

TOLL FEASIBILITY STUDY

Traffic Impacts Appendices

Prepared For:



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Toll Feasibility Study

Appendix G

Revenue Optimized Tolls – Level-of-Service

Note: Definition of Project Scenarios:

Features	Project Scenario #1	Project Scenario #2	Project Scenario #3
Projects	<ul style="list-style-type: none">• HRX	<ul style="list-style-type: none">• Improved HRBT (1)	<ul style="list-style-type: none">• Midtown & MLK
Existing/Unimproved, Tolled Roadways	<ul style="list-style-type: none">• MMMBT• JRB• HRBT	<ul style="list-style-type: none">• MMMBT• JRB• HRBT	<ul style="list-style-type: none">• Downtown Tunnel

(1) Hampton Roads Crossing Study, Alternative #1

MMMBT – Monitor Merrimac Bridge Tunnel

JRB – James River Bridge

HRBT – Hampton Roads Bridge Tunnel

The LOS analyses were performed using the Highway Capacity Software (HCS 2000 4.1e) based on the Highway Capacity Manual. Four (4) HCS modules were used for the various analyses as follows:

- Directional Two Lane Highway Segment Analysis (Two Lane);
- Arterials Planning Analysis (Arterials);
- Multilane Highways Planning Analysis (Multilane); and
- Basic Freeway Segments Operational Analysis Planning (Freeway)

Typical roadway, network and traffic flow characteristics are required as inputs for the various analyses. These include volume, peak hour factor (PHF), K factor, D factor, saturation flow rate, free flow speed, truck percentages, percent no passing zones, number of access locations, number of signals, and basic signal timing parameters. The majority of this data was derived from various studies conducted by the Hampton Roads Planning District Commission (HRPDC) as regional planning documents or on behalf of the local governments. These studies included:

1. *Norfolk Level of Service Study* (January 2000),
2. *Newport News Level of Service Study* (April 2001),
3. *Chesapeake Level of Service Study* (June 2003),
4. *2026 Regional Transportation Plan Technical Document* (July 2004), and
5. *2026 Regional Transportation Plan Technical Document Appendices* (July 2004).

This information was supplemented by data from other studies conducted in Virginia Beach including Elbow Road Phase IIA, Elbow Road Phase II, I-264/Lynnhaven Parkway/Great Neck Road Interchange Improvements and the Virginia Beach Convention Center. Considerable data collection efforts were undertaken as part of these studies and the data was used to derive the necessary data for LOS evaluation of segments in Virginia Beach. In addition, field verification of data was necessary for segments in Virginia Beach and along Route 460 to satisfy data requirements. Analysis results are shown in the following tables and figures.

Table G-1 Year 2026 Level-of-Service

Planning Analysis	Segments	No Build								Hampton Roads Crossing - Full							
		ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc.	AM Peak Hour LOS	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc.	PM Peak Hour LOS	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc.	AM Peak Hour LOS	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc.	PM Peak Hour LOS		
		Volume	(HCS)	Volume	(HCS)	Volume	(HCS)	Volume	(HCS)	Volume	(HCS)	Volume	(HCS)	Volume	(HCS)	Volume	(HCS)
Freeway	A Hampton Roads Beltway (17 Segments)																
Freeway	A1 I-64, I-664 to Armistead Ave	132,900				38.1	12,000	E	131,700					36.8	11,900	E	
Freeway	A2 I-64, Armistead Ave to Hampton Roads Bridge Tunnel	109,700				27.2	9,900	D	113,400					28.5	10,200	D	
Freeway	A3 Hampton Roads Bridge Tunnel	101,000				*	9,100	F	101,800					*	9,200	F	
Freeway	A4 I-64, Hampton Roads Bridge Tunnel to I-564	99,700				*	9,000	F	96,800					*	8,700	F	
Freeway	A5 I-64, I-564 to Chesapeake Blvd	161,300				*	14,500	F	163,100					*	14,700	F	
Freeway	A6 I-64, Chesapeake Blvd to Northampton Blvd	181,100				*	16,300	F	172,800					*	15,600	F	
Freeway	A7 I-64, Northampton Blvd to I-264	184,000				40.8	16,600	E	176,900					37.5	15,900	E	
Freeway	A8 I-64, I-264 to Indian River Rd	163,200				32.0	14,700	D	161,000					31.4	14,500	D	
Freeway	A9 I-64, Indian River Rd to Greenbrier Pkwy	147,000				27.4	13,200	D	148,700					27.8	13,400	D	
Freeway	A10 I-64, Greenbrier Pkwy to I-464	127,300				23.0	11,500	C	131,000					23.8	11,800	C	
Freeway	A11 I-64, I-464 to I-264	92,000				42.1	8,300	E	82,800					32.9	7,400	D	
Freeway	A12 I-664, I-264 to Route 58	129,700				23.5	11,700	C	89,800					16.3	8,100	B	
Freeway	A13 I-664, Route 58 to Route 164/Western Frwy	79,800				30.9	7,200	D	34,700					12.5	3,100	B	
Freeway	A14 I-664, Route 164/Western Frwy to proposed EW Conn.	65,000				23.9	5,900	C	22,000					8.0	2,000	A	
Freeway	A15 I-664, proposed EW Conn. to 23rd St	82,200				32.5	7,400	D	39,900					14.5	3,600	B	
Freeway	A16 I-664, 23rd St to Aberdeen Rd	77,200				29.4	6,900	D	29,000					10.5	2,600	A	
Freeway	A17 I-664, Aberdeen Rd to I-64	85,600				34.9	7,700	D	41,100					15.2	3,700	B	
Two-Lane	B Midtown Tunnel area (3 segments)																
Two-Lane	B1 Midtown Tunnel	53,600												-			F
Freeway	B2 MLK Frwy, High St to Pinner's Point Conn.													13.2	2,800	B	
Freeway	B3 Western Frwy (Route 164, Town Point Rd to MLK Frwy	74,500				28.1	6,700	D	65,400					23.7	5,900	C	
Multi-Lane	C Route 460 (6 segments)																
Multi-Lane	C1 I-664 to Route 58 Bypass	84,900		6,600	D												C
Freeway	C2 Route 58 Bypass																
Multi-Lane	C3 Route 58 Bypass to Windsor																
Multi-Lane	C4 Windsor to Waverly																
Multi-Lane	C5 Waverly to Route 156																
Multi-Lane	C6 Route 156 to I-295																
Two-Lane	D Oak Grove Conn. & Dominion Blvd (4 segments)																
Two-Lane	D1 Dominion Blvd, Route 17 to Cedar Rd	13,200		800	E												E
Arterial	D2 Dominion Blvd, Cedar Rd to Bainbridge Blvd	39,500	2.4	3,100	F	2.7	3,300	F	35,500	2.9	2,800	F	3.2	3,000	F		
Arterial	D3 Dominion Blvd, Bainbridge Blvd to Great Bridge Blvd	30,600	6.4	2,300	F	8.2	2,400	F						*	11,700	F	
Freeway	D4 Oak Grove Conn. (from I-64 to Battlefield Blvd)	117,300			*		10,600	F	129,700								
Arterial	E Hampton Blvd & Brambleton Ave (5 segments)																
Arterial	E1 Brambleton Ave to 21st St	38,600	7.3	2,700	F	5.1	2,900	F	36,500	10.2	2,500	F	6.6	2,700	F		
Arterial	E2 38th St to Little Creek Rd	34,800	19.1	2,300	D	18.5	2,700	D	39,400	18.6	2,600	D	17.9	3,100	D		
Arterial	E3 Little Creek Rd to proposed EW Conn.	30,700	21.1	2,100	D	21.7	2,400	D	36,100	20.1	2,500	D	20.9	2,800	D		
Arterial	E4 Proposed EW Conn. to Adm Taussig Blvd	32,700	17.5	2,500	D	18.4	2,500	D	34,200	17.2	2,600	D	18.2	2,600	D		
Arterial	E5 Brambleton Ave, Colley Ave to Boush St	65,900	4.0	5,300	F	3.4	5,500	F	65,600	4.1	5,300	F	3.4	5,500	F		
Freeway	F Downtown Tunnel Area (5 segments)													*	9,900	F	
Freeway	F1 Downtown Tunnel (I-264 from Portsmouth to I-464)	120,600				*	10,900	F	110,100								
Freeway	F2 Berkley Bridge (I-264 from Waterside to I-464)	123,100				28.2	11,100	D	130,800					30.0	11,800	D	
Two-Lane	F3 Jordan Bridge(Poindexter from Portsmouth to I-464)	5,200												-			E
Arterial	F4 Effingham St, I-264 to South St	38,500	1.8	3,800	F	1.8	3,800	F	37,300	1.9	3,700	F	1.9	3,700	F		
Arterial	F5 Frederick Blvd, I-264 to Turnpike Rd	46,600	2.6	4,700	F	2.6	4,700	F	49,300	2.3	4,900	F	2.3	4,900	F		

Planning Analysis	Segments	No Build								Hampton Roads Crossing - Full							
		ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Volume	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Volume	PM Peak Hour LOS (HCS)	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Volume	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Volume	PM Peak Hour LOS (HCS)		
Freeway	G I-64 (on the Peninsula) (5 segments)	9,600				3.5	900	A	9,600				3.5	900	A		
Freeway	G1 New Kent County Line to Route 30 (Exit 227)	67,700				24.7	6,100	C	68,300				25.0	6,200	C		
Freeway	G2 Route 30 (Exit 220) to Croaker Rd (Exit 231)	83,900				33.6	7,600	D	84,400				34.0	7,600	D		
Freeway	G3 Croaker Rd (Exit 231) to Route 199 @ Lightfoot (Exit 234)	77,000				29.3	6,900	D	76,900				29.2	6,900	D		
Freeway	G4 Route 199 @ Lightfoot (Exit 234) to Camp Peary Rd (Exit 238)	80,100				31.1	7,200	D	81,200				31.9	7,300	D		
Freeway	G5 Camp Peary Rd (Exit 238) to Route 199 @ Kingsmill (Exit 242)																
Freeway	H I-264 (4 segments)	222,100				*	20,000	F	223,600				*	20,100	F		
Freeway	H1 Witchduck Rd to Independence Blvd	181,100				40.1	16,300	E	182,100				39.8	16,400	E		
Freeway	H2 Independence Blvd to Rosemont Rd	152,200				28.8	13,700	D	154,000				29.4	13,900	D		
Freeway	H3 Rosemont Rd to Lynnhaven Pkwy	59,800				14.5	5,400	B	61,500				14.7	5,500	B		
Arterial	I Dam Neck Rd (2 segments)	44,800				13.3	4,000	F	42,000				15.7	3,800	F		
Arterial	I1 Holland Rd to London Bridge Ext	27,000				22.2	2,400	D	27,100				21.9	2,400	D		
Arterial	J Birdneck Rd (2 segments)	28,500				14.0	2,600	E	27,600				14.2	2,500	E		
Arterial	J1 I-264 to VA Beach Blvd	7,900				28.5	700	B	8,300				28.5	700	B		
Arterial	J2 Gen Booth Blvd to Norfolk Ave																
Arterial	K Battlefield Blvd (2 segments)	59,200	19.7	4,100	E	20.4	4,800	E	48,900	23.1	3,400	D	23.2	4,000	D		
Arterial	K1 Great Bridge Bypass to Volvo Pkwy	35,100	13.8	2,400	E	13.8	2,600	E	34,000	14.0	2,300	E	13.4	2,500	E		
Arterial	L Kempsville Rd (2 segments)	31,800	16.4	2,400	E	14.8	2,800	F	31,200	16.5	2,300	E	15.0	2,800	F		
Arterial	L1 Centreville Tpk to Indian River Rd	41,300	24.2	3,100	D	22.7	4,000	D	38,600	24.5	2,900	D	23.1	3,700	D		
Arterial	M Indian River Rd (2 segments)	106,000				2.9	9,500	F	101,600				3.2	9,100	F		
Arterial	M1 I-64 to Centreville Tpk	19,200				29.7	1,700	C	18,500				29.9	1,700	C		
Arterial	M2 Independence Blvd to Elbow Rd																
Arterial	N Oceana Blvd (2 segments)	42,300				4.9	3,800	F	39,800				6.2	3,600	F		
Arterial	N1 Gen Booth Blvd to Tomcat Blvd/proposed Southeastern Pkwy	42,000				23.7	3,800	D	41,400				24.5	3,700	D		
Freeway	BUILD SCENARIO - ALL ABOVE SEGMENTS, PLUS:																
Freeway	O Hampton Roads Crossing Segment 1 (2 segments)																
Freeway	O1 Proposed EW Conn., I-564 to Hampton Blvd																
Freeway	O2 Proposed EW Conn., Hampton Blvd to I-664																
Freeway	P Hampton Roads Crossing (4 segments)																
	P1/O1 Proposed EW Conn., I-564 to Hampton Blvd																
	P2 Proposed EW Conn., Hampton Blvd to Craney Island Conn.																
	P3 Proposed EW Conn., Craney Island Conn. to I-664																
	P4 Proposed Craney Island Conn.																
Freeway	Q Midtown Tunnel and MLK Frwy Extension (1 segment)																
	Q1 MLK Frwy, I-264 to High St																

Planning Analysis	Segments	No Build						Hampton Roads Crossing - Full						
		ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc.	AM Peak LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc.	PM Peak LOS (HCS)	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc.	AM Peak LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc.
	R New Alignment Route 460 (4 segments) R1 Route 58 Bypass to Windsor town limits R2 Windsor town limits to Ivor R3 Ivor to Wakefield R4 Wakefield to Waverly R5 Waverly to Route 625 R6 Route 625 to Route 156 R7 Route 156 to I-295													
	S Southeastern Parkway (6 segments) S1 Great Bridge Bypass to Centreville Tpk S2 Centreville Tpk to Indian River Rd S3 Indian River Rd to Princess Anne Rd S4 Princess Anne Rd to Dam Neck Rd S5 Dam Neck Rd to Oceana Blvd S6 Oceana Blvd to I-264													

LEVEL OF SERVICE

	A	B	C	D	E	F
<u>FREEWAY (Density pc/mi/ln)</u>	0-11	> 11-18	> 18-26	> 26-35	> 35-45	>45
<u>ARTERIAL - CLASS 1 (Average Travel Speed mph)</u>	>42	>34-42	>27-34	>21-27	>16-21	<=16
<u>ARTERIAL - CLASS 2 (Average Travel Speed mph)</u>	>35	>28-35	>22-28	>17-22	>13-17	<=13
<u>ARTERIAL - CLASS 3 (Average Travel Speed mph)</u>	>30	>24-30	>18-24	>14-18	>10-14	<=10

Notes*

1. PHF based on data from studies:Norfolk LOS study, Newport etc.
2. K factor based on HRPDC
3. D Factor based on HRPDC & Studies: etc.
4. Density for Freeway Segments (pc/mi/ln)
5. Average Travel Speed for Arterial Segments (mph)

*I-264 Corridor Study completed by URS.

