1,082 hours
3. I-64 James City/York/Williamsburg – 1,011 hours
4. Route 13/58/460 – 980 hours
5. I-64 Chesapeake – 757 hours

The total network truck delay for the 20-year forecast base scenario is 11,538 hours.



Map 1 – Truck Delay – 20-Year Forecast Base Scenario

Background map source: Google.

[9] *Hampton Roads Congestion Management Process: System Performance and Mitigation Report*, HRTPO, October 2014, pg 24-25.

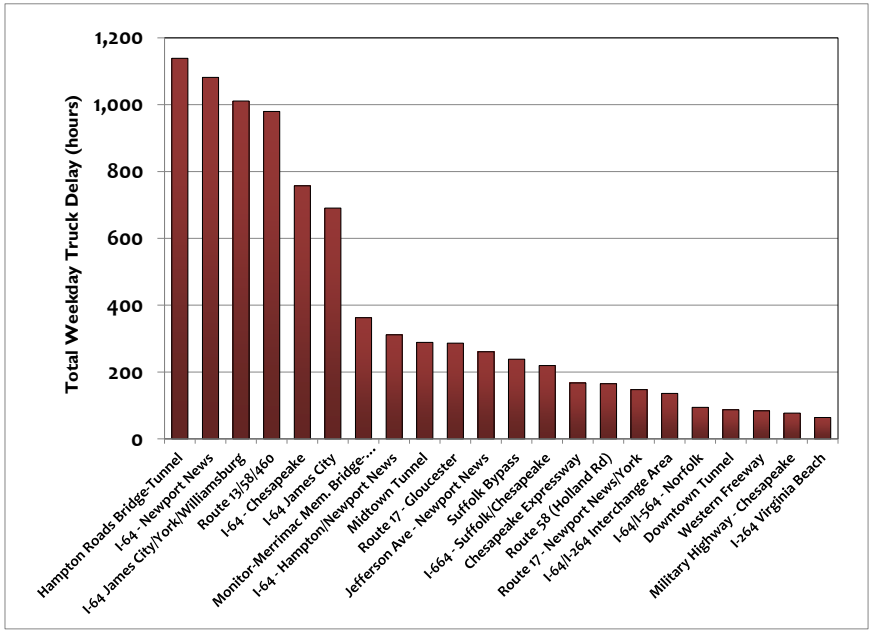


Figure 1 –Truck Delay by High Profile Corridor – 20-Year Forecast Base Scenario

High Profile Location	Total Weekday Truck Delay 6:00AM-9:00AM (hours)	Total Weekday Truck Delay 9:00AM-3:00PM (hours)	Total Weekday Truck Delay 3:00PM-6:00PM (hours)	Total Weekday Truck Delay 6:00PM-6:00AM (hours)	TOTAL (24-hours)	20-Year Forecast Total Truck Delay Rank
Hampton Roads Bridge-Tunnel	309	395	356	79	1,139	1
I-64 - Newport News	222	458	322	80	1,082	2
I-64 James City/York/Williamsburg	191	501	232	87	1,011	3
Route 13/58/460	237	426	265	52	980	4
I-64 - Chesapeake	173	285	243	56	757	5
I-64 James City	92	400	136	63	691	6
Monitor-Merrimac Mem. Bridge-Tunnel	148	37	168	11	363	7
I-64 - Hampton/Newport News	88	85	121	18	311	8
Midtown Tunnel	74	97	106	12	289	9
Route 17 - Gloucester	50	133	69	35	286	10
Jefferson Ave - Newport News	51	101	94	14	260	11
Suffolk Bypass	51	109	58	19	238	12
I-664 - Suffolk/Chesapeake	58	81	66	15	219	13
Chesapeake Expressway	36	77	43	11	167	14
Route 58 (Holland Rd)	24	96	27	18	165	15
Route 17 - Newport News/York	28	63	43	12	147	16
I-64/I-264 Interchange Area	37	45	46	8	136	17
I-64/I-564 - Norfolk	31	13	48	3	94	18
Downtown Tunnel	29	23	32	3	87	19
Western Freeway	17	34	28	6	84	20
Military Highway - Chesapeake	23	26	22	6	77	21
I-264 Virginia Beach	15	25	21	3	64	22
Remaining CMP Roadways	576	1,309	788	218	2,891	
TOTAL	**2,560**	**4,818**	**3,332**	**829**	**11,538**	

Table 2 – Truck Delay Summary – 20-Year Forecast Base Scenario

Truck Delay – 20-Year Forecast with I-64 Peninsula Widening

This section compares the total weekday truck delay for the region and by high profile corridor in the next 20 years for two scenarios—a base future roadway network scenario and one scenario containing the base future roadway network with the following key planned highway project:

- I-64 Peninsula Widening (including Segments 1-3 and Fort Eustis Blvd Interchange)

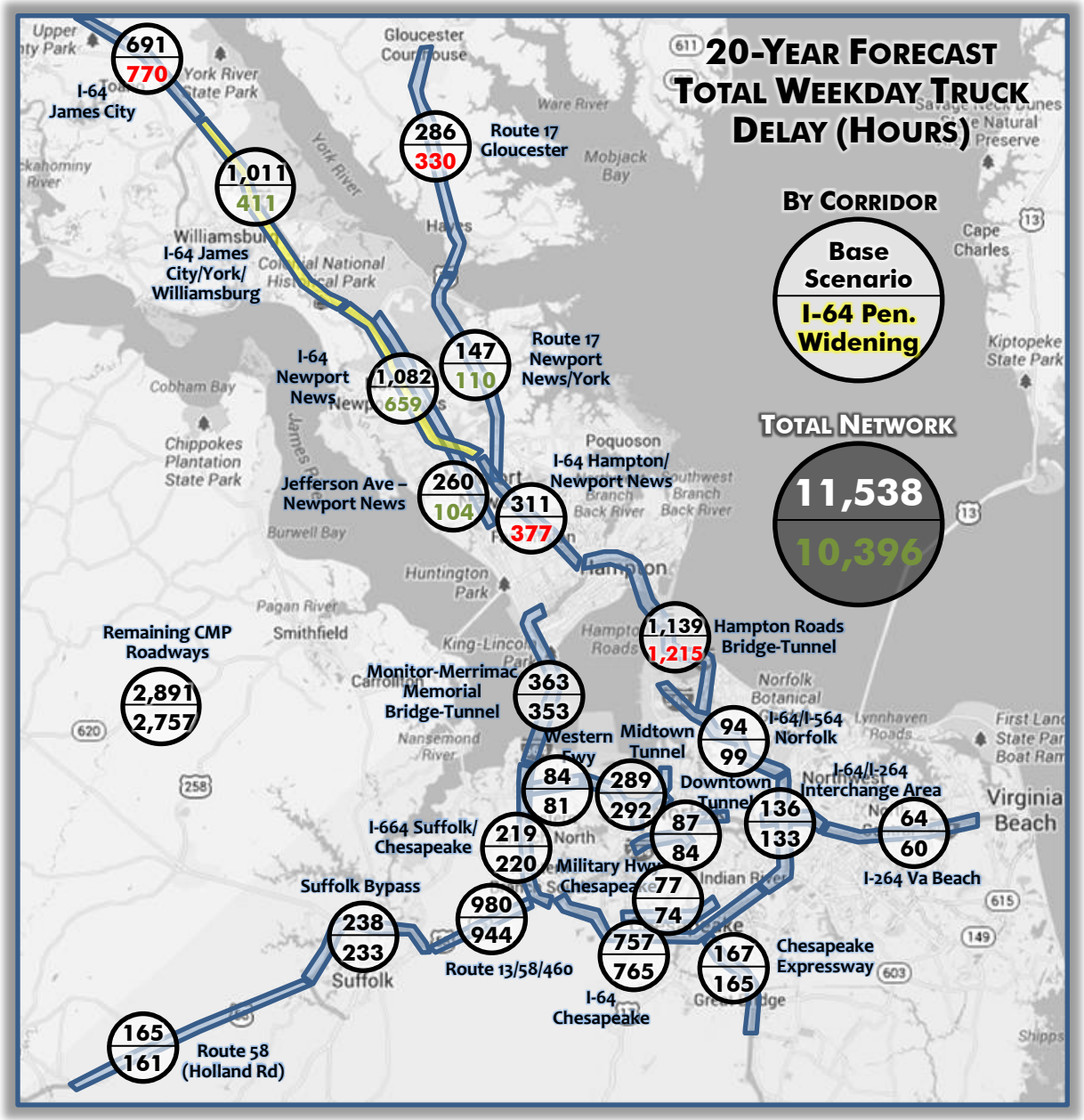
Hampton Roads High Profile Corridors – 20-Year Forecast with I-64 Peninsula Widening

The 20-year forecast total weekday truck delay was calculated for all Hampton Roads Congestion Management Process (CMP) roadways and summarized by 22 high profile corridors (**Map 2**). Truck delays by high profile corridor are tabulated by four time periods as well as by average total weekday for the I-64 Peninsula Widening scenario in **Figure 2 and Table 3** on the following page.

From the 22 high profile corridors, the top 3 corridors that are projected to have the largest reduction in future truck delay each weekday as a result of the I-64 Peninsula Widening project are (**Map 2**):

1. I-64 James City/York/Williamsburg – reduced by 600 hours (-59%)
2. I-64 Newport News – reduced by 423 hours (-39%)
3. Jefferson Ave-Newport News – reduced by 156 hours (-60%)

The total network truck delay for the 20-year forecast I-64 Peninsula Widening scenario is 10,396 hours, which is a reduction of 1,142 hours (-9.9%) from the 20-year forecast base scenario.



Map 2 – Truck Delay – 20-Year Forecast with I-64 Peninsula Widening

Background map source: Google.