Elbow Road Study completed by FHI.

I-264 Lynnhaven/Great Neck Interchange Study completed by FHI.

		Hampton Roads Crossing - Segment 1								Midtown Tunnel & MLK Extension								
Planning Analysis	Segments	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Volume	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Volume	PM Peak Hour LOS (HCS)	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Volume	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Volume	PM Peak Hour LOS (HCS)			
Freeway	A Hampton Roads Beltway (17 Segments)																	
Freeway	A1 I-64, I-664 to Armistead Ave	130,500				36.3	11,700	E	135,600				39.3	12,200	E			
Freeway	A2 I-64, Armistead Ave to Hampton Roads Bridge Tunnel	106,400				26.2	9,600	D	112,100				28.0	10,100	D			
Freeway	A3 Hampton Roads Bridge Tunnel	91,900				40.6	8,300	E	100,100				*	9,000	F			
Freeway	A4 I-64, Hampton Roads Bridge Tunnel to I-564	90,300				41.2	8,100	E	94,200				44.5	8,500	E			
Freeway	A5 I-64, I-564 to Chesapeake Blvd	160,400				*	14,400	F	159,200				*	14,300	F			
Freeway	A6 I-64, Chesapeake Blvd to Northampton Blvd	171,700				*	15,500	F	169,900				*	15,300	F			
Freeway	A7 I-64, Northampton Blvd to I-264	176,400				37.2	15,900	E	174,100				36.1	15,700	E			
Freeway	A8 I-64, I-264 to Indian River Rd	158,000				30.4	14,200	D	158,600				30.6	14,300	D			
Freeway	A9 I-64, Indian River Rd to Greenbrier Pkwy	145,600				27.0	13,100	D	146,700				27.3	13,200	D			
Freeway	A10 I-64, Greenbrier Pkwy to I-464	129,900				23.5	11,700	C	132,100				23.9	11,900	C			
Freeway	A11 I-64, I-464 to I-264	91,200				40.1	8,200	E	94,800				44.4	8,500	E			
Freeway	A12 I-664, I-264 to Route 58	132,200				24.0	11,900	C	134,000				24.5	12,100	C			
Freeway	A13 I-664, Route 58 to Route 164/Western Frwy	86,100				35.3	7,700	E	87,600				36.6	7,900	E			
Freeway	A14 I-664, Route 164/Western Frwy to proposed EW Conn.	66,600				24.4	6,000	C	68,500				25.1	6,200	C			
Freeway	A15 I-664, proposed EW Conn. to 23rd St	81,100				32.0	7,300	D	81,500				32.2	7,300	D			
Freeway	A16 I-664, 23rd St to Aberdeen Rd	84,300				34.1	7,600	D	80,000				31.2	7,200	D			
Freeway	A17 I-664, Aberdeen Rd to I-64	93,400				44.2	8,400	E	90,500				40.7	8,100	E			
Two-Lane	B Midtown Tunnel area (3 segments)																	
Two-Lane	B1 Midtown Tunnel	49,100											-				E	
Freeway	B2 MLK Frwy, High St to Pinner's Point Conn.												14.5	3,000	B			
Freeway	B3 Western Frwy (Route 164, Town Point Rd to MLK Frwy	67,300				24.6	6,100	C	68,900				25.3	6,200	C			
Multi-Lane	C Route 460 (6 segments)																	
Freeway	C1 I-664 to Route 58 Bypass	86,000		6,700	D												D	
Freeway	C2 Route 58 Bypass																	
Multi-Lane	C3 Route 58 Bypass to Windsor																	
Multi-Lane	C4 Windsor to Waverly																	
Multi-Lane	C5 Waverly to Route 156																	
Multi-Lane	C6 Route 156 to I-295																	
Two-Lane	D Oak Grove Conn. & Dominion Blvd (4 segments)																	
Arterial	D1 Dominion Blvd, Route 17 to Cedar Rd	12,300		800	E								12,200	-	800	E		
Arterial	D2 Dominion Blvd, Cedar Rd to Bainbridge Blvd	36,400	2.8	2,800	F								36,800	2.7	2,900	F		
Arterial	D3 Dominion Blvd, Bainbridge Blvd to Great Bridge Blvd														3.0	3,100	F	
Freeway	D4 Oak Grove Conn. (from I-64 to Battlefield Blvd)	129,100				*							131,500			*	11,800	F
Arterial	E Hampton Blvd & Brambleton Ave (5 segments)																	
Arterial	E1 Brambleton Ave to 21st St	36,700	9.9	2,500	F								27,100	13.9	1,900	E		
Arterial	E2 38th St to Little Creek Rd	35,800	19.0	2,400	D								34,700	19.1	2,300	D		
Arterial	E3 Little Creek Rd to proposed EW Conn.	32,800	20.8	2,300	D								33,200	20.7	2,300	D		
Arterial	E4 Proposed EW Conn. to Adm Taussig Blvd	34,700	17.2	2,700	D								33,800	17.3	2,600	D		
Arterial	E5 Brambleton Ave, Colley Ave to Boush St	65,500	4.1	5,300	F								54,800	6.6	4,400	F		
5.3	4,600	F																
Freeway	F Downtown Tunnel Area (5 segments)																	
Freeway	F1 Downtown Tunnel (I-264 from Portsmouth to I-464)	111,700				*							120,300			*	10,800	F
Two-Lane	F2 Berkley Bridge (I-264 from Waterside to I-464)	124,500				28.4							131,800			30.1	11,900	D
Arterial	F3 Jordan Bridge(Poindexter from Portsmouth to I-464)	12,500											15,800			-		E
Arterial	F4 Effingham St, I-264 to South St	38,000	1.8	3,800	F								35,700	2.2	3,600	F		
Arterial	F5 Frederick Blvd, I-264 to Turnpike Rd	47,400	2.5	4,700	F								42,900	3.1	4,300	F		

		Hampton Roads Crossing - Segment 1								Midtown Tunnel & MLK Extension							
Planning Analysis	Segments	ADT	AM Peak Hour Criteria	AM Peak Hour	AM Peak LOS	PM Peak Hour Criteria	PM Peak Hour	PM Peak LOS	ADT	AM Peak Hour Criteria	AM Peak Hour	AM Peak LOS	PM Peak Hour Criteria	PM Peak Hour	PM Peak LOS		
			(Density ⁴) (Avg Travel Speed ⁵)	Peak Volume	Calc. (HCS)	(Density ⁴) (Avg Travel Speed ⁵)	Peak Volume	Calc. (HCS)		(Density ⁴) (Avg Travel Speed ⁵)	Peak Volume	Calc. (HCS)	(Density ⁴) (Avg Travel Speed ⁵)	Peak Volume	Calc. (HCS)		
Freeway	G I-64 (on the Peninsula) (5 segments)	9,600				3.5	900	A	9,600				3.5	900	A		
Freeway	G1 New Kent County Line to Route 30 (Exit 227)	68,400				25.0	6,200	C	68,400				25.0	6,200	C		
Freeway	G2 Route 30 (Exit 220) to Croaker Rd (Exit 231)	84,500				34.0	7,600	D	84,500				34.1	7,600	D		
Freeway	G3 Croaker Rd (Exit 231) to Route 199 @ Lightfoot (Exit 234)	76,800				29.2	6,900	D	76,800				29.2	6,900	D		
Freeway	G4 Route 199 @ Lightfoot (Exit 234) to Camp Peary Rd (Exit 238)	81,300				31.9	7,300	D	81,100				31.8	7,300	D		
Freeway	G5 Camp Peary Rd (Exit 238) to Route 199 @ Kingsmill (Exit 242)																
Freeway	H I-264 (4 segments)	225,600				*	20,300	F	223,400				*	20,100	F		
Freeway	H1 Witchduck Rd to Independence Blvd	182,200				39.7	16,400	E	181,200				39.4	16,300	E		
Freeway	H2 Independence Blvd to Rosemont Rd	154,000				29.4	13,900	D	153,800				29.2	13,800	D		
Freeway	H3 Rosemont Rd to Lynnhaven Pkwy	61,900				14.8	5,600	B	61,700				14.7	5,600	B		
Arterial	I Dam Neck Rd (2 segments)	42,300				15.5	3,800	F	42,100				15.7	3,800	F		
Arterial	I1 Holland Rd to London Bridge Ext	27,100				21.9	2,400	D	27,100				21.9	2,400	D		
Arterial	I2 Proposed Southeastern Pkwy to Gen Booth Blvd																
Arterial	J Birdneck Rd (2 segments)	27,700				14.1	2,500	E	27,600				14.2	2,500	E		
Arterial	J1 I-264 to VA Beach Blvd	8,400				28.4	800	B	8,400				28.5	800	B		
Arterial	J2 Gen Booth Blvd to Norfolk Ave																
Arterial	K Battlefield Blvd (2 segments)	48,000	23.3	3,300	D	23.3	3,900	D	49,400	23.0	3,400	D	23.1	4,000	D		
Arterial	K1 Great Bridge Bypass to Volvo Pkwy	33,700	14.0	2,300	E	13.5	2,500	E	35,200	13.8	2,400	E	13.2	2,600	E		
Arterial	K2 Cedar Rd to Mt Pleasant Rd																
Arterial	L Kempsville Rd (2 segments)	31,300	16.4	2,300	E	14.9	2,800	F	31,300	16.4	2,300	E	14.9	2,800	F		
Arterial	L1 Centreville Tpk to Indian River Rd	38,500	24.5	2,900	D	23.1	3,700	D	38,700	24.5	2,900	D	23.1	3,700	D		
Arterial	L2 Great Bridge Bypass to Greenbrier Pkwy																
Arterial	M Indian River Rd (2 segments)	101,100				3.3	9,100	F	101,400				3.3	9,100	F		
Arterial	M1 I-64 to Centreville Tpk	18,400				29.9	1,700	C	18,300				29.9	1,700	C		
Arterial	M2 Independence Blvd to Elbow Rd																
Arterial	N Oceana Blvd (2 segments)	39,800				6.2	3,600	F	39,900				6.1	3,600	F		
Arterial	N1 Gen Booth Blvd to Tomcat Blvd/proposed Southeastern Pkwy	41,600				24.2	3,700	D	41,500				24.3	3,700	D		
Arterial	N2 Tomcat Blvd/proposed Southeastern Pkwy to VA Beach Blvd																
BUILD SCENARIO - ALL ABOVE SEGMENTS, PLUS:																	
Freeway	O Hampton Roads Crossing Segment 1 (2 segments)	17,800				12.7	1,600	B									
Freeway	O1 Proposed EW Conn., I-564 to Hampton Blvd	29,300				20.9	2,600	C									
P Hampton Roads Crossing (4 segments)																	
P1/O1	Proposed EW Conn., I-564 to Hampton Blvd																
P2	Proposed EW Conn., Hampton Blvd to Craney Island Conn.																
P3	Proposed EW Conn., Craney Island Conn. to I-664																
P4	Proposed Craney Island Conn.																
Q Midtown Tunnel and MLK Frwy Extension (1 segment)									11,000				3.9	1,000	A		
Q1	MLK Frwy, I-264 to High St																

Planning Analysis	Segments	Hampton Roads Crossing - Segment 1							Midtown Tunnel & MLK Extension						
		ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc.	AM Peak LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc.	PM Peak LOS (HCS)	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc.	AM Peak LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc.	PM Peak LOS (HCS)
	R New Alignment Route 460 (4 segments) R1 Route 58 Bypass to Windsor town limits R2 Windsor town limits to Ivor R3 Ivor to Wakefield R4 Wakefield to Waverly R5 Waverly to Route 625 R6 Route 625 to Route 156 R7 Route 156 to I-295														
	S Southeastern Parkway (6 segments) S1 Great Bridge Bypass to Centreville Tpk S2 Centreville Tpk to Indian River Rd S3 Indian River Rd to Princess Anne Rd S4 Princess Anne Rd to Dam Neck Rd S5 Dam Neck Rd to Oceana Blvd S6 Oceana Blvd to I-264														

LEVEL OF SERVICE

	A	B	C	D	E	F
<u>FREEWAY (Density pc/mi/ln)</u>	0-11	> 11-18	> 18-26	> 26-35	> 35-45	>45
<u>ARTERIAL - CLASS 1 (Average Travel Speed mph)</u>	>42	>34-42	>27-34	>21-27	>16-21	<=16
<u>ARTERIAL - CLASS 2 (Average Travel Speed mph)</u>	>35	>28-35	>22-28	>17-22	>13-17	<=13
<u>ARTERIAL - CLASS 3 (Average Travel Speed mph)</u>	>30	>24-30	>18-24	>14-18	>10-14	<=10

Notes*

1. PHF based on data from studies:Norfolk LOS study, Newport etc.
2. K factor based on HRPDC
3. D Factor based on HRPDC & Studies: etc.
4. Density for Freeway Segments (pc/mi/ln)
5. Average Travel Speed for Arterial Segments (mph)

*I-264 Corridor Study completed by URS.

Elbow Road Study completed by FHI.

I-264 Lynnhaven/Great Neck Interchange Study completed by FHI.

		Southeastern Parkway & Greenbelt								Route 460 Realignment							
Planning Analysis	Segments	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Volume	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Volume	PM Peak Hour LOS (HCS)	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Volume	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Volume	PM Peak Hour LOS (HCS)		
Freeway	A Hampton Roads Beltway (17 Segments)																
Freeway	A1 I-64, I-664 to Armistead Ave	135,500				39.1	12,200	E	130,800					36.4	11,800	E	
Freeway	A2 I-64, Armistead Ave to Hampton Roads Bridge Tunnel	111,400				27.8	10,000	D	106,200					26.1	9,600	D	
Freeway	A3 Hampton Roads Bridge Tunnel	99,300				*	8,900	F	92,900					41.9	8,400	E	
Freeway	A4 I-64, Hampton Roads Bridge Tunnel to I-564	95,000				44.2	8,500	E	90,700					41.3	8,200	E	
Freeway	A5 I-64, I-564 to Chesapeake Blvd	159,900				*	14,400	F	151,700					*	13,700	F	
Freeway	A6 I-64, Chesapeake Blvd to Northampton Blvd	172,100				*	15,500	F	164,600					*	14,800	F	
Freeway	A7 I-64, Northampton Blvd to I-264	175,800				36.8	15,800	E	168,100					34.1	15,100	D	
Freeway	A8 I-64, I-264 to Indian River Rd	154,700				29.5	13,900	D	156,700					30.1	14,100	D	
Freeway	A9 I-64, Indian River Rd to Greenbrier Pkwy	130,600				23.9	11,800	C	147,000					27.4	13,200	D	
Freeway	A10 I-64, Greenbrier Pkwy to I-464	109,700				20.3	9,900	C	130,500					23.7	11,700	C	
Freeway	A11 I-64, I-464 to I-264	92,000				42.1	8,300	E	94,400					43.5	8,500	E	
Freeway	A12 I-664, I-264 to Route 58	135,100				24.6	12,200	C	154,000					29.4	13,900	D	
Freeway	A13 I-664, Route 58 to Route 164/Western Frwy	88,400				37.2	8,000	E	83,300					33.2	7,500	D	
Freeway	A14 I-664, Route 164/Western Frwy to proposed EW Conn.	68,800				25.3	6,200	C	62,800					22.7	5,600	C	
Freeway	A15 I-664, proposed EW Conn. to 23rd St	81,700				32.2	7,400	D	74,200					27.8	6,700	D	
Freeway	A16 I-664, 23rd St to Aberdeen Rd	80,300				31.2	7,200	D	74,300					28.1	6,700	D	
Freeway	A17 I-664, Aberdeen Rd to I-64	91,100				41.2	8,200	E	86,300					36.6	7,800	E	
Two-Lane	B Midtown Tunnel area (3 segments)																
Two-Lane	B1 Midtown Tunnel	52,200				-		F	52,800					-			F
Freeway	B2 MLK Frwy, High St to Pinner's Point Conn.	29,600				12.7	2,700	B									
Freeway	B3 Western Frwy (Route 164, Town Point Rd to MLK Frwy	74,900				28.4	6,700	D	72,400					27.1	6,500	D	
Multi-Lane	C Route 460 (6 segments)																
Multi-Lane	C1 I-664 to Route 58 Bypass	86,100	-	6,700	D	-	7,200	D	110,900	-	8,600	E	-	-	9,300	E	
Freeway	C2 Route 58 Bypass																
Multi-Lane	C3 Route 58 Bypass to Windsor																
Multi-Lane	C4 Windsor to Waverly																
Multi-Lane	C5 Waverly to Route 156																
Multi-Lane	C6 Route 156 to I-295																
Two-Lane	D Oak Grove Conn. & Dominion Blvd (4 segments)																
Two-Lane	D1 Dominion Blvd, Route 17 to Cedar Rd	11,900	-	700	E	-	900	E	12,400	-	800	E	-	-	1,000	E	
Arterial	D2 Dominion Blvd, Cedar Rd to Bainbridge Blvd	20,700	8.8	1,600	F	10.7	1,700	F	36,800	2.7	2,900	F	3.0	-	3,100	F	
Arterial	D3 Dominion Blvd, Bainbridge Blvd to Great Bridge Blvd	25,900	8.8	1,900	F	11.9	2,100	F						*	11,600	F	
Freeway	D4 Oak Grove Conn. (from I-64 to Battlefield Blvd)	112,400				*	10,100	F	128,500								
Arterial	E Hampton Blvd & Brambleton Ave (5 segments)																
Arterial	E1 Brambleton Ave to 21st St	39,000	6.9	2,700	F	4.8	2,900	F	39,600	6.3	2,700	F	4.5	-	3,000	F	
Arterial	E2 38th St to Little Creek Rd	37,000	18.9	2,400	D	18.2	2,900	D	36,800	18.9	2,400	D	18.2	-	2,900	D	
Arterial	E3 Little Creek Rd to proposed EW Conn.	33,900	20.5	2,400	D	21.3	2,600	D	34,400	20.4	2,400	D	21.2	-	2,600	D	
Arterial	E4 Proposed EW Conn. to Adm Taussig Blvd	34,200	17.2	2,600	D	18.2	2,600	D	34,700	17.2	2,700	D	18.2	-	2,600	D	
Arterial	E5 Brambleton Ave, Colley Ave to Boush St	65,900	4.0	5,300	F	3.4	5,500	F	61,700	4.7	5,000	F	3.9	-	5,200	F	
Freeway	F Downtown Tunnel Area (5 segments)																
Freeway	F1 Downtown Tunnel (I-264 from Portsmouth to I-464)	114,200				*	10,300	F	118,800					*	10,700	F	
Freeway	F2 Berkley Bridge (I-264 from Waterside to I-464)	120,800				27.7	10,900	D	128,500					29.3	11,600	D	
Two-Lane	F3 Jordan Bridge(Poindexter from Portsmouth to I-464)	13,500				-		E	14,200					-			E
Arterial	F4 Effingham St, I-264 to South St	39,800	1.6	4,000	F	1.6	4,000	F	37,700	1.9	3,800	F	1.9	-	3,800	F	
Arterial	F5 Frederick Blvd, I-264 to Turnpike Rd	47,600	2.4	4,800	F	2.4	4,800	F	47,700	2.4	4,800	F	2.4	-	4,800	F	

		Southeastern Parkway & Greenbelt								Route 460 Realignment							
Planning Analysis	Segments	ADT	AM Peak Hour Criteria	AM Peak Hour	AM Peak Hour LOS	PM Peak Hour Criteria	PM Peak Hour	PM Peak Hour LOS	ADT	AM Peak Hour Criteria	AM Peak Hour	AM Peak Hour LOS	PM Peak Hour Criteria	PM Peak Hour	PM Peak Hour LOS		
			(Density ⁴) (Avg Travel Speed ⁵)	Peak Volume	Calc. (HCS)	(Density ⁴) (Avg Travel Speed ⁵)	Peak Volume	Calc. (HCS)		(Density ⁴) (Avg Travel Speed ⁵)	Peak Volume	Calc. (HCS)	(Density ⁴) (Avg Travel Speed ⁵)	Peak Volume	Calc. (HCS)		
Freeway	G I-64 (on the Peninsula) (5 segments)	9,600				3.5	900	A	10,800				3.9	1,000	A		
Freeway	G1 New Kent County Line to Route 30 (Exit 227)	68,400				25.0	6,200	C	55,000				19.8	5,000	C		
Freeway	G2 Route 30 (Exit 220) to Croaker Rd (Exit 231)	84,500				34.1	7,600	D	72,500				26.9	6,500	D		
Freeway	G3 Croaker Rd (Exit 231) to Route 199 @ Lightfoot (Exit 234)	76,800				29.1	6,900	D	66,600				24.2	6,000	C		
Freeway	G4 Route 199 @ Lightfoot (Exit 234) to Camp Peary Rd (Exit 238)	81,400				32.0	7,300	D	68,900				25.2	6,200	C		
Freeway	G5 Camp Peary Rd (Exit 238) to Route 199 @ Kingsmill (Exit 242)																
Freeway	H I-264 (4 segments)	218,200				*	19,600	F	218,400				*	19,700	F		
Freeway	H1 Witchduck Rd to Independence Blvd	176,900				37.2	15,900	E	175,700				37.1	15,800	E		
Freeway	H2 Independence Blvd to Rosemont Rd	151,600				28.7	13,600	D	149,400				28.1	13,400	D		
Freeway	H3 Rosemont Rd to Lynnhaven Pkwy	73,400				17.6	6,600	B	57,600				13.8	5,200	B		
Arterial	I Dam Neck Rd (2 segments)	37,300				22.9	3,400	D	41,500				16.4	3,700	E		
Arterial	I1 Holland Rd to London Bridge Ext	39,600				8.9	3,600	F	26,800				22.0	2,400	D		
Arterial	I2 Proposed Southeastern Pkwy to Gen Booth Blvd																
Arterial	J Birdneck Rd (2 segments)	23,400				15.0	2,100	E	27,100				14.3	2,400	E		
Arterial	J1 I-264 to VA Beach Blvd	3,800				29.1	300	B	8,100				28.5	700	B		
Arterial	J2 Gen Booth Blvd to Norfolk Ave																
Arterial	K Battlefield Blvd (2 segments)	74,000	7.0	5,100	F	7.2	6,000	F	47,400	23.3	3,300	D	23.4	3,800	D		
Arterial	K1 Great Bridge Bypass to Volvo Pkwy	33,800	14.0	2,300	E	13.5	2,500	E	35,100	13.8	2,400	E	13.2	2,600	E		
Arterial	K2 Cedar Rd to Mt Pleasant Rd																
Arterial	L Kempsville Rd (2 segments)	32,900	16.2	2,400	E	14.6	2,900	F	30,900	16.5	2,300	E	15.0	2,700	F		
Arterial	L1 Centreville Tpk to Indian River Rd	40,100	24.4	3,000	D	22.9	3,800	D	38,700	24.5	2,900	D	23.1	3,700	D		
Arterial	L2 Great Bridge Bypass to Greenbrier Pkwy																
Arterial	M Indian River Rd (2 segments)	100,600				3.3	9,100	F	100,600				3.3	9,100	F		
Arterial	M1 I-64 to Centreville Tpk	17,500				30.1	1,600	C	18,400				29.9	1,700	C		
Arterial	M2 Independence Blvd to Elbow Rd																
Arterial	N Oceana Blvd (2 segments)	43,200				4.6	3,900	F	39,700				6.3	3,600	F		
Arterial	N1 Gen Booth Blvd to Tomcat Blvd/proposed Southeastern Pkwy	31,100				40.9	2,800	B	41,000				25.0	3,700	D		
Freeway	BUILD SCENARIO - ALL ABOVE SEGMENTS, PLUS:																
Freeway	O Hampton Roads Crossing Segment 1 (2 segments)																
Freeway	O1 Proposed EW Conn., I-564 to Hampton Blvd																
Freeway	O2 Proposed EW Conn., Hampton Blvd to I-664																
	P Hampton Roads Crossing (4 segments)																
P1/O1	Proposed EW Conn., I-564 to Hampton Blvd																
	P2 Proposed EW Conn., Hampton Blvd to Craney Island Conn.																
	P3 Proposed EW Conn., Craney Island Conn. to I-664																
	P4 Proposed Craney Island Conn.																
	Q Midtown Tunnel and MLK Frwy Extension (1 segment)																
	Q1 MLK Frwy, I-264 to High St																