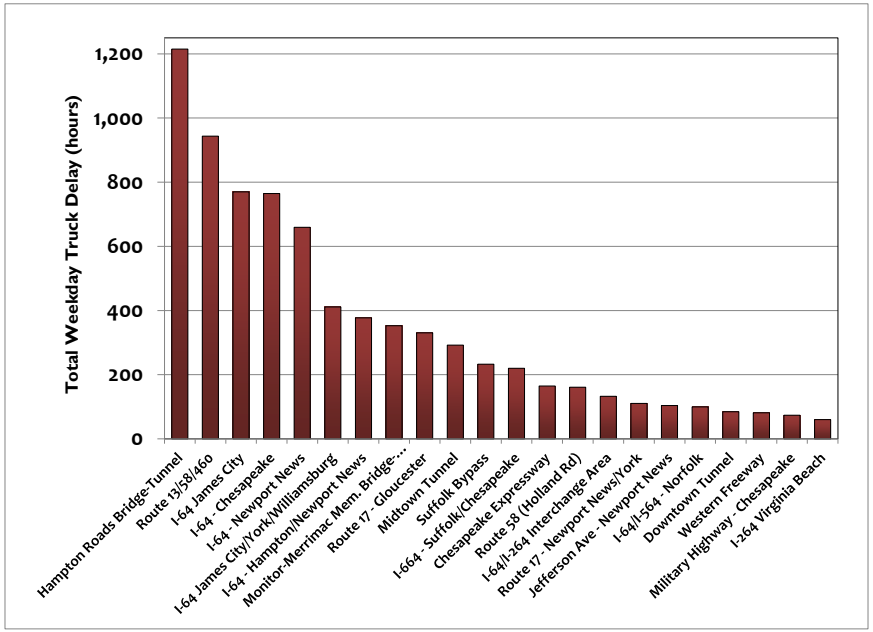


Figure 2 – Truck Delay by High Profile Corridor – 20-Year Forecast with I-64 Peninsula Widening

High Profile Location	Total Weekday Truck Delay 6:00AM-9:00AM (hours)	Total Weekday Truck Delay 9:00AM-3:00PM (hours)	Total Weekday Truck Delay 3:00PM-6:00PM (hours)	Total Weekday Truck Delay 6:00PM-6:00AM (hours)	TOTAL (24-hours)	20-Year Forecast Total Truck Delay Rank
Hampton Roads Bridge-Tunnel	334	416	380	84	1,215	1
Route 13/58/460	225	415	252	52	944	2
I-64 James City	107	433	159	70	770	3
I-64 - Chesapeake	202	272	233	57	765	4
I-64 - Newport News	139	272	207	40	659	5
I-64 James City/York/Williamsburg	80	193	104	34	411	6
I-64 - Hampton/Newport News	99	118	138	22	377	7
Monitor-Merrimac Mem. Bridge-Tunnel	145	37	160	11	353	8
Route 17 - Gloucester	51	165	77	37	330	9
Midtown Tunnel	75	101	105	12	292	10
Suffolk Bypass	46	111	56	19	233	11
I-664 - Suffolk/Chesapeake	56	80	69	15	220	12
Chesapeake Expressway	35	77	41	11	165	13
Route 58 (Holland Rd)	23	94	25	18	161	14
I-64/I-264 Interchange Area	38	42	45	8	133	15
Route 17 - Newport News/York	24	43	33	11	110	16
Jefferson Ave - Newport News	23	40	35	6	104	17
I-64/I-564 - Norfolk	33	14	50	3	99	18
Downtown Tunnel	28	23	31	3	84	19
Western Freeway	17	35	24	6	81	20
Military Highway - Chesapeake	20	26	23	5	74	21
I-264 Virginia Beach	14	22	21	3	60	22
Remaining CMP Roadways	541	1,261	745	210	2,757	
TOTAL	**2,355**	**4,289**	**3,017**	**736**	**10,396**	

Table 3 – Truck Delay Summary – 20-Year Forecast with I-64 Peninsula Widening

Truck Delay – 20-Year Forecast with I-64 Southside Widening

This section compares the total weekday truck delay for the region and by high profile corridor in the next 20 years for two scenarios—a base future roadway network scenario and one scenario containing the base future roadway network with the following key planned highway project:

- I-64 Southside Widening (including replacement of High Rise Bridge)

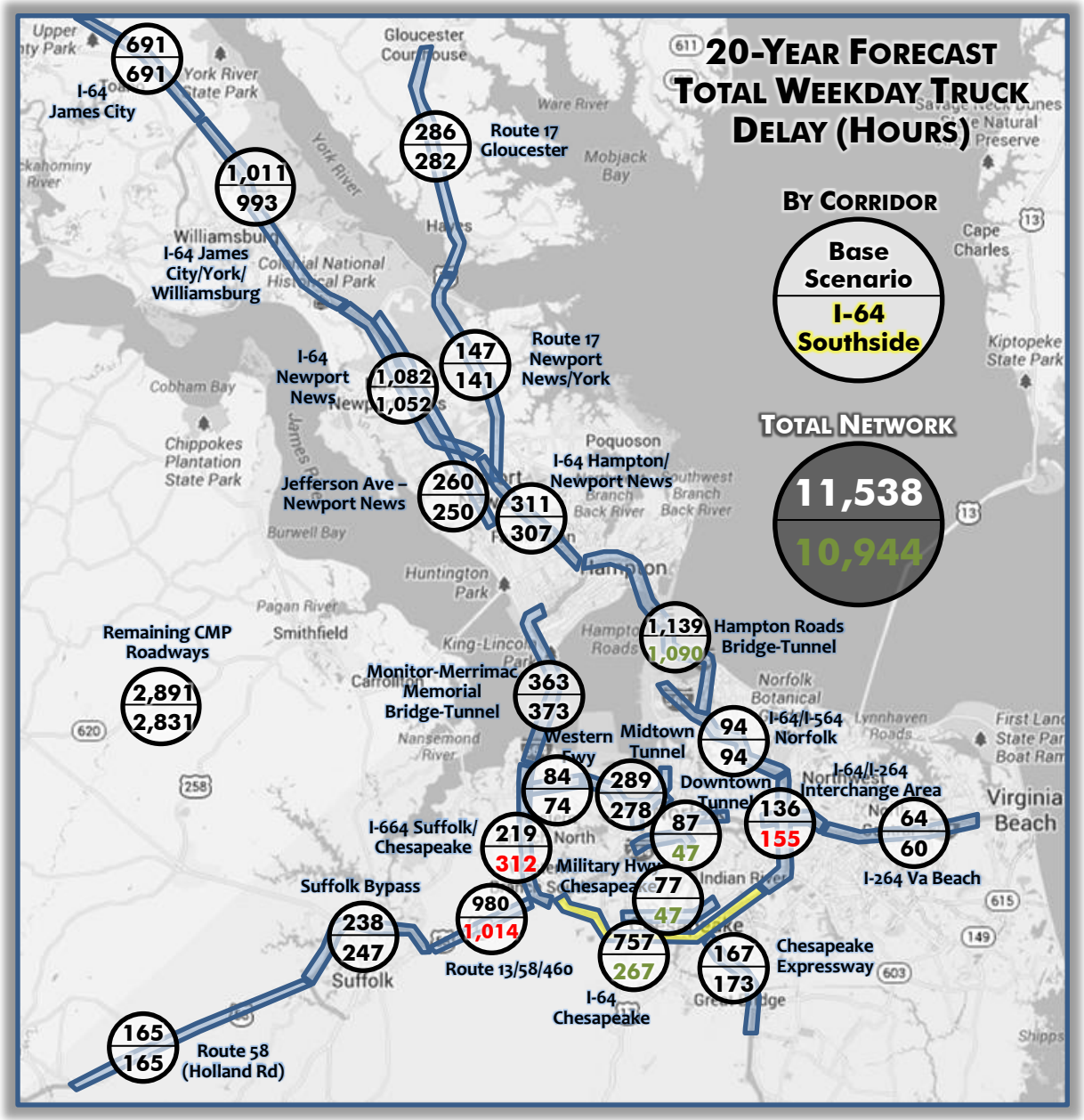
Hampton Roads High Profile Corridors – 20-Year Forecast with I-64 Southside Widening

The 20-year forecast total weekday truck delay was calculated for all Hampton Roads Congestion Management Process (CMP) roadways and summarized by 22 high profile corridors (**Map 3**). Truck delays by high profile corridor are tabulated by four time periods as well as by average total weekday for the I-64 Southside Widening scenario in **Figure 3 and Table 4** on the following page.

From the 22 high profile corridors, the top 3 corridors that are projected to have the largest reduction in future truck delay each weekday as a result of the I-64 Southside Widening project are (**Map 3**):

1. I-64 Chesapeake – reduced by 490 hours (-65%)
2. Hampton Roads Bridge-Tunnel – reduced by 423 hours (-4%)
3. Downtown Tunnel – reduced by 40 hours (-46%)

The total network truck delay for the 20-year forecast I-64 Southside Widening scenario is 10,944 hours, which is a reduction of 594 hours (-5.1%) from the 20-year forecast base scenario.



Map 3 – Truck Delay – 20-Year Forecast with I-64 Southside Widening

Background map source: Google.

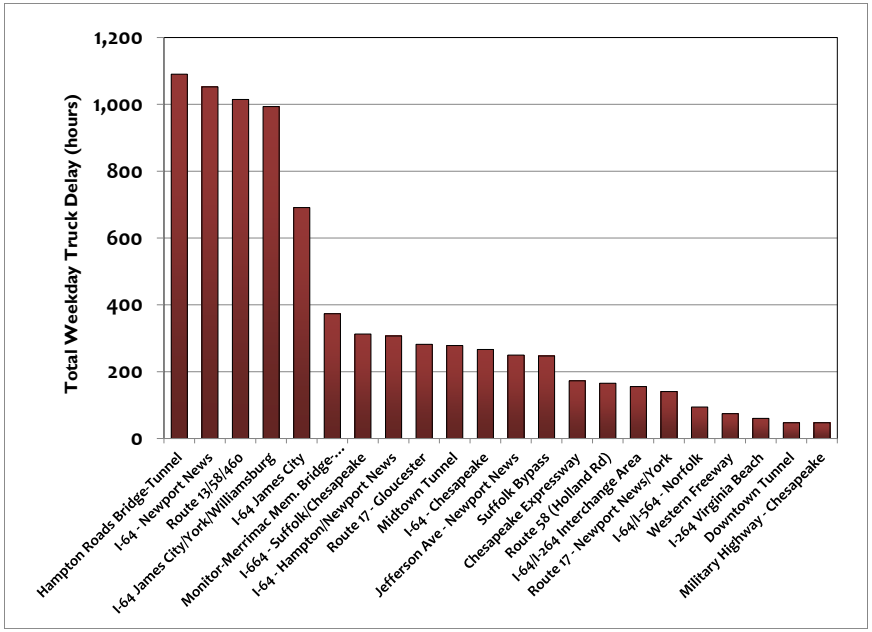


Figure 3 – Truck Delay by High Profile Corridor – 20-Year Forecast with I-64 Southside Widening