Planning Analysis	Southeastern Parkway & Greenbelt										Route 460 Realignment										
	Segments		ADT	AM Peak Hour Criteria			PM Peak Hour Criteria			ADT	AM Peak Hour Criteria			PM Peak Hour Criteria			ADT	AM Peak Hour Criteria			
	R	New Alignment Route 460 (4 segments)		Peak (Density ⁴)	Hour (Avg Travel Speed ⁵)	Peak Calc.	Hour Volume	Peak (HCS)	Hour (Avg Travel Speed ⁵)	Peak Calc.	Hour Volume	Peak (HCS)	Peak (Density ⁴)	Hour (Avg Travel Speed ⁵)	Peak Calc.	Hour Volume	Peak (HCS)	Peak (Density ⁴)	Hour (Avg Travel Speed ⁵)	Peak Calc.	
	R1	Route 58 Bypass to Windsor town limits											20,700					7.4	1,900	A	
	R2	Windsor town limits to Ivor											15,100					5.4	1,400	A	
	R3	Ivor to Wakefield											15,700					5.6	1,400	A	
	R4	Wakefield to Waverly											15,000					5.4	1,400	A	
	R5	Waverly to Route 625											8,600					3.1	800	A	
	R6	Route 625 to Route 156											9,500					3.4	900	A	
	R7	Route 156 to I-295											9,600					3.6	900	A	
	S	Southeastern Parkway (6 segments)																			
	S1	Great Bridge Bypass to Centreville Tpk		35,000					12.6		3,200	B									
	S2	Centreville Tpk to Indian River Rd		34,400					12.4		3,100	B									
	S3	Indian River Rd to Princess Anne Rd		14,100					5.1		1,300	A									
	S4	Princess Anne Rd to Dam Neck Rd		16,100					5.8		1,500	A									
	S5	Dam Neck Rd to Oceana Blvd		9,400					3.4		800	A									
	S6	Oceana Blvd to I-264		25,000					8.9		2,300	A									

LEVEL OF SERVICE

	A	B	C	D	E	F
<u>FREEWAY (Density pc/mi/ln)</u>	0-11	> 11-18	> 18-26	> 26-35	> 35-45	>45
<u>ARTERIAL - CLASS 1 (Average Travel Speed mph)</u>	>42	>34-42	>27-34	>21-27	>16-21	<=16
<u>ARTERIAL - CLASS 2 (Average Travel Speed mph)</u>	>35	>28-35	>22-28	>17-22	>13-17	<=13
<u>ARTERIAL - CLASS 3 (Average Travel Speed mph)</u>	>30	>24-30	>18-24	>14-18	>10-14	<=10

Notes*

1. PHF based on data from studies:Norfolk LOS study, Newport etc.
2. K factor based on HRPDC
3. D Factor based on HRPDC & Studies: etc.
4. Density for Freeway Segments (pc/mi/ln)
5. Average Travel Speed for Arterial Segments (mph)

*I-264 Corridor Study completed by URS.

Elbow Road Study completed by FHI.

I-264 Lynnhaven/Great Neck Interchange Study completed by FHI.

Planning Analysis	Segments	Project Scenario 1								Project Scenario 2							
		ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Volume	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Volume	PM Peak Hour LOS (HCS)	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Volume	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Volume	PM Peak Hour LOS (HCS)		
Freeway	A Hampton Roads Beltway (17 Segments)																
Freeway	A1 I-64, I-664 to Armistead Ave	115,500				29.2	10,400	D	85,400				20.7	7,700	C		
Freeway	A2 I-64, Armistead Ave to Hampton Roads Bridge Tunnel	90,700				21.7	8,200	C	58,100				13.9	5,200	B		
Freeway	A3 Hampton Roads Bridge Tunnel	66,800				24.4	6,000	C	64,300				23.3	5,800	C		
Freeway	A4 I-64, Hampton Roads Bridge Tunnel to I-564	74,200				28.8	6,700	D	26,600				10.0	2,400	A		
Freeway	A5 I-64, I-564 to Chesapeake Blvd	151,800				*	13,700	F	140,700				42.8	12,700	E		
Freeway	A6 I-64, Chesapeake Blvd to Northampton Blvd	162,200				*	14,600	F	158,100				*	14,200	F		
Freeway	A7 I-64, Northampton Blvd to I-264	169,700				34.7	15,300	D	166,300				33.4	15,000	D		
Freeway	A8 I-64, I-264 to Indian River Rd	152,600				29.0	13,700	D	149,100				28.1	13,400	D		
Freeway	A9 I-64, Indian River Rd to Greenbrier Pkwy	143,800				26.6	12,900	D	142,700				26.4	12,800	D		
Freeway	A10 I-64, Greenbrier Pkwy to I-464	131,500				23.9	11,800	C	131,900				24.0	11,900	C		
Freeway	A11 I-64, I-464 to I-264	82,100				32.3	7,400	D	92,400				41.2	8,300	E		
Freeway	A12 I-664, I-264 to Route 58	85,000				15.4	7,600	B	129,000				23.5	11,600	C		
Freeway	A13 I-664, Route 58 to Route 164/Western Frwy	30,400				10.9	2,700	A	83,900				33.8	7,500	D		
Freeway	A14 I-664, Route 164/Western Frwy to proposed EW Conn.	15,500				5.7	1,400	A	60,400				21.7	5,400	C		
Freeway	A15 I-664, proposed EW Conn. to 23rd St	32,300				11.7	2,900	B	71,100				26.4	6,400	D		
Freeway	A16 I-664, 23rd St to Aberdeen Rd	17,200				6.9	1,500	A	75,500				29.1	6,800	D		
Freeway	A17 I-664, Aberdeen Rd to I-64	28,000				10.4	2,500	A	87,800				39.0	7,900	E		
Two-Lane	B Midtown Tunnel area (3 segments)																
Two-Lane	B1 Midtown Tunnel	45,100				-		F	50,800				-		F		
Freeway	B2 MLK Frwy, High St to Pinner's Point Conn.	32,000				11.7	2,900	B									
Freeway	B3 Western Frwy (Route 164, Town Point Rd to MLK Frwy	70,900				26.3	6,400	D	76,400				29.0	6,900	D		
Multi-Lane	C Route 460 (6 segments)																
Multi-Lane	C1 I-664 to Route 58 Bypass	77,600	-	6,100	C	-	6,500	C	85,000	-	6,600	D	-	7,100	C		
Freeway	C2 Route 58 Bypass																
Multi-Lane	C3 Route 58 Bypass to Windsor																
Multi-Lane	C4 Windsor to Waverly																
Multi-Lane	C5 Waverly to Route 156																
Multi-Lane	C6 Route 156 to I-295																
Two-Lane	D Oak Grove Conn. & Dominion Blvd (4 segments)																
Two-Lane	D1 Dominion Blvd, Route 17 to Cedar Rd	12,800	-	800	E	-	1,000	E	12,700	-	800	E	-	1,000	E		
Arterial	D2 Dominion Blvd, Cedar Rd to Bainbridge Blvd	36,900	2.7	2,900	F	3.0	3,100	F	37,300	2.7	2,900	F	3.0	3,100	F		
Arterial	D3 Dominion Blvd, Bainbridge Blvd to Great Bridge Blvd																
Freeway	D4 Oak Grove Conn. (from I-64 to Battlefield Blvd)	130,700				*	11,800	F	132,600				*	11,900	F		
Arterial	E Hampton Blvd & Brambleton Ave (5 segments)																
Arterial	E1 Brambleton Ave to 21st St	34,200	12.4	2,400	F	9.8	2,600	F	36,800	9.7	2,500	F	6.3	2,800	F		
Arterial	E2 38th St to Little Creek Rd	36,600	18.9	2,400	D	18.2	2,900	D	34,600	19.1	2,300	D	18.5	2,700	D		
Arterial	E3 Little Creek Rd to proposed EW Conn.	34,700	20.4	2,400	D	21.1	2,700	D	31,700	21.0	2,200	D	21.6	2,400	D		
Arterial	E4 Proposed EW Conn. to Adm Taussig Blvd	29,700	18.0	2,300	D	18.8	2,300	D	32,500	17.5	2,500	D	18.4	2,500	D		
Arterial	E5 Brambleton Ave, Colley Ave to Boush St	67,800	3.8	5,500	F	3.2	5,700	F	69,600	3.6	5,600	F	3.0	5,800	F		
Freeway	F Downtown Tunnel Area (5 segments)																
Freeway	F1 Downtown Tunnel (I-264 from Portsmouth to I-464)	106,000				*	9,500	F	113,300				*	10,200	F		
Freeway	F2 Berkley Bridge (I-264 from Waterside to I-464)	132,900				30.4	12,000	D	136,000				31.1	12,200	D		
Two-Lane	F3 Jordan Bridge(Poindexter from Portsmouth to I-464)	18,000				-		E	21,000				-		E		
Arterial	F4 Effingham St, I-264 to South St	37,600	1.9	3,800	F	1.9	3,800	F	38,900	1.7	3,900	F	1.7	3,900	F		
Arterial	F5 Frederick Blvd, I-264 to Turnpike Rd	46,700	2.6	4,700	F	2.6	4,700	F	46,100	2.6	4,600	F	2.6	4,600	F		

Planning Analysis	Segments	Project Scenario 1								Project Scenario 2							
		ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Volume	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Volume	PM Peak Hour LOS (HCS)	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Volume	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Volume	PM Peak Hour LOS (HCS)		
Freeway	G I-64 (on the Peninsula) (5 segments)	9,600				3.5	900	A	9,600				3.5	900	A		
Freeway	G1 New Kent County Line to Route 30 (Exit 227)	67,700				24.7	6,100	C	67,700				24.7	6,100	C		
Freeway	G2 Route 30 (Exit 220) to Croaker Rd (Exit 231)	81,400				31.9	7,300	D	81,500				32.0	7,300	D		
Freeway	G3 Croaker Rd (Exit 231) to Route 199 @ Lightfoot (Exit 234)	71,700				26.5	6,500	D	72,100				26.7	6,500	D		
Freeway	G4 Route 199 @ Lightfoot (Exit 234) to Camp Peary Rd (Exit 238)	75,500				28.5	6,800	D	75,900				28.7	6,800	D		
Freeway	G5 Camp Peary Rd (Exit 238) to Route 199 @ Kingsmill (Exit 242)																
Freeway	H I-264 (4 segments)	215,700				*	19,400	F	214,500				*	19,300	F		
Freeway	H1 Witchduck Rd to Independence Blvd	176,600				37.8	15,900	E	176,100				37.5	15,800	E		
Freeway	H2 Independence Blvd to Rosemont Rd	150,300				28.2	13,500	D	150,200				28.2	13,500	D		
Freeway	H3 Rosemont Rd to Lynnhaven Pkwy	63,600				15.2	5,700	B	63,800				15.3	5,700	B		
Arterial	I Dam Neck Rd (2 segments)	42,200				15.6	3,800	F	42,300				15.5	3,800	F		
Arterial	I1 Holland Rd to London Bridge Ext	28,000				21.7	2,500	D	27,900				21.7	2,500	D		
Arterial	I2 Proposed Southeastern Pkwy to Gen Booth Blvd																
Arterial	J Birdneck Rd (2 segments)	27,000				14.3	2,400	E	26,900				14.3	2,400	E		
Arterial	J1 I-264 to VA Beach Blvd	9,800				28.2	900	B	9,800				28.2	900	B		
Arterial	J2 Gen Booth Blvd to Norfolk Ave																
Arterial	K Battlefield Blvd (2 segments)	49,200	23.1	3,400	D	23.1	4,000	D	48,900	23.1	3,400	D	23.2	4,000	D		
Arterial	K1 Great Bridge Bypass to Volvo Pkwy	42,500	11.8	2,800	F	6.3	3,100	F	42,200	12.0	2,800	F	6.6	3,100	F		
Arterial	K2 Cedar Rd to Mt Pleasant Rd																
Arterial	L Kempsville Rd (2 segments)	32,900	16.2	2,400	E	14.9	2,900	F	32,700	16.2	2,400	E	14.6	2,900	F		
Arterial	L1 Centreville Tpk to Indian River Rd	38,100	24.6	2,800	D	23.2	3,700	D	37,800	24.6	2,800	D	23.2	3,600	D		
Arterial	L2 Great Bridge Bypass to Greenbrier Pkwy																
Arterial	M Indian River Rd (2 segments)	100,500				3.3	9,000	F	101,000				3.3	9,100	F		
Arterial	M1 I-64 to Centreville Tpk	18,300				30.0	1,600	C	18,400				29.9	1,700	C		
Arterial	M2 Independence Blvd to Elbow Rd																
Arterial	N Oceana Blvd (2 segments)	38,400				7.2	3,500	F	38,200				7.4	3,400	F		
Arterial	N1 Gen Booth Blvd to Tomcat Blvd/proposed Southeastern Pkwy	39,400				27.4	3,500	C	39,400				27.4	3,500	C		
BUILD SCENARIO - ALL ABOVE SEGMENTS, PLUS:																	
Freeway	O Hampton Roads Crossing Segment 1 (2 segments)																
Freeway	O1 Proposed EW Conn., I-564 to Hampton Blvd																
Freeway	O2 Proposed EW Conn., Hampton Blvd to I-664																
P Hampton Roads Crossing (4 segments)																	
P1/O1	P1/O1 Proposed EW Conn., I-564 to Hampton Blvd	19,500				7.2	1,800	A									
P2	P2 Proposed EW Conn., Hampton Blvd to Craney Island Conn.	33,000				11.9	3,000	B									
P3	P3 Proposed EW Conn., Craney Island Conn. to I-664	25,100				9.1	2,300	A									
P4	P4 Proposed Craney Island Conn.	7,900				2.8	700	A									
Q Midtown Tunnel and MLK Frwy Extension (1 segment)																	
Q1	Q1 MLK Frwy, I-264 to High St																

Planning Analysis	Segments	Project Scenario 1								Project Scenario 2							
		ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Calc.	AM Peak LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Calc.	PM Peak LOS (HCS)	ADT	AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc. Calc.	AM Peak LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc. Calc.	PM Peak LOS (HCS)		
	R New Alignment Route 460 (4 segments) R1 Route 58 Bypass to Windsor town limits R2 Windsor town limits to Ivor R3 Ivor to Wakefield R4 Wakefield to Waverly R5 Waverly to Route 625 R6 Route 625 to Route 156 R7 Route 156 to I-295																
	S Southeastern Parkway (6 segments) S1 Great Bridge Bypass to Centreville Tpk S2 Centreville Tpk to Indian River Rd S3 Indian River Rd to Princess Anne Rd S4 Princess Anne Rd to Dam Neck Rd S5 Dam Neck Rd to Oceana Blvd S6 Oceana Blvd to I-264																

LEVEL OF SERVICE

	A	B	C	D	E	F
<u>FREEWAY (Density pc/mi/ln)</u>	0-11	> 11-18	> 18-26	> 26-35	> 35-45	>45
<u>ARTERIAL - CLASS 1 (Average Travel Speed mph)</u>	>42	>34-42	>27-34	>21-27	>16-21	<=16
<u>ARTERIAL - CLASS 2 (Average Travel Speed mph)</u>	>35	>28-35	>22-28	>17-22	>13-17	<=13
<u>ARTERIAL - CLASS 3 (Average Travel Speed mph)</u>	>30	>24-30	>18-24	>14-18	>10-14	<=10

Notes*

1. PHF based on data from studies:Norfolk LOS study, Newport etc.
2. K factor based on HRPDC
3. D Factor based on HRPDC & Studies: etc.
4. Density for Freeway Segments (pc/mi/ln)
5. Average Travel Speed for Arterial Segments (mph)

*I-264 Corridor Study completed by URS.

Elbow Road Study completed by FHI.

I-264 Lynnhaven/Great Neck Interchange Study completed by FHI.

		Project Scenario 3						
Planning Analysis	Segments	ADT	AM Peak Hour Criteria	AM Peak Hour	PM Peak Hour Criteria	PM Peak Hour	PM Peak LOS	
			(Density ⁴) (Avg Travel Speed ⁵)	Peak Calc. Volume	Hour LOS (HCS)	(Density ⁴) (Avg Travel Speed ⁵)	Calc. Volume	Hour LOS (HCS)
Freeway	A Hampton Roads Beltway (17 Segments)							
Freeway	A1 I-64, I-664 to Armistead Ave	133,300			38.1	12,000	E	
Freeway	A2 I-64, Armistead Ave to Hampton Roads Bridge Tunnel	112,000			28.1	10,100	D	
Freeway	A3 Hampton Roads Bridge Tunnel	104,400			*	9,400	F	
Freeway	A4 I-64, Hampton Roads Bridge Tunnel to I-564	93,500			42.6	8,400	E	
Freeway	A5 I-64, I-564 to Chesapeake Blvd	155,200			*	14,000	F	
Freeway	A6 I-64, Chesapeake Blvd to Northampton Blvd	163,600			*	14,700	F	
Freeway	A7 I-64, Northampton Blvd to I-264	171,200			35.1	15,400	E	
Freeway	A8 I-64, I-264 to Indian River Rd	158,100			30.5	14,200	D	
Freeway	A9 I-64, Indian River Rd to Greenbrier Pkwy	154,800			29.6	13,900	D	
Freeway	A10 I-64, Greenbrier Pkwy to I-464	144,200			26.8	13,000	D	
Freeway	A11 I-64, I-464 to I-264	115,200			*	10,400	F	
Freeway	A12 I-664, I-264 to Route 58	125,300			22.8	11,300	C	
Freeway	A13 I-664, Route 58 to Route 164/Western Frwy	88,300			37.4	7,900	E	
Freeway	A14 I-664, Route 164/Western Frwy to proposed EW Conn.	64,300			23.3	5,800	C	
Freeway	A15 I-664, proposed EW Conn. to 23rd St	79,000			30.6	7,100	D	
Freeway	A16 I-664, 23rd St to Aberdeen Rd	80,300			32.5	7,200	D	
Freeway	A17 I-664, Aberdeen Rd to I-64	83,900			35.9	7,500	E	
Two-Lane	B Midtown Tunnel area (3 segments)							
Freeway	B1 Midtown Tunnel	23,800			-		E	
Freeway	B2 MLK Frwy, High St to Pinner's Point Conn.							
Freeway	B3 Western Frwy (Route 164, Town Point Rd to MLK Frwy	62,600			22.6	5,600	C	
Multi-Lane	C Route 460 (6 segments)							
Freeway	C1 I-664 to Route 58 Bypass	84,800	-	6,600	D	-	7,100	C
Freeway	C2 Route 58 Bypass							
Multi-Lane	C3 Route 58 Bypass to Windsor							
Multi-Lane	C4 Windsor to Waverly							
Multi-Lane	C5 Waverly to Route 156							
Multi-Lane	C6 Route 156 to I-295							
Two-Lane	D Oak Grove Conn. & Dominion Blvd (4 segments)							
Arterial	D1 Dominion Blvd, Route 17 to Cedar Rd	13,000	-	800	E	-	1,000	E
Arterial	D2 Dominion Blvd, Cedar Rd to Bainbridge Blvd	36,900	2.7	2,900	F	3.0	3,100	F
Freeway	D3 Dominion Blvd, Bainbridge Blvd to Great Bridge Blvd							
Freeway	D4 Oak Grove Conn. (from I-64 to Battlefield Blvd)	146,800			*	13,200	F	
Arterial	E Hampton Blvd & Brambleton Ave (5 segments)							
Arterial	E1 Brambleton Ave to 21st St	25,300	14.3	1,700	E	13.9	1,900	E
Arterial	E2 38th St to Little Creek Rd	36,800	18.9	2,400	D	18.2	2,900	D
Arterial	E3 Little Creek Rd to proposed EW Conn.	33,900	20.5	2,400	D	21.3	2,600	D
Arterial	E4 Proposed EW Conn. to Adm Taussig Blvd	34,100	17.3	2,600	D	18.3	2,600	D
Arterial	E5 Brambleton Ave, Colley Ave to Boush St	65,000	4.2	5,300	F	3.5	5,500	F
Freeway	F Downtown Tunnel Area (5 segments)							
Freeway	F1 Downtown Tunnel (I-264 from Portsmouth to I-464)	39,800				18.9	3,600	C
Freeway	F2 Berkley Bridge (I-264 from Waterside to I-464)	104,200				23.8	9,400	C
Two-Lane	F3 Jordan Bridge(Poindexter from Portsmouth to I-464)	34,600				-		F
Arterial	F4 Effingham St, I-264 to South St	24,400	10.0	2,400	F	10.0	2,400	F
Arterial	F5 Frederick Blvd, I-264 to Turnpike Rd	40,700	3.5	4,100	F	3.5	4,100	F

Project Scenario 3

Planning Analysis	Segments	ADT	AM Peak Hour Criteria	AM Peak Hour	PM Peak Hour Criteria	PM Peak Hour		
			(Density ⁴) (Avg Travel Speed ⁵)	Calc. Volume	LOS (HCS)	(Density ⁴) (Avg Travel Speed ⁵)	Calc. Volume	LOS (HCS)
Freeway	G I-64 (on the Peninsula) (5 segments)	9,600			3.5	900	A	
Freeway	G1 New Kent County Line to Route 30 (Exit 227)	67,800			24.7	6,100	C	
Freeway	G2 Route 30 (Exit 220) to Croaker Rd (Exit 231)	81,900			32.2	7,400	D	
Freeway	G3 Croaker Rd (Exit 231) to Route 199 @ Lightfoot (Exit 234)	72,900			27.1	6,600	D	
Freeway	G4 Route 199 @ Lightfoot (Exit 234) to Camp Peary Rd (Exit 238)	77,100			29.4	6,900	D	
Freeway	G5 Camp Peary Rd (Exit 238) to Route 199 @ Kingsmill (Exit 242)							
	H I-264 (4 segments)							
Freeway	H1 Witchduck Rd to Independence Blvd	218,000			*	19,600	F	
Freeway	H2 Independence Blvd to Rosemont Rd	177,600			38.4	16,000	E	
Freeway	H3 Rosemont Rd to Lynnhaven Pkwy	150,700			28.3	13,600	D	
Freeway	H4 First Colonial Rd to proposed Southeastern Pkwy	63,900			15.3	5,800	B	
	I Dam Neck Rd (2 segments)							
Arterial	I1 Holland Rd to London Bridge Ext	42,400			15.4	3,800	F	
Arterial	I2 Proposed Southeastern Pkwy to Gen Booth Blvd	28,200			21.6	2,500	D	
	J Birdneck Rd (2 segments)							
Arterial	J1 I-264 to VA Beach Blvd	27,100			14.3	2,400	E	
Arterial	J2 Gen Booth Blvd to Norfolk Ave	9,800			28.2	900	B	
	K Battlefield Blvd (2 segments)							
Arterial	K1 Great Bridge Bypass to Volvo Pkwy	49,300	23.1	3,400	D	23.1	4,000	D
Arterial	K2 Cedar Rd to Mt Pleasant Rd	42,300	11.9	2,800	F	6.4	3,100	F
	L Kempsville Rd (2 segments)							
Arterial	L1 Centreville Tpk to Indian River Rd	33,800	16.1	2,500	E	14.3	3,000	F
Arterial	L2 Great Bridge Bypass to Greenbrier Pkwy	39,400	24.4	2,900	D	23.0	3,800	D
	M Indian River Rd (2 segments)							
Arterial	M1 I-64 to Centreville Tpk	101,900				3.2	9,200	F
Arterial	M2 Independence Blvd to Elbow Rd	18,500				29.9	1,700	C
	N Oceana Blvd (2 segments)							
Arterial	N1 Gen Booth Blvd to Tomcat Blvd/proposed Southeastern Pkwy	38,200				7.4	3,400	F
Arterial	N2 Tomcat Blvd/proposed Southeastern Pkwy to VA Beach Blvd	39,500				27.2	3,600	C
	BUILD SCENARIO - ALL ABOVE SEGMENTS, PLUS:							
	O Hampton Roads Crossing Segment 1 (2 segments)							
Freeway	O1 Proposed EW Conn., I-564 to Hampton Blvd							
Freeway	O2 Proposed EW Conn., Hampton Blvd to I-664							
	P Hampton Roads Crossing (4 segments)							
	P1/O1 Proposed EW Conn., I-564 to Hampton Blvd							
	P2 Proposed EW Conn., Hampton Blvd to Craney Island Conn.							
	P3 Proposed EW Conn., Craney Island Conn. to I-664							
	P4 Proposed Craney Island Conn.							
	Q Midtown Tunnel and MLK Frwy Extension (1 segment)							
	Q1 MLK Frwy, I-264 to High St							

Planning Analysis	Segments	ADT	Project Scenario 3					
			AM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	AM Peak Hour Calc.	AM Peak Hour LOS (HCS)	PM Peak Hour Criteria (Density ⁴) (Avg Travel Speed ⁵)	PM Peak Hour Calc.	PM Peak Hour LOS (HCS)
R New Alignment Route 460 (4 segments)	R1 Route 58 Bypass to Windsor town limits R2 Windsor town limits to Ivor R3 Ivor to Wakefield R4 Wakefield to Waverly R5 Waverly to Route 625 R6 Route 625 to Route 156 R7 Route 156 to I-295							
S Southeastern Parkway (6 segments)	S1 Great Bridge Bypass to Centreville Tpk S2 Centreville Tpk to Indian River Rd S3 Indian River Rd to Princess Anne Rd S4 Princess Anne Rd to Dam Neck Rd S5 Dam Neck Rd to Oceana Blvd S6 Oceana Blvd to I-264							

LEVEL OF SERVICE	A	B	C	D	E	F
<u>FREEWAY (Density pc/mi/ln)</u>	0-11	> 11-18	> 18-26	> 26-35	> 35-45	>45
<u>ARTERIAL - CLASS 1 (Average Travel Speed mph)</u>	>42	>34-42	>27-34	>21-27	>16-21	<=16
<u>ARTERIAL - CLASS 2 (Average Travel Speed mph)</u>	>35	>28-35	>22-28	>17-22	>13-17	<=13
<u>ARTERIAL - CLASS 3 (Average Travel Speed mph)</u>	>30	>24-30	>18-24	>14-18	>10-14	<=10