High Profile Location	Total Weekday Truck Delay 6:00AM-9:00AM (hours)	Total Weekday Truck Delay 9:00AM-3:00PM (hours)	Total Weekday Truck Delay 3:00PM-6:00PM (hours)	Total Weekday Truck Delay 6:00PM-6:00AM (hours)	TOTAL (24-hours)	20-Year Forecast Total Truck Delay Rank
Hampton Roads Bridge-Tunnel	295	384	335	76	1,090	1
I-64 - Newport News	209	458	309	76	1,052	2
Route 13/58/460	250	437	275	53	1,014	3
I-64 James City/York/Williamsburg	183	503	222	85	993	4
I-64 James City	91	404	133	64	691	5
Monitor-Merrimac Mem. Bridge-Tunnel	154	38	170	11	373	6
I-664 - Suffolk/Chesapeake	91	101	101	19	312	7
I-64 - Hampton/Newport News	87	92	108	19	307	8
Route 17 - Gloucester	49	128	72	33	282	9
Midtown Tunnel	75	92	101	10	278	10
I-64 - Chesapeake	66	99	83	20	267	11
Jefferson Ave - Newport News	51	99	87	14	250	12
Suffolk Bypass	53	111	65	18	247	13
Chesapeake Expressway	37	79	44	12	173	14
Route 58 (Holland Rd)	24	96	27	19	165	15
I-64/I-264 Interchange Area	43	51	53	9	155	16
Route 17 - Newport News/York	27	59	42	13	141	17
I-64/I-564 - Norfolk	30	13	49	3	94	18
Western Freeway	16	31	22	5	74	19
I-264 Virginia Beach	14	22	21	4	60	20
Downtown Tunnel	15	14	17	2	47	21
Military Highway - Chesapeake	13	19	11	4	47	22
Remaining CMP Roadways	544	1,301	771	215	2,831	
TOTAL	**2,416**	**4,628**	**3,117**	**783**	**10,944**	

Table 4 – Truck Delay Summary – 20-Year Forecast with I-64 Southside Widening

Truck Delay – 20-year forecast with I-64/I-264 Interchange

This section compares the total weekday truck delay for the region and by high profile corridor in the next 20 years for two scenarios—a base future roadway network scenario and one scenario containing the base future roadway network with the following key planned highway project:

- I-64/I-264 Interchange (including Witchduck Rd Interchange)

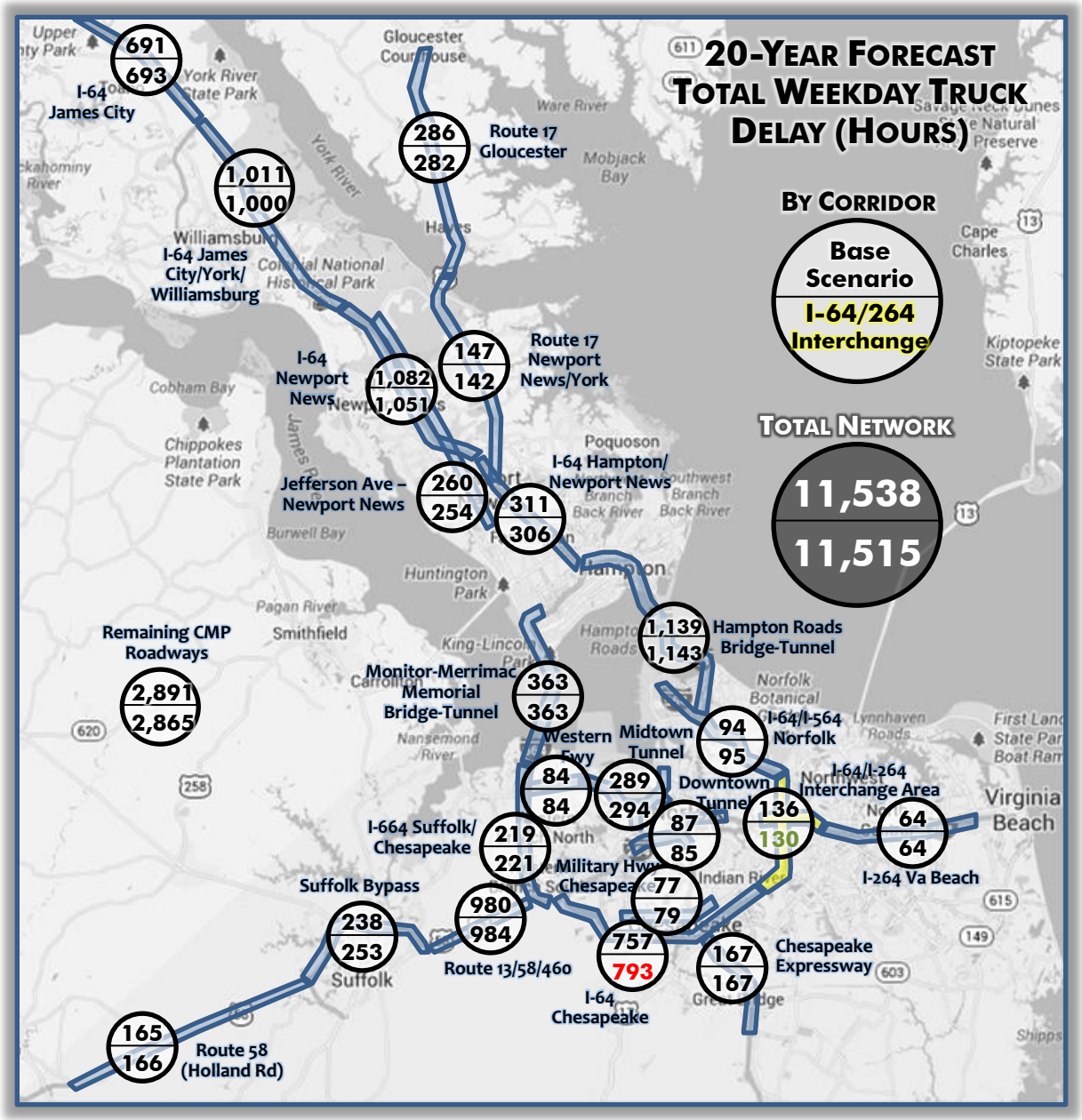
Hampton Roads High Profile Corridors – 20-Year Forecast with I-64/I-264 Interchange

The 20-year forecast total weekday truck delay was calculated for all Hampton Roads Congestion Management Process (CMP) roadways and summarized by 22 high profile corridors (**Map 4**). Truck delays by high profile corridor are tabulated by four time periods as well as by average total weekday for the I-64/I-264 Interchange scenario in **Figure 4 and Table 5** on the following page.

From the 22 high profile corridors, the top corridor that is projected to have the largest reduction in future truck delay each weekday as a result of the I-64/I-264 Interchange project is (**Map 4**):

1. I-64/I-264 Interchange Area – reduced by 6 hours (-4%)

The total network truck delay for the 20-year forecast I-64/I-264 Interchange scenario is 11,515 hours, which is a reduction of 23 hours (-0.2%) from the 20-year forecast base scenario.



Map 4 – Truck Delay – 20-Year Forecast with I-64/I-264 Interchange

Background map source: Google.

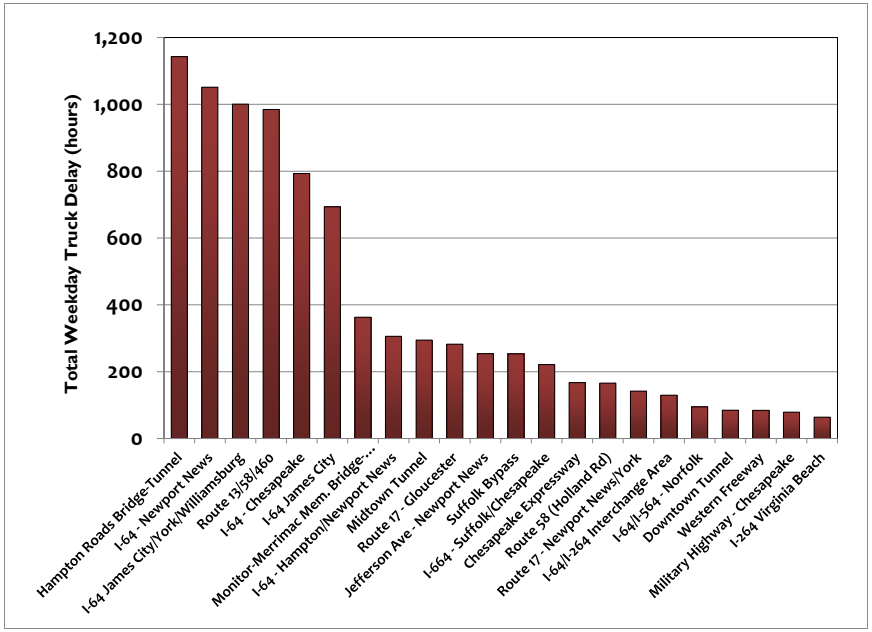


Figure 4 – Truck Delay by High Profile Corridor – 20-Year Forecast with I-64/ I-264 Interchange

High Profile Location	Total Weekday Truck Delay 6:00AM-9:00AM (hours)	Total Weekday Truck Delay 9:00AM-3:00PM (hours)	Total Weekday Truck Delay 3:00PM-6:00PM (hours)	Total Weekday Truck Delay 6:00PM-6:00AM (hours)	TOTAL (24-hours)	20-Year Forecast Total Truck Delay Rank
Hampton Roads Bridge-Tunnel	309	398	357	79	1,143	1
I-64 - Newport News	213	475	288	75	1,051	2
I-64 James City/York/Williamsburg	186	507	220	87	1,000	3
Route 13/58/460	235	430	266	53	984	4
I-64 - Chesapeake	218	280	239	56	793	5
I-64 James City	92	405	134	63	693	6
Monitor-Merrimac Mem. Bridge-Tunnel	150	37	166	11	363	7
I-64 - Hampton/Newport News	86	89	113	18	306	8
Midtown Tunnel	77	100	106	12	294	9
Route 17 - Gloucester	50	130	68	34	282	10
Jefferson Ave - Newport News	51	96	93	13	254	11
Suffolk Bypass	50	121	63	19	253	12
I-664 - Suffolk/Chesapeake	63	76	67	15	221	13
Chesapeake Expressway	35	79	42	11	167	14
Route 58 (Holland Rd)	24	97	27	18	166	15
Route 17 - Newport News/York	27	60	42	13	142	16
I-64/I-264 Interchange Area	37	40	45	7	130	17
I-64/I-564 - Norfolk	31	13	49	3	95	18
Downtown Tunnel	26	23	33	3	85	19
Western Freeway	17	35	27	6	84	20
Military Highway - Chesapeake	22	27	24	6	79	21
I-264 Virginia Beach	15	23	23	3	64	22
Remaining CMP Roadways	564	1,303	780	218	2,865	
TOTAL	**2,579**	**4,843**	**3,270**	**823**	**11,515**	

Table 5 – Truck Delay Summary – 20-Year Forecast with I-64/I-264 Interchange

Truck Delay – 20-Year Forecast with Route 58 (Holland Rd)