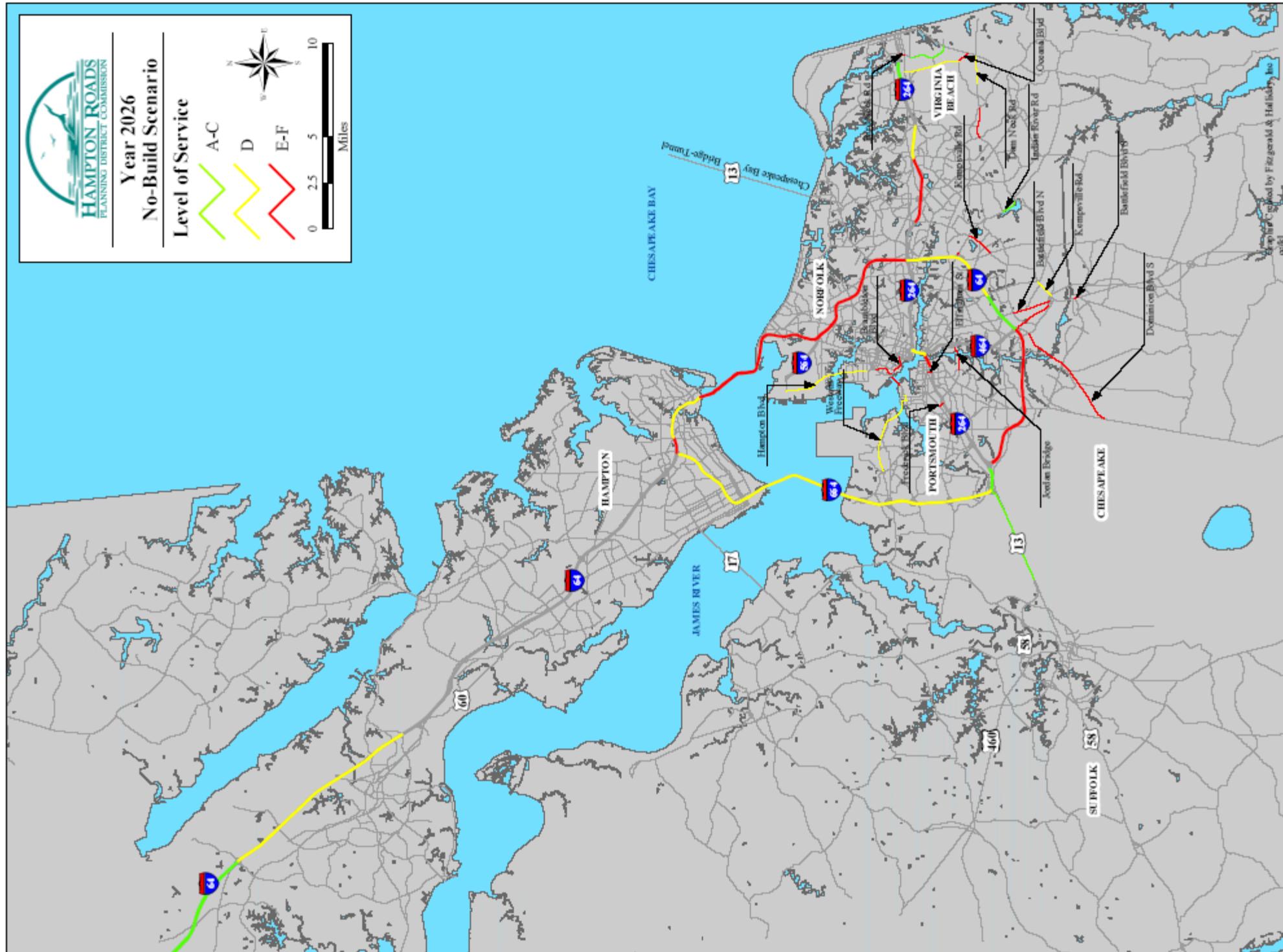
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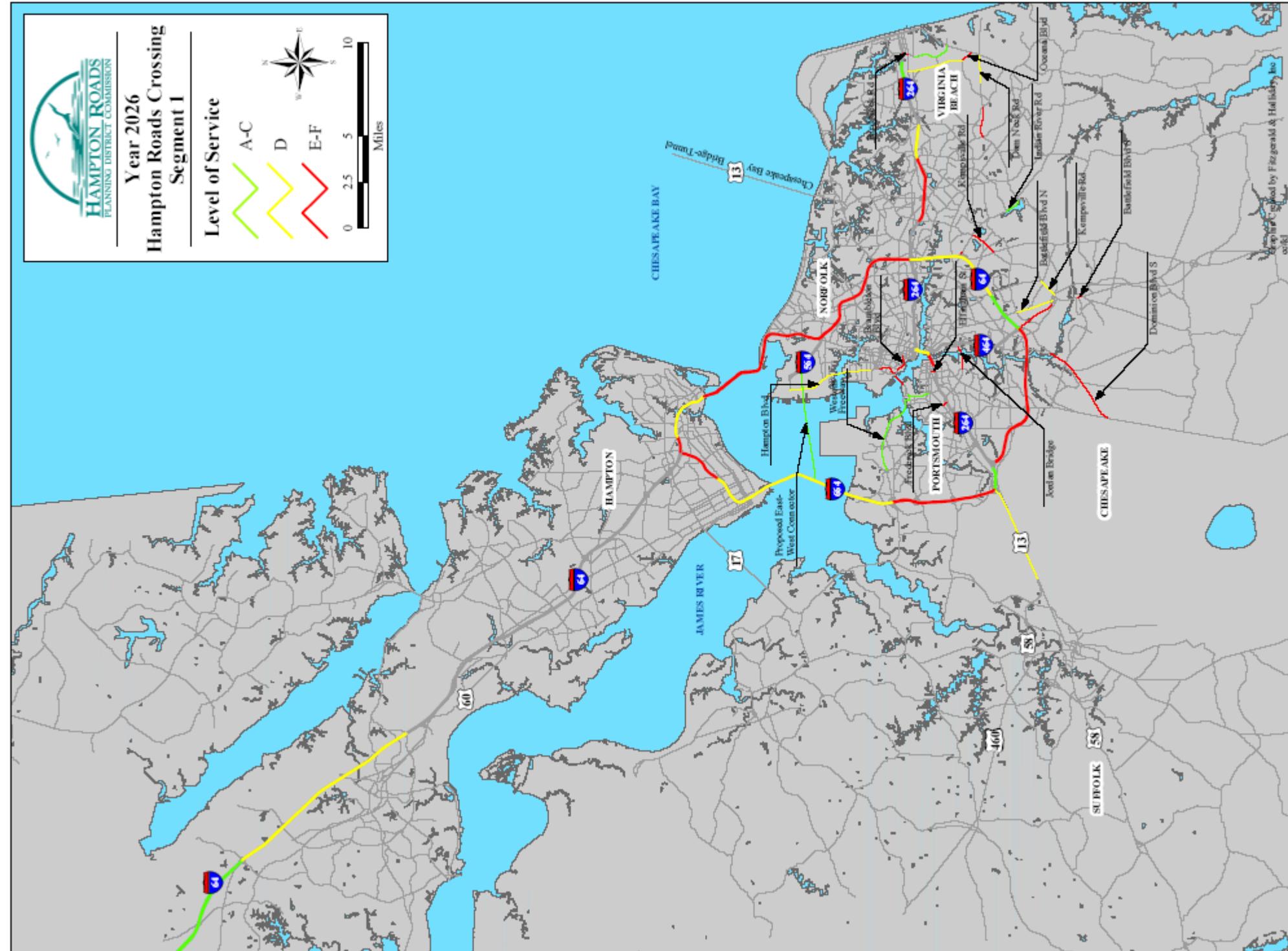
1. PHF based on data from studies:Norfolk LOS study, Newport etc.
2. K factor based on HRPDC
3. D Factor based on HRPDC & Studies: etc.
4. Density for Freeway Segments (pc/mi/ln)
5. Average Travel Speed for Arterial Segments (mph)

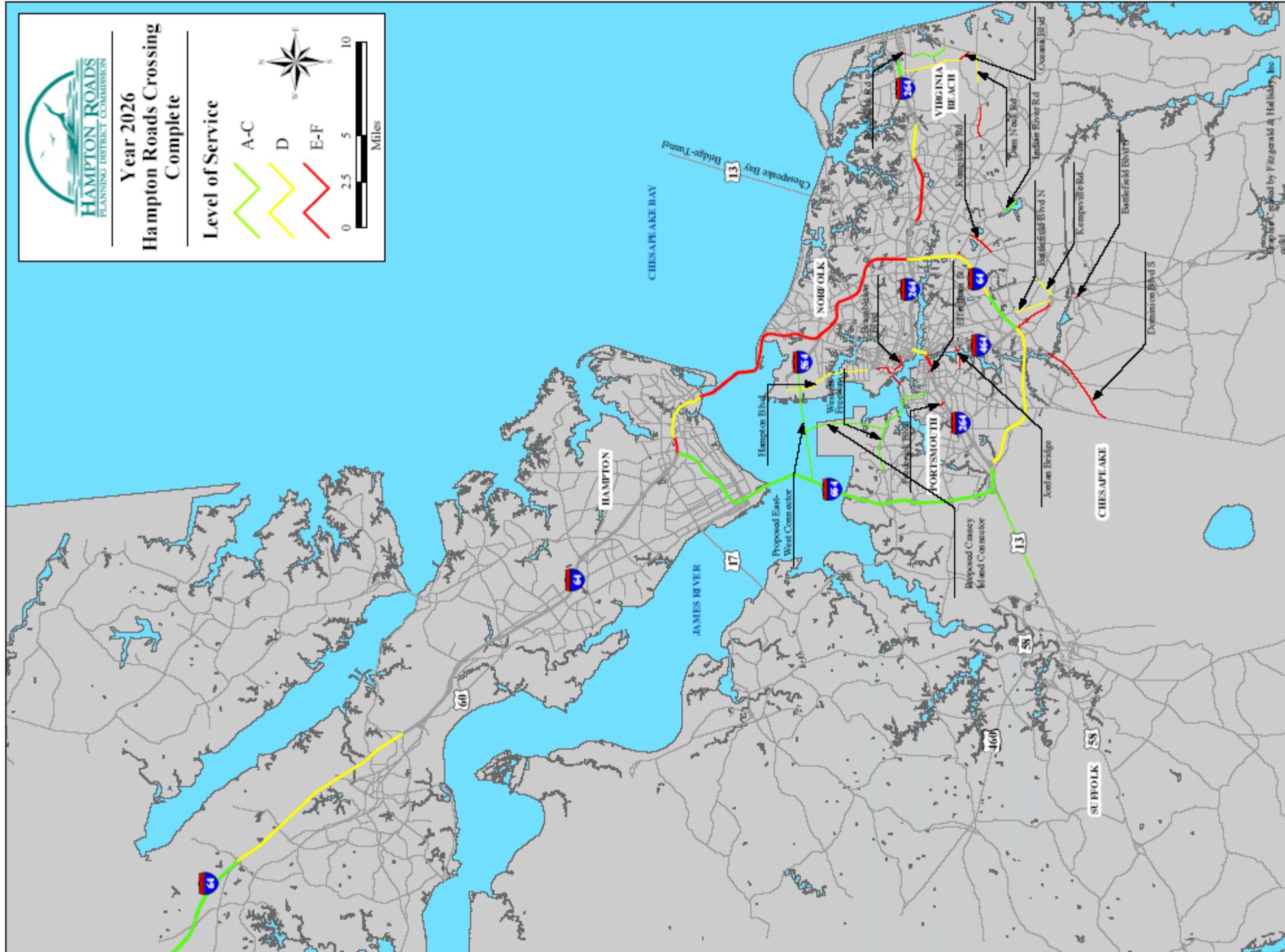
*I-264 Corridor Study completed by URS.