This section compares the total weekday truck delay for the region and by high profile corridor in the next 20 years for two scenarios—a base future roadway network scenario and one scenario containing the base future roadway network with the following key planned highway project:

- Route 58 (Holland Rd)

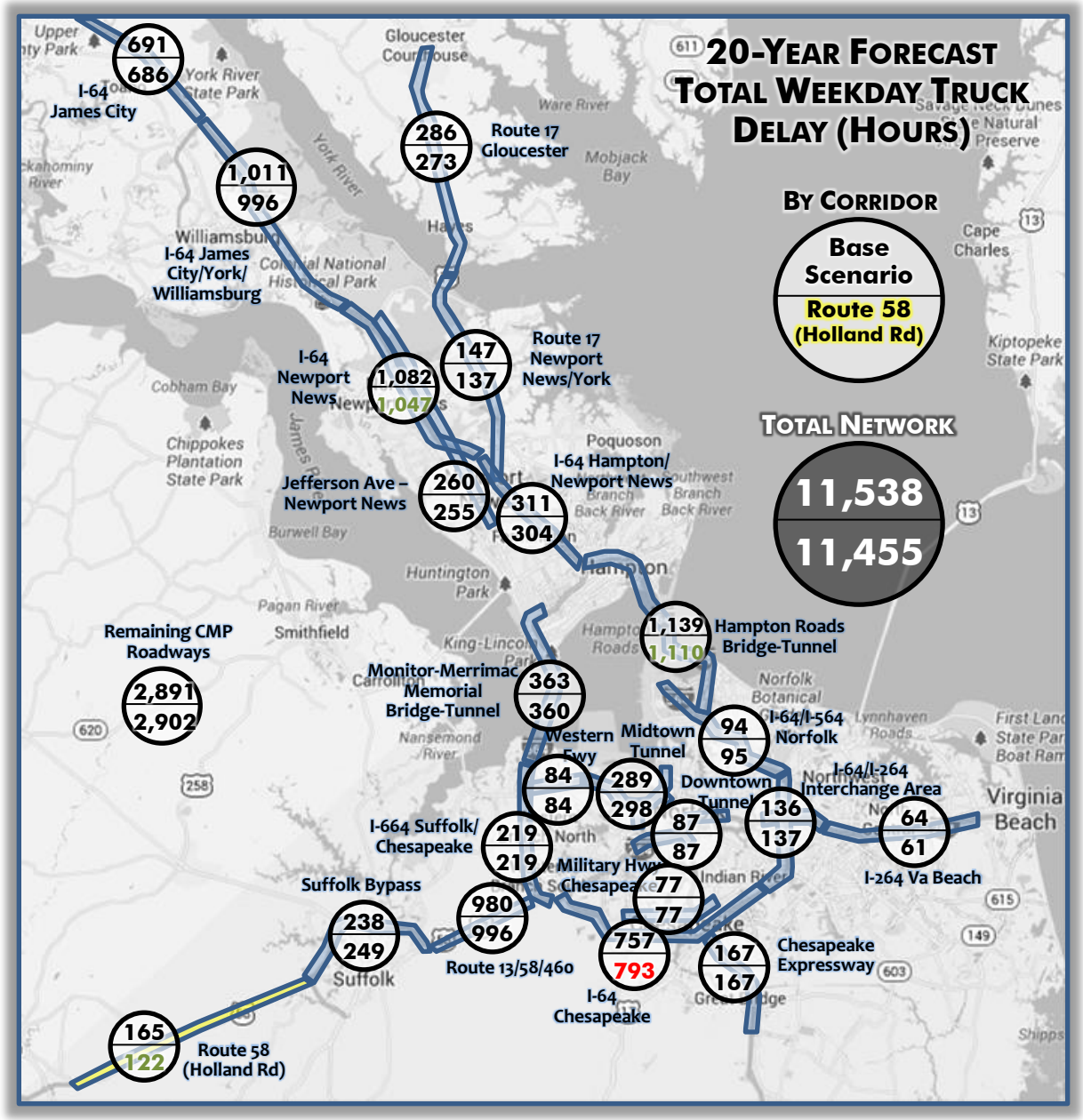
Hampton Roads High Profile Corridors – 20-Year Forecast with Route 58 (Holland Rd)

The 20-year forecast total weekday truck delay was calculated for all Hampton Roads Congestion Management Process (CMP) roadways and summarized by 22 high profile corridors (**Map 5**). Truck delays by high profile corridor are tabulated by four time periods as well as by average total weekday for the Route 58 (Holland Rd) scenario in **Figure 5 and Table 6** on the following page.

From the 22 high profile corridors, the top 3 corridors that are projected to have the largest reduction in future truck delay each weekday as a result of the Route 58 (Holland Rd) project are (**Map 5**):

1. Route 58 (Holland Rd) – reduced by 43 hours (-26%)
2. I-64 Newport News – reduced by 35 hours (-3%)
3. Hampton Roads Bridge-Tunnel – reduced by 29 hours (-3%)

The total network truck delay for the 20-year forecast Route 58 (Holland Rd) scenario is 11,455 hours, which is a reduction of 83 hours (-0.7%) from the 20-year forecast base scenario.



Map 5 – Truck Delay – 20-Year Forecast with Route 58 (Holland Rd)

Background map source: Google.

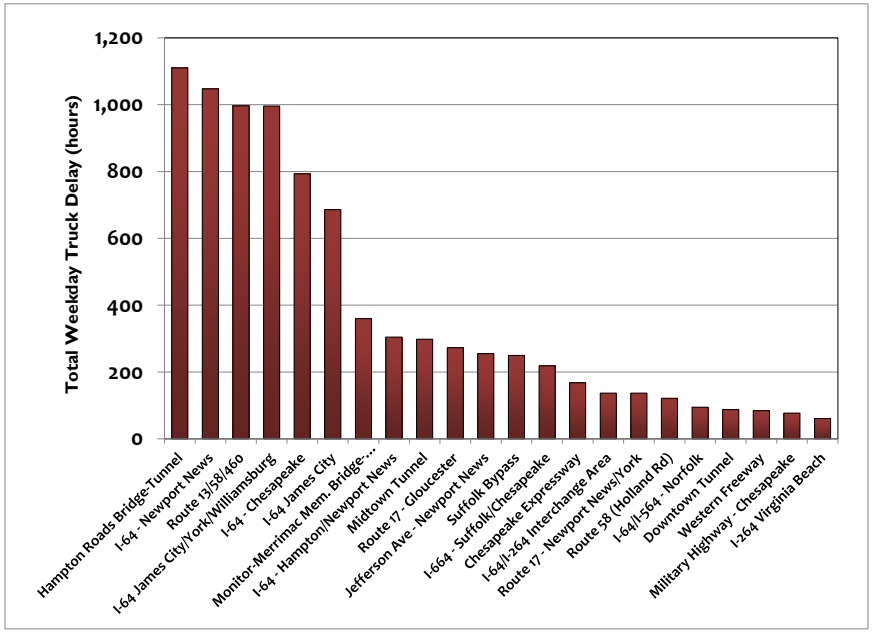


Figure 5 – Truck Delay by High Profile Corridor – 20-Year Forecast with Route 58 (Holland Rd)

High Profile Location	Total Weekday Truck Delay 6:00AM-9:00AM (hours)	Total Weekday Truck Delay 9:00AM-3:00PM (hours)	Total Weekday Truck Delay 3:00PM-6:00PM (hours)	Total Weekday Truck Delay 6:00PM-6:00AM (hours)	TOTAL (24-hours)	20-Year Forecast Total Truck Delay Rank
Hampton Roads Bridge-Tunnel	299	390	343	78	1,110	1
I-64 - Newport News	216	453	293	86	1,047	2
Route 13/58/460	242	431	271	53	996	3
I-64 James City/York/Williamsburg	184	503	222	87	996	4
I-64 - Chesapeake	206	292	236	59	793	5
I-64 James City	89	402	131	64	686	6
Monitor-Merrimac Mem. Bridge-Tunnel	148	37	165	11	360	7
I-64 - Hampton/Newport News	84	92	110	18	304	8
Midtown Tunnel	81	101	104	12	298	9
Route 17 - Gloucester	50	116	68	39	273	10
Jefferson Ave - Newport News	52	97	91	14	255	11
Suffolk Bypass	51	111	67	20	249	12
I-664 - Suffolk/Chesapeake	61	77	66	14	219	13
Chesapeake Expressway	36	79	42	11	167	14
I-64/I-264 Interchange Area	39	43	47	8	137	15
Route 17 - Newport News/York	25	60	40	12	137	16
Route 58 (Holland Rd)	18	69	22	14	122	17
I-64/I-564 - Norfolk	31	13	49	3	95	18
Downtown Tunnel	28	23	33	3	87	19
Western Freeway	18	35	26	6	84	20
Military Highway - Chesapeake	22	28	22	5	77	21
I-264 Virginia Beach	14	22	21	3	61	22
Remaining CMP Roadways	573	1,317	795	217	2,902	
TOTAL	**2,568**	**4,787**	**3,263**	**838**	**11,455**	

Table 6 – Truck Delay Summary – 20-Year Forecast with Route 58 (Holland Rd)

Truck Delay – 20-Year Forecast with Third Crossing

This section compares the total weekday truck delay for the region and by high profile corridor in the next 20 years for two scenarios—a base future roadway network scenario and one scenario containing the base future roadway network with the following key planned highway project:

- Third Crossing (including Patriots Crossing, Craney Island Connector, and I-664 Widening/Bowers Hill Interchange)

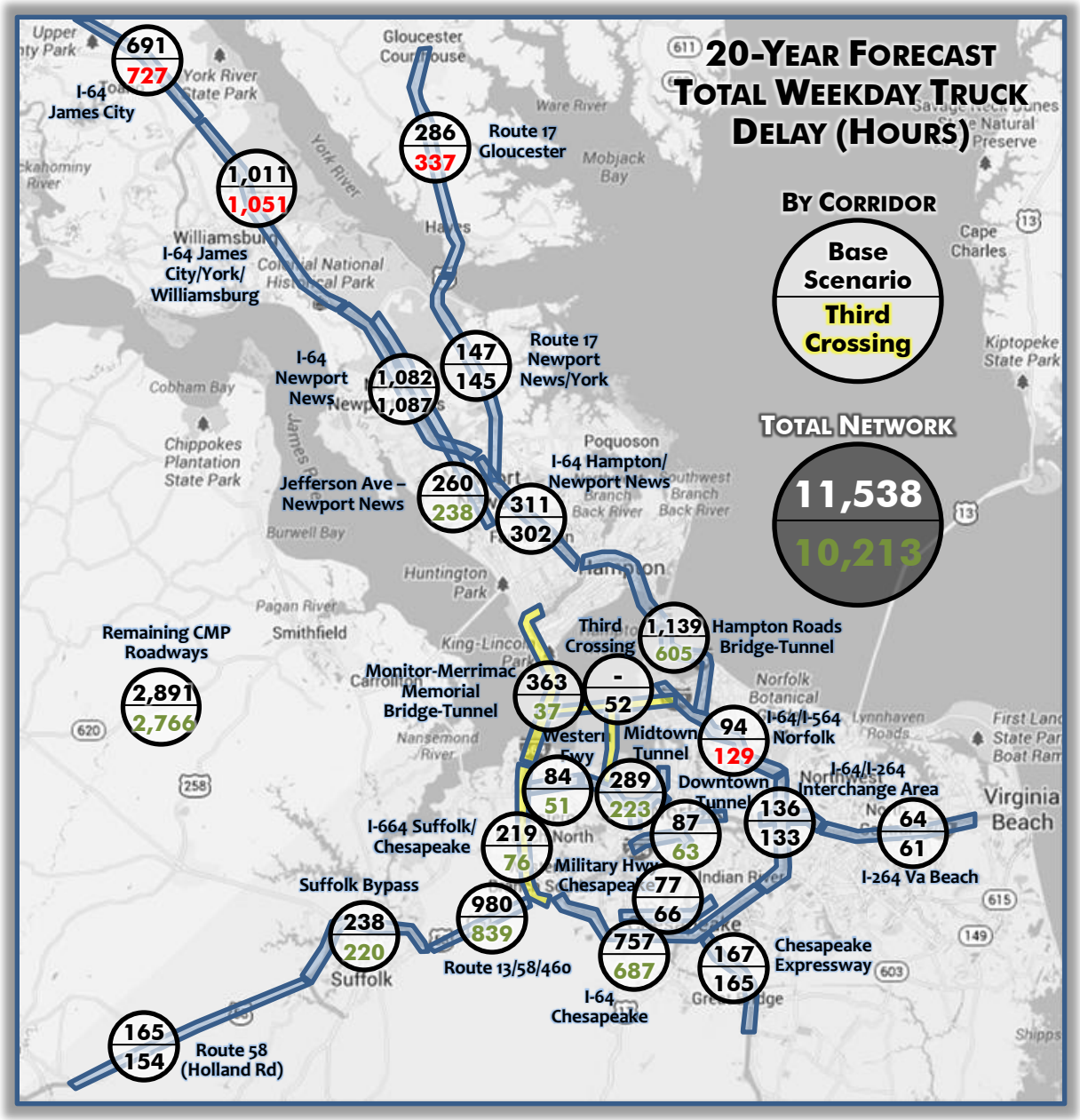
Hampton Roads High Profile Corridors – 20-Year Forecast with Third Crossing

The 20-year forecast total weekday truck delay was calculated for all Hampton Roads Congestion Management Process (CMP) roadways and summarized by 23 high profile corridors (**Map 6**). Truck delays by high profile corridor are tabulated by four time periods as well as by average total weekday for the Third Crossing scenario in **Figure 6 and Table 7** on the following page.

From the 23 high profile corridors, the top 3 corridors that are projected to have the largest reduction in future truck delay each weekday as a result of the Third Crossing project are (**Map 6**):

1. Hampton Roads Bridge-Tunnel – reduced by 534 hours (-47%)
2. Monitor-Merrimac Memorial Bridge-Tunnel – reduced by 423 hours (-90%)
3. I-664 Suffolk/Chesapeake – reduced by 219 hours (-65%)

The total network truck delay for the 20-year forecast Third Crossing scenario is 10,213 hours, which is a reduction of 1,325 hours (-11.5%) from the 20-year forecast base scenario.



Map 6 – Truck Delay – 20-Year Forecast with Third Crossing

Background map source: Google.

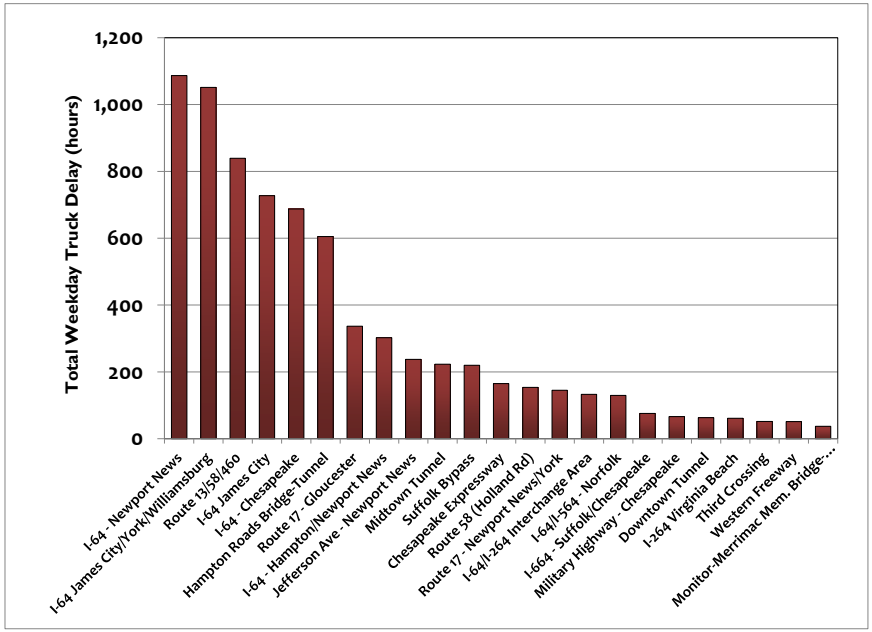


Figure 6 – Truck Delay by High Profile Corridor – 20-Year Forecast with Third Crossing

High Profile Location	Total Weekday Truck Delay 6:00AM-9:00AM (hours)	Total Weekday Truck Delay 9:00AM-3:00PM (hours)	Total Weekday Truck Delay 3:00PM-6:00PM (hours)	Total Weekday Truck Delay 6:00PM-6:00AM (hours)	TOTAL (24-hours)	20-Year Forecast Total Truck Delay Rank
I-64 - Newport News	208	495	304	80	1,087	1
I-64 James City/York/Williamsburg	185	533	239	95	1,051	2
Route 13/58/460	209	352	241	38	839	3
I-64 James City	97	420	143	68	727	4
I-64 - Chesapeake	153	255	229	50	687	5
Hampton Roads Bridge-Tunnel	138	216	201	50	605	6
Route 17 - Gloucester	65	152	75	45	337	7
I-64 - Hampton/Newport News	85	88	114	15	302	8
Jefferson Ave - Newport News	47	92	85	14	238	9
Midtown Tunnel	44	71	98	9	223	10
Suffolk Bypass	47	100	56	17	220	11
Chesapeake Expressway	36	76	42	11	165	12
Route 58 (Holland Rd)	23	88	26	17	154	13
Route 17 - Newport News/York	30	59	42	14	145	14
I-64/I-264 Interchange Area	37	45	43	8	133	15
I-64/I-564 - Norfolk	44	19	62	4	129	16
I-664 - Suffolk/Chesapeake	18	27	25	5	76	17
Military Highway - Chesapeake	19	24	18	5	66	18
Downtown Tunnel	18	18	24	2	63	19
I-264 Virginia Beach	15	23	20	3	61	20
Third Crossing	38	7	5	1	52	21
Western Freeway	11	24	12	4	51	22
Monitor-Merrimac Mem. Bridge-Tunnel	12	10	13	2	37	23
Remaining CMP Roadways	525	1,292	730	219	2,766	
	2,104	**4,487**	**2,847**	**776**	**10,213**	

Table 7 – Truck Delay Summary – 20-Year Forecast with Third Crossing

Truck Delay – 20-Year Forecast with US 13/58/460 Connector

This section compares the total weekday truck delay for the region and by high profile corridor in the next 20 years for two scenarios—a base future roadway network scenario and one scenario containing the base future roadway network with the following key planned highway project:

- US 13/58/460 Connector (including SPSA overpass and Hampton Roads Executive Airport Interchanges)

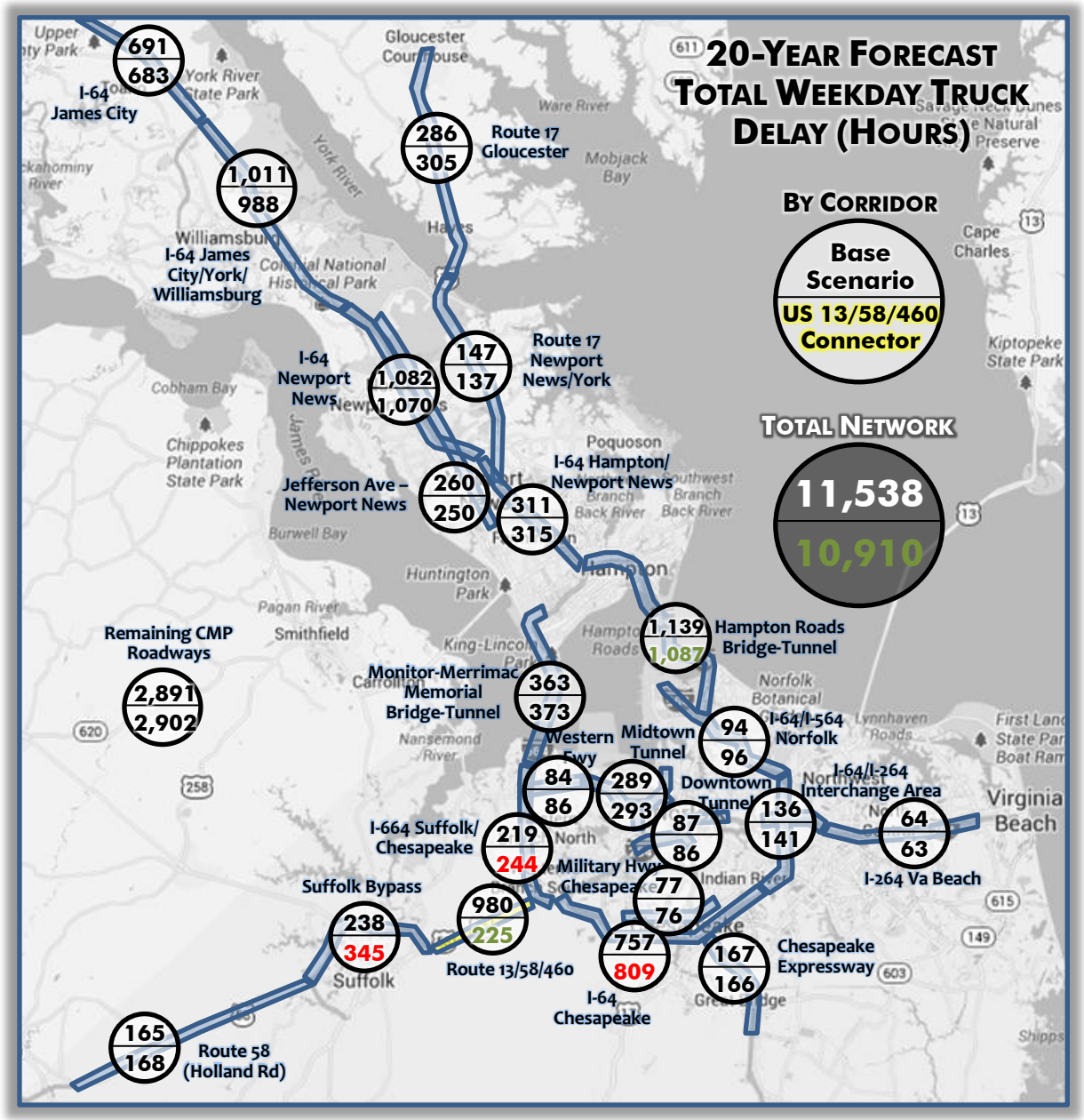
Hampton Roads High Profile Corridors – 20-Year Forecast with US 13/58/460 Connector