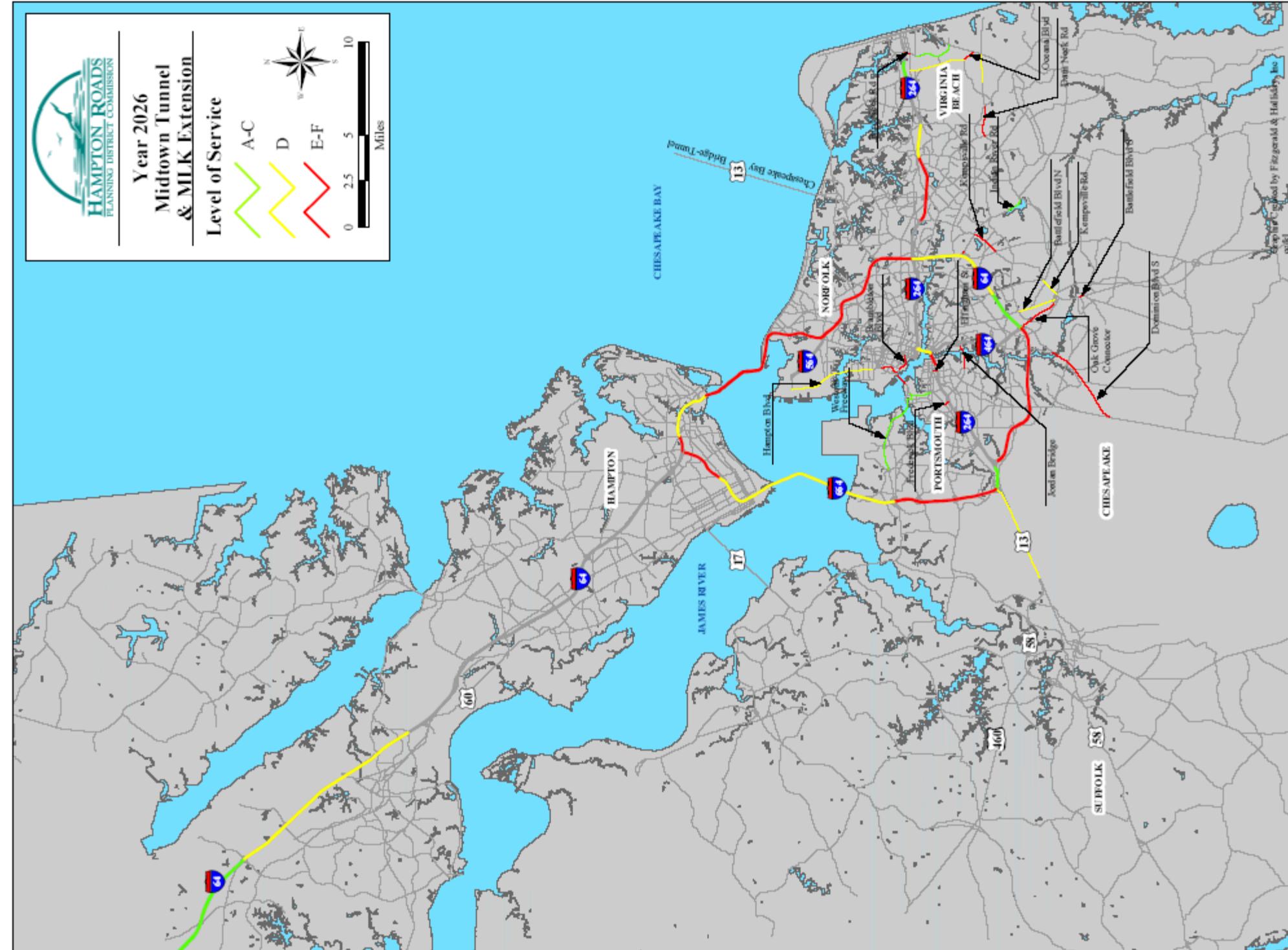
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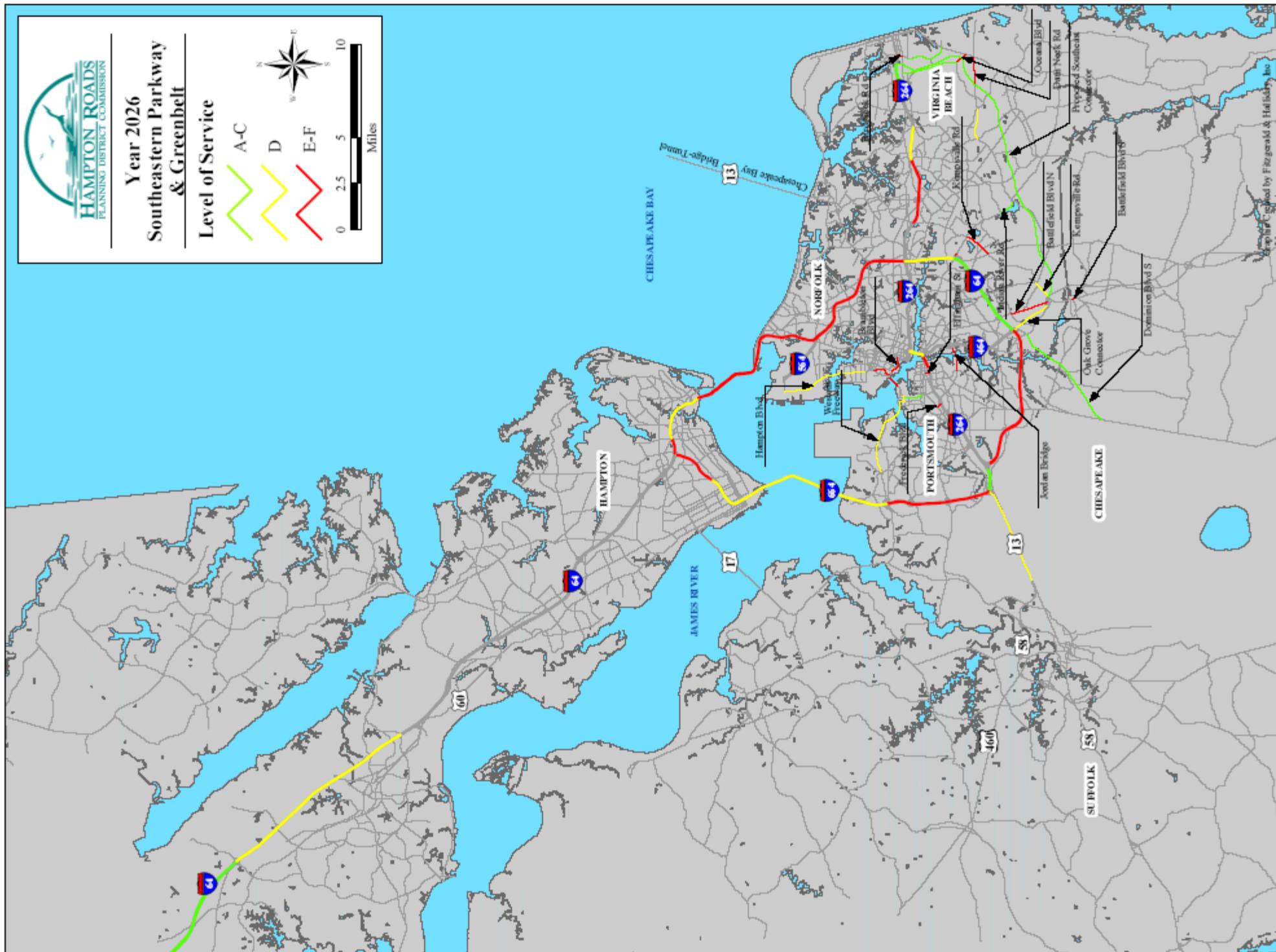
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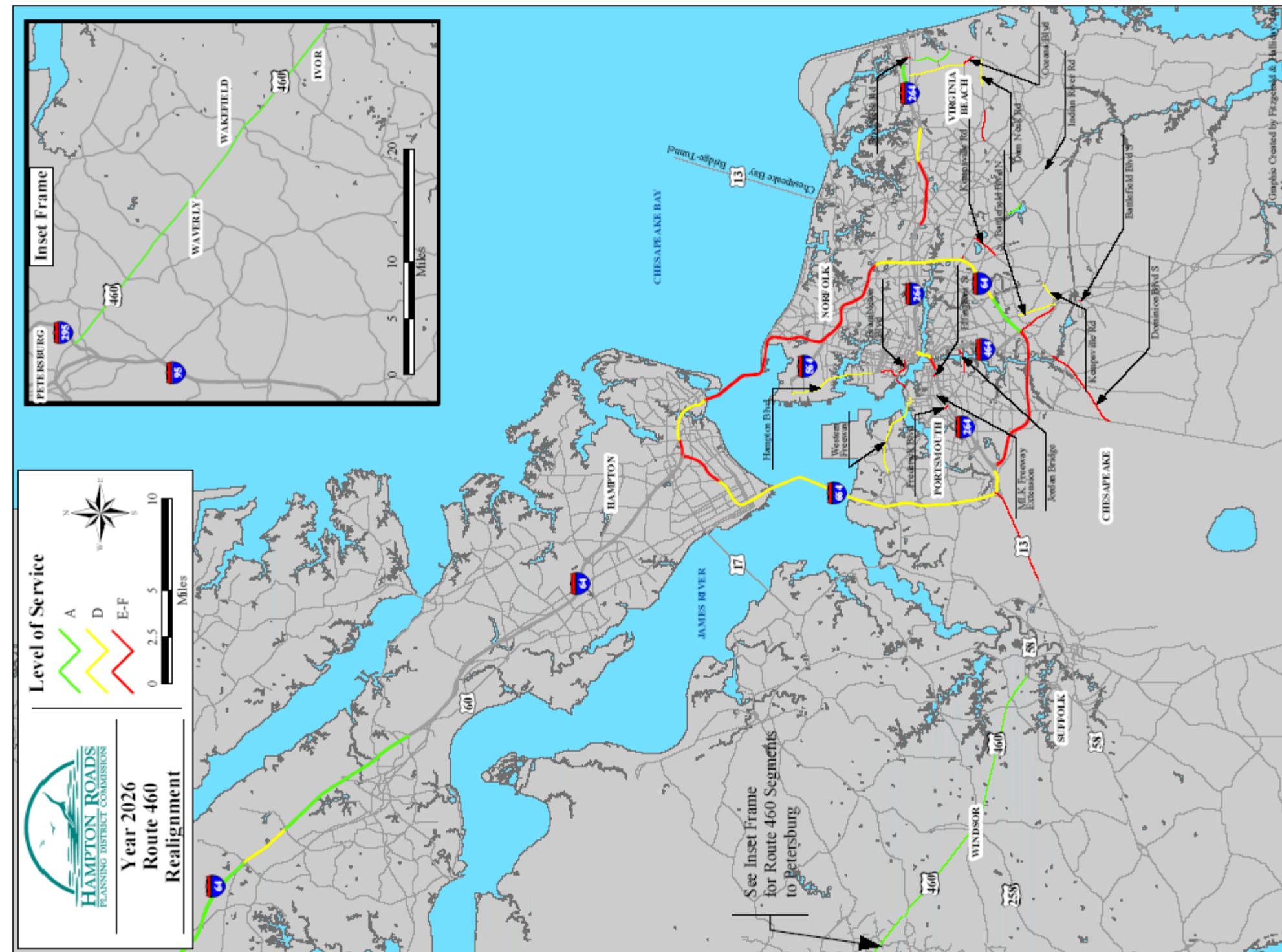