The 20-year forecast total weekday truck delay was calculated for all Hampton Roads Congestion Management Process (CMP) roadways and summarized by 22 high profile corridors (**Map 7**). Truck delays by high profile corridor are tabulated by four time periods as well as by average total weekday for the US 13/58/460 Connector scenario in **Figure 7 and Table 8** on the following page.

From the 22 high profile corridors, the top 2 corridors that are projected to have the largest reduction in future truck delay each weekday as a result of the US 13/58/460 Connector project are (**Map 7**):

4. Route 13/58/460 – reduced by 600 hours (-77%)
5. Hampton Roads Bridge-Tunnel – reduced by 423 hours (-5%)

The total network truck delay for the 20-year forecast US 13/58/460 Connector scenario is 10,910 hours, which is a reduction of 628 hours (-5.4%) from the 20-year forecast base scenario.



Map 7 – Truck Delay – 20-Year Forecast with US 13/58/460 Connector

Background map source: Google.

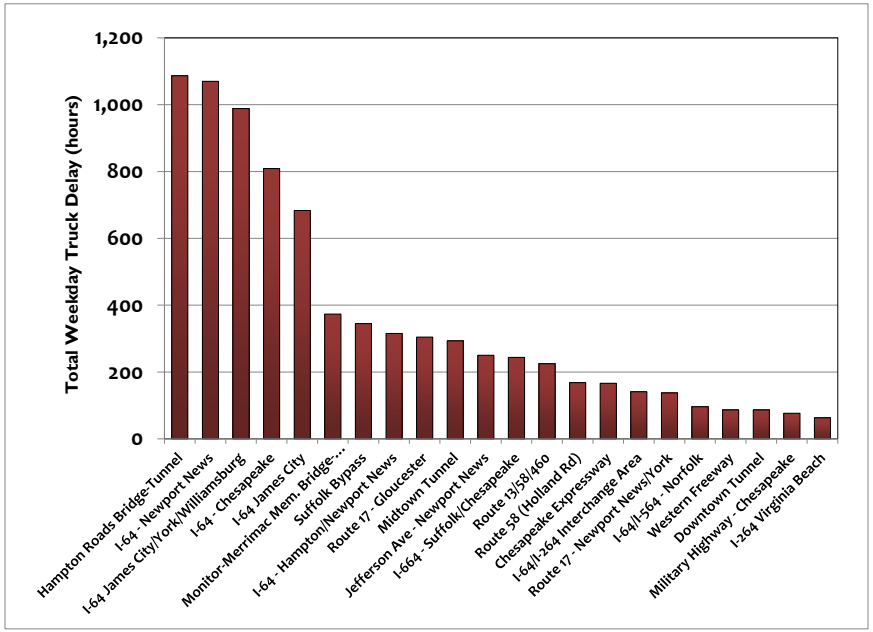


Figure 7 – Truck Delay by High Profile Corridor – 20-Year Forecast with US 13/58/460 Connector

High Profile Location	Total Weekday Truck Delay 6:00AM-9:00AM (hours)	Total Weekday Truck Delay 9:00AM-3:00PM (hours)	Total Weekday Truck Delay 3:00PM-6:00PM (hours)	Total Weekday Truck Delay 6:00PM-6:00AM (hours)	TOTAL (24-hours)	20-Year Forecast Total Truck Delay Rank
Hampton Roads Bridge-Tunnel	291	378	341	76	1,087	1
I-64 - Newport News	204	463	312	90	1,070	2
I-64 James City/York/Williamsburg	178	501	223	86	988	3
I-64 - Chesapeake	204	296	252	56	809	4
I-64 James City	89	400	131	62	683	5
Monitor-Merrimac Mem. Bridge-Tunnel	148	41	173	12	373	6
Suffolk Bypass	69	162	90	24	345	7
I-64 - Hampton/Newport News	84	94	118	19	315	8
Route 17 - Gloucester	53	141	68	42	305	9
Midtown Tunnel	79	97	106	11	293	10
Jefferson Ave - Newport News	52	95	87	15	250	11
I-664 - Suffolk/Chesapeake	63	88	76	16	244	12
Route 13/58/460	56	79	78	12	225	13
Route 58 (Holland Rd)	25	97	28	19	168	14
Chesapeake Expressway	36	77	42	11	166	15
I-64/I-264 Interchange Area	38	46	49	8	141	16
Route 17 - Newport News/York	27	58	42	11	137	17
I-64/I-564 - Norfolk	31	13	49	3	96	18
Western Freeway	19	34	28	5	86	19
Downtown Tunnel	28	24	31	3	86	20
Military Highway - Chesapeake	22	25	23	5	76	21
I-264 Virginia Beach	14	24	21	3	63	22
Remaining CMP Roadways	569	1,325	792	217	2,902	
TOTAL	**2,384**	**4,560**	**3,160**	**807**	**10,910**	

Table 8 – Truck Delay Summary – 20-Year Forecast with US 13/58/460 Connector

COMPARISON OF TRUCK DELAY – 20-YEAR FORECAST SCENARIOS

This section compares truck delay for the 20-year forecast conditions presented in the previous seven sections. The Hampton Roads regional travel demand model was run for seven scenarios—a base future roadway network scenario and six additional scenarios containing the base future roadway network and one of the following key planned highway projects:

- I-64 Peninsula Widening (including Segments 1-3 and Fort Eustis Blvd Interchange)
- I-64 Southside Widening (including replacement of High Rise Bridge)
- I-64/I-264 Interchange (including Witchduck Rd Interchange)
- Route 58 (Holland Rd)
- Third Crossing (including Patriots Crossing, Craney Island Connector, and I-664 Widening/Bowers Hill Interchange)
- US 13/58/460 Connector (including SPSA overpass and Hampton Roads Executive Airport Interchanges)

This analysis shows how each of the six key planned highway projects impacts future weekday truck delay by corridor and for the entire Hampton Roads Congestion Management Process (CMP) roadway network.

COMPARISON OF HAMPTON ROADS HIGH PROFILE CORRIDORS – 20-YEAR FORECAST

Total Weekday Truck Delay

As discussed in the previous sections of this report, total weekday truck delays were summarized for 23 high profile corridors in the region for the 20-year forecast. **Table 9** to the right and **Figure 9** (on page 27) provide a comparison of truck delay for all seven scenarios by high profile location. In Table 9, numbers shown in green indicate that the hours of weekday truck delay is expected to improve from the 20-year forecast base scenario, while numbers in red indicate that truck delay is expected to worsen. **Figure 8** (on the following page) provides a graphical summary of the overall network truck delay shown in Table 9.

	20-Year Forecast Total Weekday Truck Delay (hours)						
High Profile Location	Base Scenario	I-64 Peninsula Widening	I-64 Southside Widening	I-64/I-264 Interchange	Rte 58 (Holland Rd)	Third Crossing	US 13/58/460 Connector
Hampton Roads Bridge-Tunnel	1,139	1,215	1,090	1,143	1,110	605	1,087
I-64 - Newport News	1,082	659	1,052	1,051	1,047	1,087	1,070
I-64 James City/York/Williamsburg	1,011	411	993	1,000	996	1,051	988
Route 13/58/460	980	944	1,014	984	996	839	225
I-64 - Chesapeake	757	765	267	793	793	687	809
I-64 James City	691	770	691	693	686	727	683
Monitor-Merrimac Mem. Bridge-Tunnel	363	353	373	363	360	37	373
I-64 - Hampton/Newport News	311	377	307	306	304	302	315
Midtown Tunnel	289	292	278	294	298	223	293
Route 17 - Gloucester	286	330	282	282	273	337	305
Jefferson Ave - Newport News	260	104	250	254	255	238	250
Suffolk Bypass	238	233	247	253	249	220	345
I-664 - Suffolk/Chesapeake	219	220	312	221	219	76	244
Chesapeake Expressway	167	165	173	167	167	165	166
Route 58 (Holland Rd)	165	161	165	166	122	154	168
Route 17 - Newport News/York	147	110	141	142	137	145	137
I-64/I-264 Interchange Area	136	133	155	130	137	133	141
I-64/I-564 - Norfolk	94	99	94	95	95	129	96
Downtown Tunnel	87	84	47	85	87	63	86
Western Freeway	84	81	74	84	84	51	86
Military Highway - Chesapeake	77	74	47	79	77	66	76
I-264 Virginia Beach	64	60	60	64	61	61	63
Third Crossing	NA	NA	NA	NA	NA	52	NA
Remaining CMP Roadways	2,891	2,757	2,831	2,865	2,902	2,766	2,902
TOTAL	**11,538**	**10,396**	**10,944**	**11,515**	**11,455**	**10,213**	**10,910**
Percent Change		**-9.9%**	**-5.1%**	**-0.2%**	**-0.7%**	**-11.5%**	**-5.4%**

Table 9 – Comparison of Truck Delay – 20-Year Forecast Scenarios

Based on the analysis presented in this report, overall truck delay for the total network (Hampton Roads CMP roadways) is anticipated to be reduced for each key planned highway project by the following amounts:

- I-64 Peninsula Widening (1,141 hours or -9.9%)
- I-64 Southside Widening (628 hours or -5.1%)
- I-64/I-264 Interchange (23 hours or -0.2%)
- Route 58 (Holland Rd) (83 hours or -0.7%)
- Third Crossing (1,325 hours or -11.5%)
- US 13/58/460 Connector (628 hours or -5.4%)

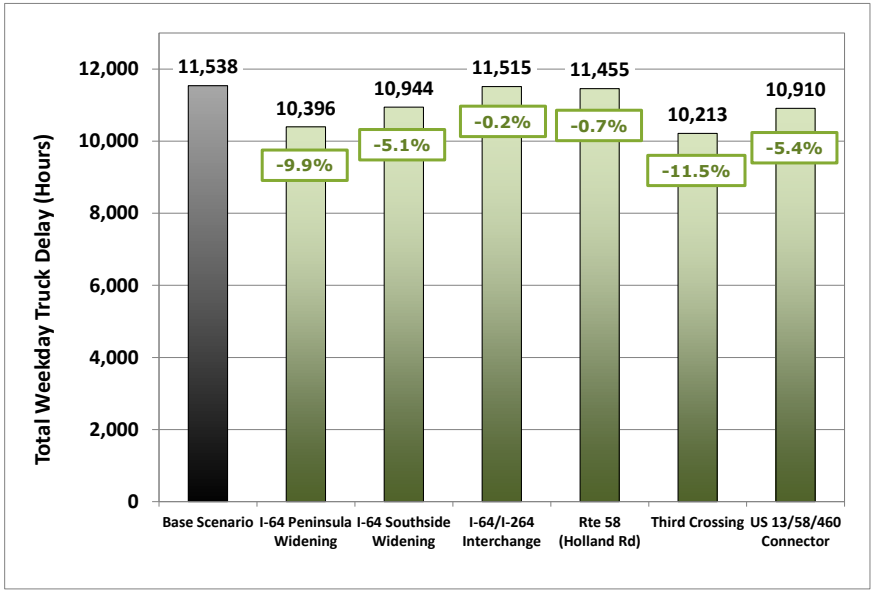


Figure 8 – Comparison of Truck Delay, Total Network – 20-Year Forecast Scenarios

Delay Per Truck

Delay per truck was calculated for each roadway segment by dividing the total weekday truck delay by the 20-year forecast weekday truck volume. All roadway segments within each high profile corridor for all seven scenarios were summarized to estimate delay per truck (minutes) as shown in **Table 10**. This analysis shows the typical delay that a truck is expected to experience if it were to travel the entire length of the high profile corridor. In Table 10, numbers shown in green indicate that the delay per truck is expected to improve from the 20-year forecast base scenario, while numbers in red indicate that delay per truck is expected to worsen.

	20-Year Forecast Delay per Truck (minutes)						
High Profile Location	Base Scenario	I-64 Peninsula Widening	I-64 Southside Widening	I-64/I-264 Interchange	Rte 58 (Holland Rd)	Third Crossing	US 13/58/460 Connector
Route 17 - Gloucester	18	19	18	18	17	19	19
Hampton Roads Bridge-Tunnel	16	16	15	16	16	8	16
Route 17 - Newport News/York	11	8	11	11	10	10	10
I-64 - Newport News	9	4	9	9	9	8	9
Jefferson Ave - Newport News	9	5	9	9	9	8	8
Route 13/58/460	8	8	8	8	8	8	2
I-64 James City/York/Williamsburg	7	3	7	7	7	7	7
I-64 - Chesapeake	5	5	2	5	5	5	5
I-64 James City	4	5	4	4	4	4	4
Chesapeake Expressway	4	4	4	4	4	4	4
Monitor-Merrimac Mem. Bridge-Tunnel	4	4	4	4	4	0	4
Midtown Tunnel	4	4	4	4	4	3	4
Suffolk Bypass	3	3	3	3	3	3	4
Military Highway - Chesapeake	3	3	2	3	3	3	3
I-64 - Hampton/Newport News	2	2	2	2	2	2	2
Route 58 (Holland Rd)	2	2	2	2	1	2	2
I-664 - Suffolk/Chesapeake	2	2	3	2	2	1	2
Downtown Tunnel	2	2	1	2	2	1	2
I-64/I-264 Interchange Area	1	1	2	1	1	1	2
I-64/I-564 - Norfolk	1	1	1	1	1	1	1
Western Freeway	1	1	1	1	1	1	1
I-264 Virginia Beach	1	1	1	1	1	1	1
Third Crossing	NA	NA	NA	NA	NA	2	NA

Table 10 – Comparison of Delay per Truck – 20-Year Forecast Scenarios

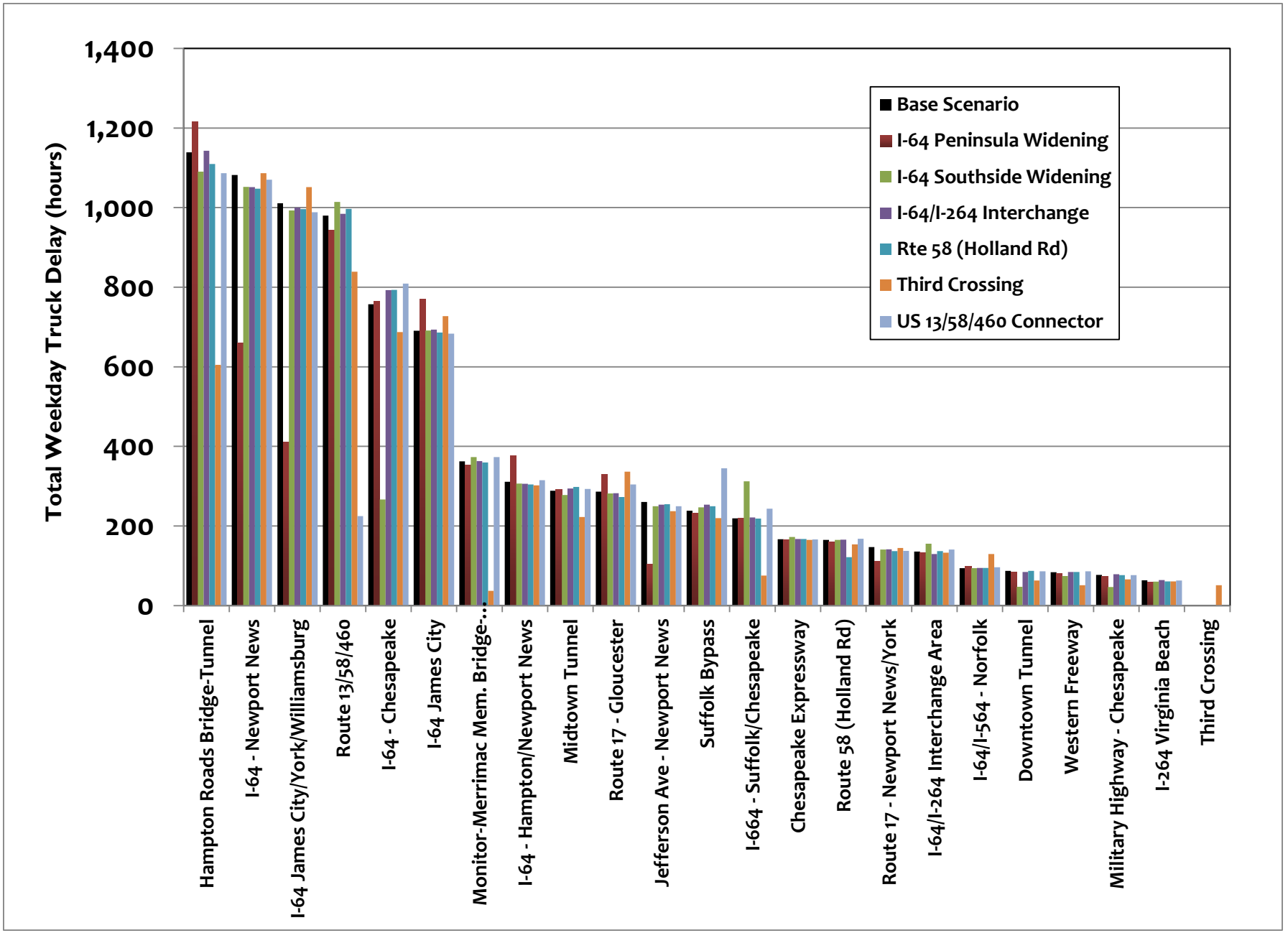


Figure 9 – Comparison of Truck Delay by High Profile Corridor –20-Year Forecast Scenarios

Comparison of Project Corridors –20-Year Forecast

Delay Per Truck – by Project Corridor

For each of the six project corridors analyzed within this study, the 20-year forecast delay per truck was calculated along the roadway sections where construction is planned. These results show how delays are expected to be reduced once the project is completed (**Table 11**).

Project Corridor	From	To	20-Year Forecast Delay per Truck (minutes)	
			Base Scenario	With Project
I-64 - Peninsula Widening	Route 199/646	Jefferson Ave	16	6
I-64 - Southside Widening	I-464	I-264 & 664 (Bowers Hill)	5	1
I-64/I-264 Interchange Area	(see footnote below)(1)		1	1
Route 58 (Holland Rd)	Route 649 (Lummis Rd)	Suffolk Bypass	1	0.4
Third Crossing	(see footnotes below)		6(2)	3(3)
Hampton Roads Bridge-Tunnel	I-664 (Hampton)	I-564/Little Creek Rd	16	8
US 13/58/460 Connector	Suffolk Bypass	I-664	8	2

(1) Includes I-64 from Northampton Blvd to Chesapeake City Line (1.3 mi south of Indian River Rd) and I-264 from Military Hwy to Witchduck

(2) Includes Intermodal Connector from 2nd St to I-564 and I-664 from I-64 & I-264 (Bowers Hill) to I-64 (Hampton).

(3) Includes Intermodal Connector from 2nd St to I-564, I-664 from I-64 & I-264 (Bowers Hill) to I-64 (Hampton), Craney Island Connector fro Western Fwy to Patriots Crossing, and Patriots Crossing from I-664 to 2nd St.

Table 11 – Comparison of Delay per Truck with and without Projects – 20-Year Forecast Scenarios

Changes in Truck Volume – by Project Corridor

For each of the six project corridors analyzed within this study, the 20-year forecast weekday truck volumes are shown with and without the project for selected roadway segments within each corridor (**Table 12**). As shown in Table 12, truck demand is expected to increase along the project corridors.

	Selected Roadway Segment within Project Corridor				20-Year Forecast Weekday Truck Volume		
Project Corridor	Juris	Roadway Name	Segment From	Segment To	Base Scenario	With Project	Percent Change
I-64 - Peninsula Widening	YC/JCC	I-64	Grove Connector	Newport News City Line/ Skiffes Creek Reservoir	7,023	8,867	26%
I-64 - Southside Widening	CHES	I-64	I-464	George Washington Hwy	9,656	11,675	21%
I-64/I-264 Interchange Area	NOR	I-64	I-264	Virginia Beach City Line/ Eastern Branch Elizabeth River	5,851	6,038	3%
Route 58 (Holland Rd)	SUF	Route 58 (Holland Rd)	Cove Point Dr	Suffolk Bypass	6,457	6,677	3%
Third Crossing	NN	I-664/MMMBT	Suffolk City Line/1.2 Mi south of MMMBT entrance	Terminal Ave	5,485	6,801	24%
US 13/58/460 Connector	SUF/CHES	Route 13/58/460	Suffolk Bypass	I-664	7,182	7,877	10%

Table 12 – Changes in Truck Volume with and without Projects – 20-Year Forecast Scenarios

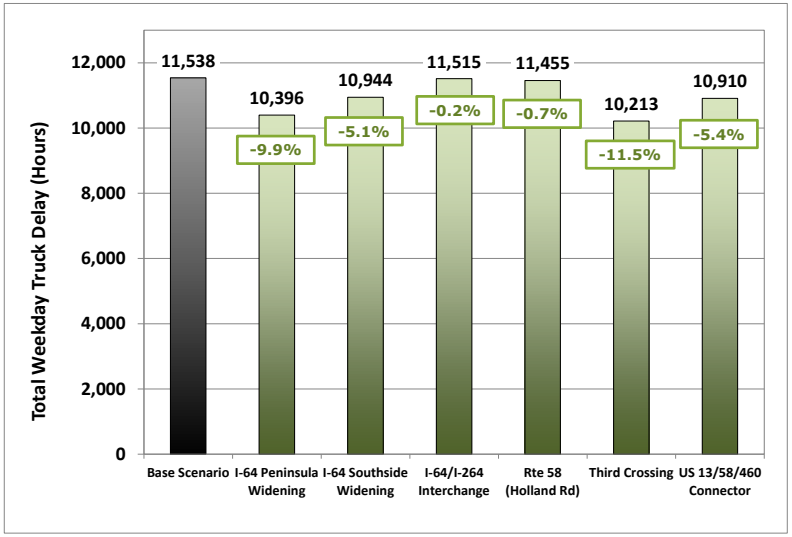
SUMMARY

This study builds on the work contained within the 2013 Existing and Future Truck Delay in Hampton Roads study, measuring future truck delay impacts in the next 20 years for six key planned highway projects. This information will be shared with the Freight Technical Advisory Committee (FTAC), which advises the HRTPO Board on freight issues in the region. This study estimates total weekday truck delay for the region and by corridor in the next 20 years for seven scenarios using the truck component of the Hampton Roads travel demand model—a base future roadway network scenario and six additional scenarios containing the base future roadway network and one of the following key planned highway projects:

- I-64 Peninsula Widening (including Segments 1-3 and Fort Eustis Blvd Interchange)
- I-64 Southside Widening (including replacement of High Rise Bridge)
- I-64/I-264 Interchange (including Witchduck Rd Interchange)
- Route 58 (Holland Rd)
- Third Crossing (including Patriots Crossing, Craney Island Connector, and I-664 Widening/Bowers Hill Interchange)
- US 13/58/460 Connector (including SPSA overpass and Hampton Roads Executive Airport Interchanges)

Based on the analysis presented in this report, overall truck delay for the total network (Hampton Roads Congestion Management Process roadways) is anticipated to be reduced for each key planned highway project by the following amounts:

- I-64 Peninsula Widening (1,141 hours or -9.9%)
- I-64 Southside Widening (628 hours or -5.1%)
- I-64/I-264 Interchange (23 hours or -0.2%)
- Route 58 (Holland Rd) (83 hours or -0.7%)
- Third Crossing (1,325 hours or -11.5%)
- US 13/58/460 Connector (628 hours or -5.4%)



Comparison of Truck Delay, Total Network – 20-Year Forecast Scenarios

APPENDICES

APPENDIX A:
2040 LONG-RANGE TRANSPORTATION PLAN: COMMITTED PROJECTS

This appendix shows the 2040 LRTP Committed Projects[10] that were used to model the future roadway networks for the seven 20-year forecast scenarios tested within this study (see Truck Delay Methodology on page 9).

[10] *Hampton Roads 2040 Long-Range Transportation Plan: Committed and Candidate Transportation Projects*, HRTPO, September 2014, p. 7-9.

Appendix A: 2040 LRTP Committed Projects List

2040 Project ID	UPC	Locality	Name	From	To
Hampton Roads Transportation Fund (HRTF) Projects*					
2040-1	104905	Multi-jurisdictional	I-64 Peninsula Widening- Segment 1	Jefferson Ave (Exit 255)	0.5 miles East of Exit 247
2040-2	N/A	Multi-jurisdictional	I-64 Peninsula Widening- Segment 2	0.5 miles East of Exit 247	Rt 199 East of Williamsburg (Exit 242)
2040-3	N/A	Multi-jurisdictional	I-64 & Fort Eustis Blvd Interchange	N/A	N/A
2040-4	N/A	Multi-jurisdictional	I-64 Peninsula Widening - Segment 3	Rt 199 East of Williamsburg (Exit 242)	Rt 199 West of Williamsburg (Exit 234)
2040-5	12834	Multi-jurisdictional	Patriots Crossing portion of Third Crossing** (including Craney Island Connector)	Hampton Blvd	I-664 and Western Fwy
2040-6	12834	Multi-jurisdictional	I-664 portion of Third Crossing**, (including Bowers Hill Interchange)	I-64/I-664 (Bowers Hill)	I-64/I-664 (Hampton Coliseum)
2040-7	N/A	Multi-jurisdictional	I-64 Southside Widening (including High Rise Bridge)	I-64/I-464	I-64/I-664 at Bowers Hill
2040-8	17630	Multi-jurisdictional	I-64/I-264 Interchange (including Witchduck Rd Interchange)	N/A	N/A
2040-9	N/A	Multi-jurisdictional	US 460/58/13 Connector (including SPSA Overpass and Hampton Roads Exec. Airport Interchanges)	I-664	Eastern end of Suffolk Bypass
Other Committed Projects					
2040-248	T11488	Multi-jurisdictional	Downtown Tunnel/Midtown Tunnel/MLK Extension	Hampton Blvd	I-264
2040-87	103803	Multi-jurisdictional	US 460 - Hampton Roads Portion	Suffolk Bypass	Zuni
2040-236	97715, 13427	Multi-jurisdictional	Wythe Creek Rd	Alphus St	Commander Shepard Blvd
2040-230	56187	Chesapeake	Dominion Blvd	0.05 mi N. of Great Bridge Blvd	0.75 mil S. of Cedar Rd
2040-231	1904	Chesapeake	Gilmerton Bridge	0.36 mi E. of Bridge (Bainbridge Blvd)	0.42 mi W. of Bridge (Shell Rd)
2040-232	18591	Chesapeake	Portsmouth Blvd	Jolliff Rd	Suffolk CL
2040-234	93081	Hampton	Bridge Street Bridge	Rudd Ln	Marrow St

Appendix A: 2040 LRTP Committed Projects List (Continued)

2040 Project ID	UPC	Locality	Name	From	To
Other Committed Projects (Continued)					
2040-233	104363	Hampton	I-64 Interchange at Lasalle Ave	N/A	N/A
2040-235	57047	Hampton	Saunders Rd	Big Bethel Rd	Newport News CL
2040-90	4483	Newport News	Atkinson Blvd	Jefferson Ave	Warwick Blvd
2040-238	93077	Newport News	Denbigh Blvd Bridge Replacement	Richneck Rd	Trailblazer Blvd
2040-240	11816	Newport News	Middle Ground Blvd	Jefferson Ave	Warwick Blvd
2040-103	102734	Newport News	Newport News Multimodal High-Speed and Intercity Passenger Rail Station Development	N/A	N/A
2040-242	101279	Newport News	Warwick Blvd over Lake Maury	Gatewood Rd	J Clyde Morris Blvd
2040-241	85955	Newport News	Washington Ave Bridge Replacement	39th St	41st St
2040-244	14672	Norfolk	Hampton Blvd Railroad Grade Separation	Rogers Ave	B Ave
2040-243	18968	Norfolk	Intermodal Connector	I-564	Hampton Blvd
2040-247	9783	Norfolk	Military Hwy	0.3 mile S. of Northampton Blvd	Lowery Rd
2040-246	1765	Norfolk	Military Hwy	0.3 mi N. of Northampton Blvd	0.3 S. of Northampton Blvd
2040-245	84243	Norfolk	Military Hwy	Robin Hood Rd	0.3 mile N. of Northampton Blvd
2040-128	102715	Portsmouth	Churchland Bridge	N/A	N/A
2040-250	65655	Portsmouth	Turnpike Rd	0.13 mi E. of Frederick Blvd	Constitution Ave
2040-252	61407	Suffolk	Nansemond Pkwy	Chesapeake CL	NS Railroad
2040-139	100937	Suffolk	Route 58 (Holland Rd)	Suffolk Bypass	0.7 mi W. of Manning Bridge Rd
2040-151	103005	Virginia Beach	Centerville Turnpike	Indian River Rd	Kempsville Rd

Appendix A: 2040 LRTP Committed Projects List (Continued)

2040 Project ID	UPC	Locality	Name	From	To
Other Committed Projects (Continued)					
2040-255	15827	Virginia Beach	Holland Road	Nimmo Pkwy	Dam Neck Rd
2040-256	51866	Virginia Beach	Kempsville Rd Intersection at Princess Anne Rd	N/A	N/A
2040-253	97737	Virginia Beach	Lesner Bridge	E. Stratford Rd	Paige Ave
2040-174	14603	Virginia Beach	Lynnhaven Pkwy	Indian River Rd	Centerville Tnpk
2040-258	52058	Virginia Beach	Nimmo Pkwy	Holland Rd	General Booth Blvd
2040-259	13482/93522/ 95555/96137	Virginia Beach	Princess Anne Rd and Nimmo Pkwy	Dam Neck Rd	Holland Rd
2040-260	60843	York County	Route 17 (George Washington Memorial Hwy)	Hampton Hwy	Dare Rd

Note: List not in ranked order

* Per HRTPO Resolution 2013-09, October 17, 2013

**Per the October 1997 FEIS, the Third Crossing Alternative 9 includes mulitmodal lanes along Patriots Crossing and along the northern portion of I-664 from Patriots Crossing to I-64 (Hampton Coliseum)

APPENDIX B:
PUBLIC REVIEW AND COMMENTS

As part of the Hampton Roads Transportation Planning Organization's (HRTPO) efforts to provide opportunities for the public to review and comment on this draft report prior to the final product being published, a public review period was conducted from April 16, 2015 through April 30, 2015. No public comments were received.