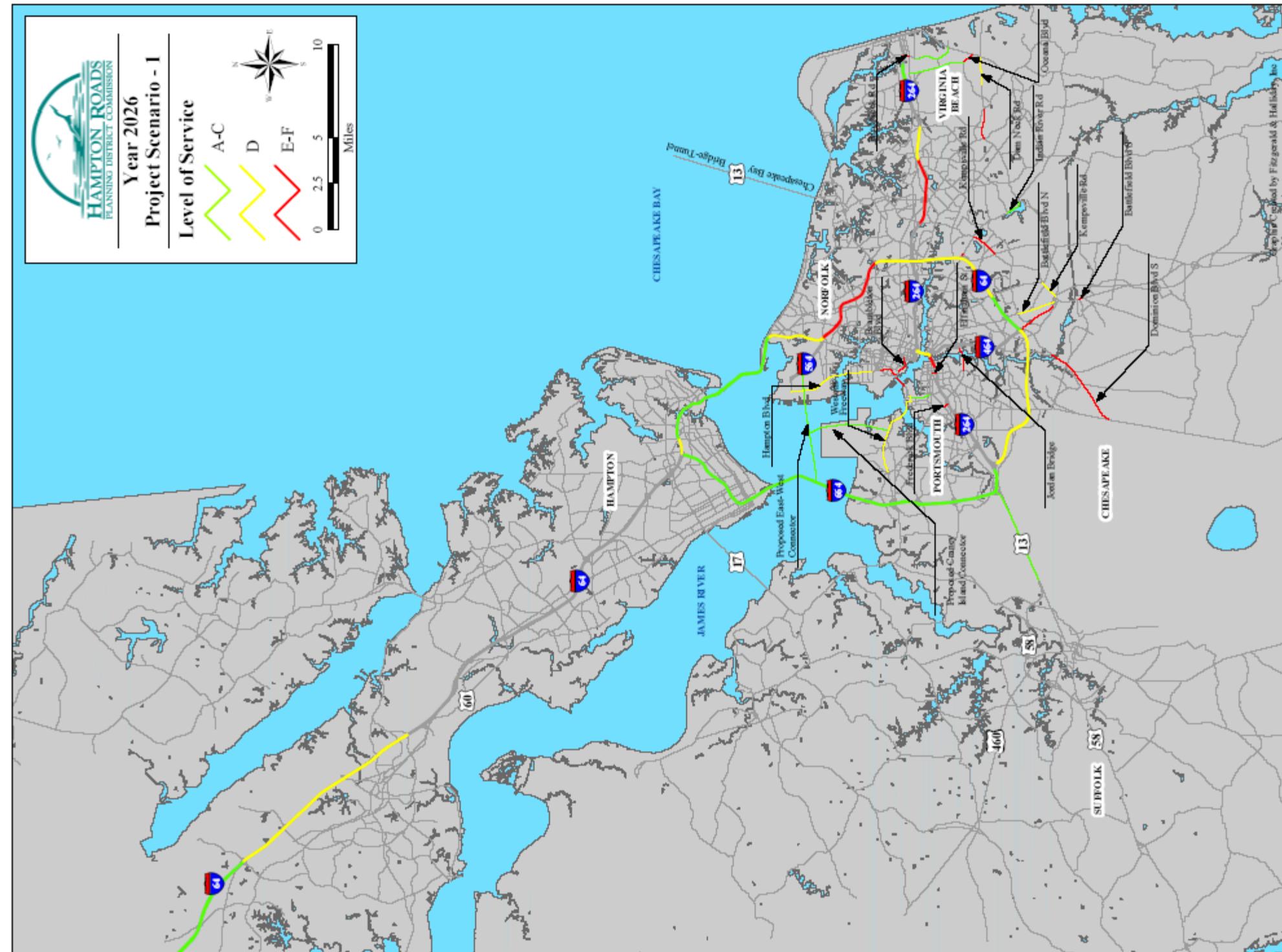


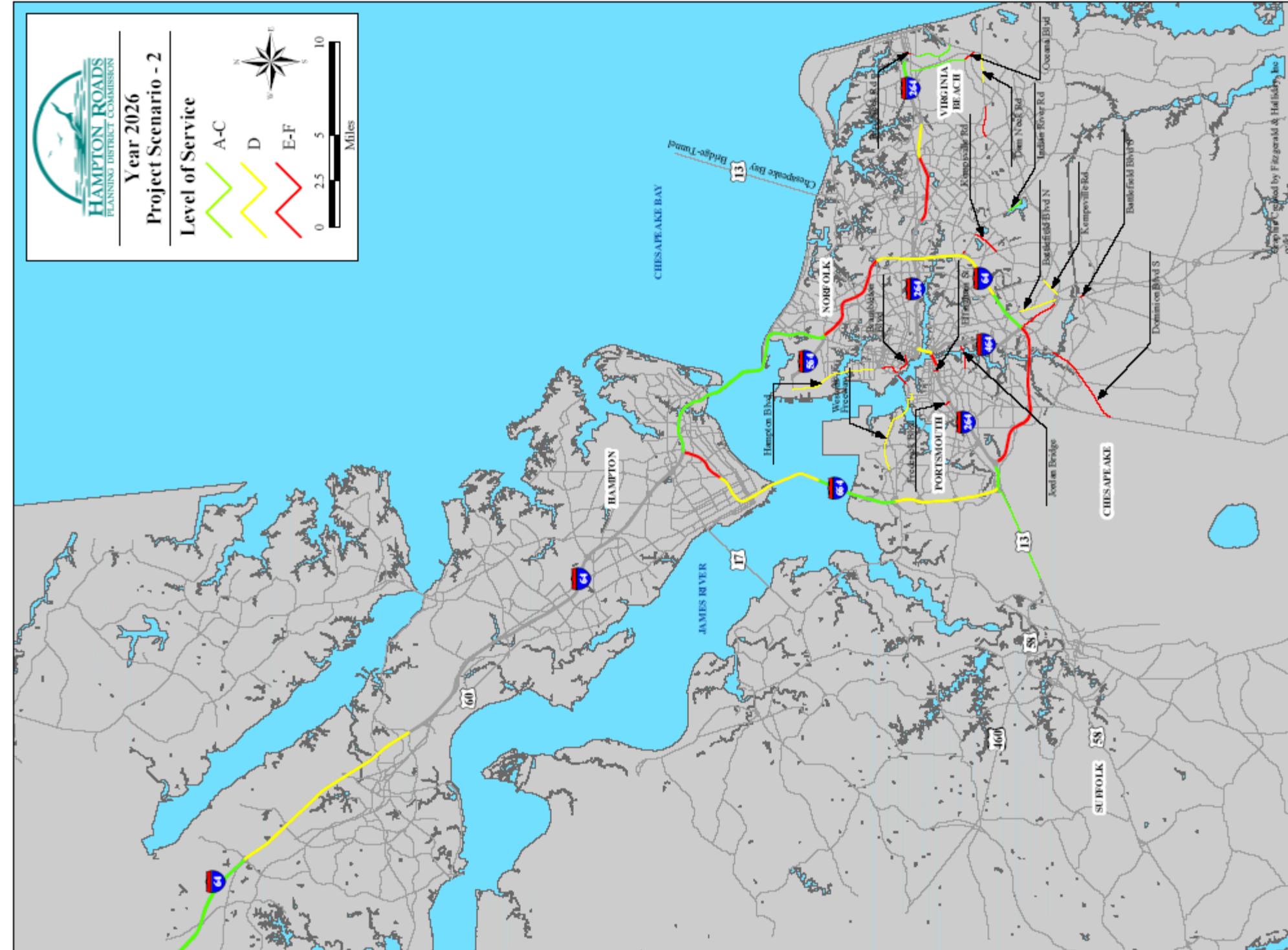


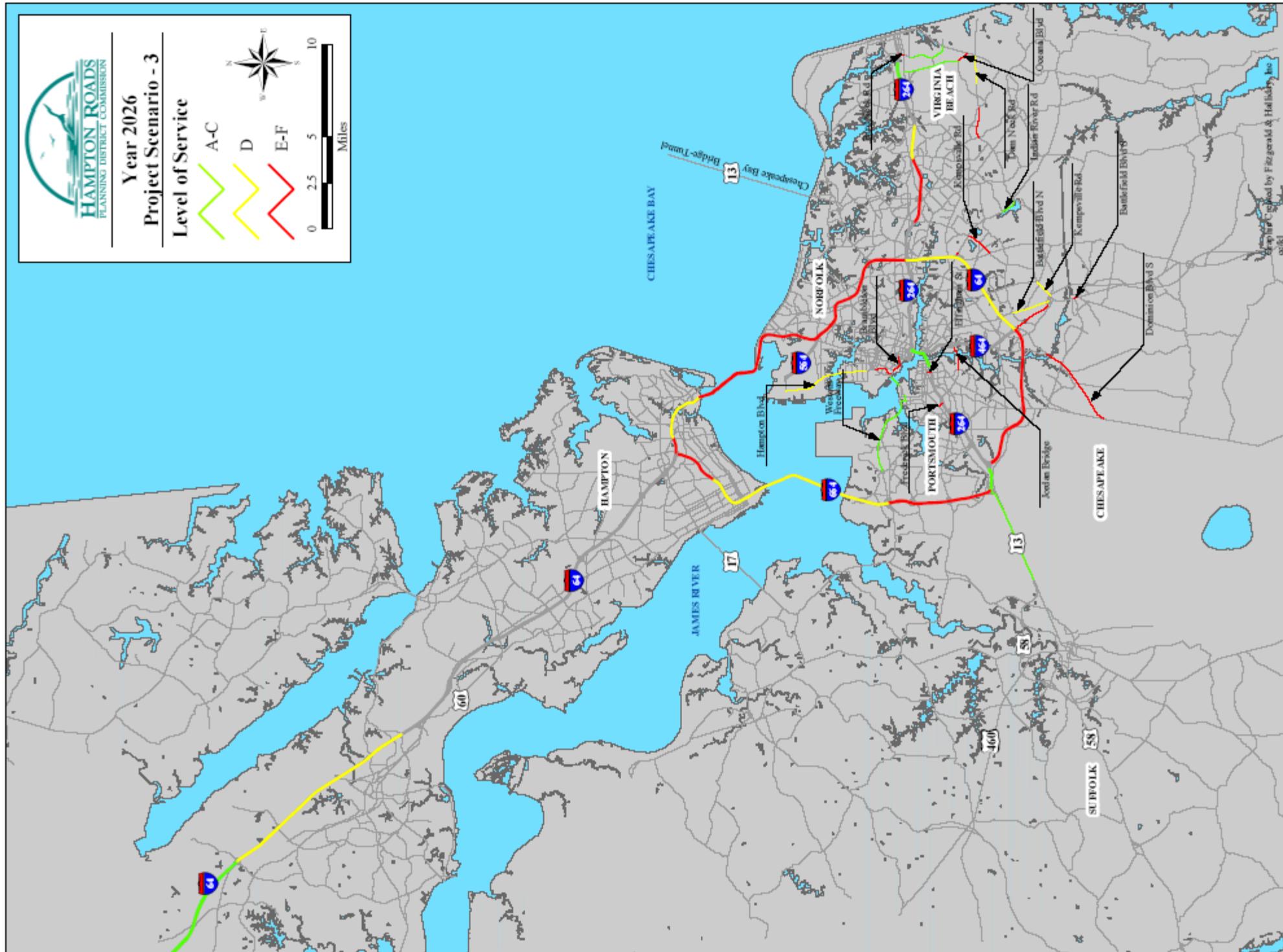












Toll Feasibility Study

Appendix H

Revenue Optimized Tolls – Travel Patterns

Note: Definition of Project Scenarios:

Features	Project Scenario #1	Project Scenario #2	Project Scenario #3
Projects	<ul style="list-style-type: none">HRX	<ul style="list-style-type: none">Improved HRBT (1)	<ul style="list-style-type: none">Midtown & MLK
Existing/Unimproved, Tolled Roadways	<ul style="list-style-type: none">MMMBTJRBHRBT	<ul style="list-style-type: none">MMMBTJRBHRBT	<ul style="list-style-type: none">Downtown Tunnel

(2) Hampton Roads Crossing Study, Alternative #1

MMMBT – Monitor Merrimac Bridge Tunnel

JRB – James River Bridge

HRBT – Hampton Roads Bridge Tunnel

Table H-1 Daily Travel Pattern – No Project

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	148,431	44,148	27,401	13,387	33,083	1,575	586	1,894	1,078	12	50	71	105	0	271,820
Norfolk	16,135	158,210	7,365	1,226	37,042	204	599	840	1,339	13	64	81	106	0	223,223
Portsmouth	21,277	16,915	39,175	7,715	3,947	1,057	90	1,304	717	8	45	54	73	0	92,379
Suffolk	15,610	6,047	8,353	57,799	2,371	5,664	55	3,203	1,611	21	92	122	181	3	101,133
Virginia Beach	63,196	123,746	8,727	3,090	354,912	432	16,144	818	944	12	27	35	82	0	572,164
Isle of Wight	1,417	759	807	4,116	259	26,439	7	2,939	1,427	20	77	99	163	5	38,534
Va Bch Waterfront	1,153	3,171	218	71	17,554	12	6,597	23	27	1	0	0	2	0	28,828
Newport News	1,789	3,196	997	2,116	548	3,742	12	144,128	38,092	1,029	9,549	13,696	19,260	1,813	239,968
Hampton	1,661	6,872	895	1,497	1,330	2,453	25	44,717	82,527	940	1,712	2,265	4,950	301	152,144
Poquoson	88	325	46	87	67	161	2	4,467	5,194	2,488	398	527	1,825	108	15,784
Williamsburg	2	10	2	3	1	5	0	492	100	5	6,308	3,649	1,777	42	12,396
James City	15	66	9	19	6	38	0	2,847	562	25	15,715	39,584	8,019	166	67,071
York	233	799	125	254	156	470	4	23,198	11,678	1,093	8,894	10,134	21,735	1,633	80,405
Gloucester	1	6	1	2	0	5	0	300	72	4	122	149	277	21,147	22,087
Total	271,010	364,270	94,122	91,381	451,276	42,257	24,119	231,170	145,367	5,671	43,054	70,467	58,554	25,219	1,917,936

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	316,538	49,404	61,376	17,272	103,700	4,575	1,644	10,060	8,932	228	1,744	1,123	1,823	0	578,420
Norfolk	20,550	342,581	10,403	2,635	91,294	1,217	1,055	5,612	7,250	173	733	627	1,175	1	485,306
Portsmouth	30,099	10,486	123,502	8,448	9,312	1,710	311	3,761	3,293	68	421	332	592	0	192,335
Suffolk	9,182	2,813	8,188	59,072	4,991	4,281	155	4,000	3,163	88	606	364	718	16	97,636
Virginia Beach	53,935	95,090	9,525	5,194	849,748	2,191	22,855	6,771	7,582	211	1,554	951	1,602	0	1,057,209
Isle of Wight	1,862	1,293	1,490	3,850	2,095	80,369	72	5,723	4,581	111	707	441	868	51	103,514
Va Bch Waterfront	351	670	165	81	13,896	37	6,557	102	166	3	34	14	29	0	22,106
Newport News	2,322	3,215	1,937	2,145	3,858	3,728	122	492,108	94,534	1,971	10,704	6,288	34,664	1,102	658,700
Hampton	1,411	2,753	1,133	1,113	3,039	1,846	114	63,409	257,071	1,591	2,154	1,347	9,545	439	346,965
Poquoson	318	509	193	273	657	383	15	11,292	13,590	16,455	734	553	6,970	154	52,096
Williamsburg	30	32	17	22	68	28	3	776	226	9	17,917	3,677	3,317	27	26,147
James City	571	895	428	452	1,182	583	22	11,704	4,453	207	53,900	116,099	18,675	567	209,739
York	502	802	372	453	1,031	622	35	39,461	18,788	1,916	15,103	6,711	63,522	402	149,718
Gloucester	75	133	63	62	148	74	2	1,161	598	31	406	253	508	35,115	38,629
Total	437,746	510,675	218,793	101,073	1,085,020	101,643	32,961	655,941	424,228	23,062	106,715	138,781	144,009	37,873	4,018,520

Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	110,696	19,739	19,205	5,672	34,164	1,333	346	2,271	1,331	124	194	566	561	131	196,333
Norfolk	19,558	198,192	8,615	1,573	57,519	786	605	1,842	2,198	82	333	884	626	161	292,973
Portsmouth	19,272	8,746	53,711	4,268	5,522	857	96	1,083	743	30	143	356	260	61	95,148
Suffolk	5,849	1,640	4,324	22,866	2,121	2,241	43	1,333	896	40	103	380	263	74	42,176
Virginia Beach	33,865	57,352	5,412	2,034	363,655	1,536	8,366	3,690	2,193	216	231	798	965	229	480,542
Isle of Wight	1,426	852	911	2,323	1,673	33,405	61	2,657	1,755	67	102	446	389	97	46,164
Va Bch Waterfront	345	604	92	41	8,359	56	2,294	112	110	6	8	16	19	7	12,070
Newport News	2,508	2,057	1,1												

Table H-2 Daily Travel Pattern – Hampton Roads Crossing, Segment I

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	159,944	43,340	27,193	12,719	24,327	1,270	343	1,594	992	8	23	19	48	0	271,820
Norfolk	14,463	167,810	6,908	1,530	29,016	242	357	1,350	1,412	10	28	31	65	0	223,223
Portsmouth	20,837	17,005	41,064	7,900	2,712	887	47	1,141	696	6	21	23	42	0	92,379
Suffolk	13,694	8,900	8,309	58,242	1,501	5,627	27	2,941	1,627	15	56	78	117	0	101,133
Virginia Beach	57,421	109,562	7,872	2,740	375,526	345	17,029	853	788	6	0	0	21	0	572,164
Isle of Wight	1,106	962	700	4,134	154	27,520	3	2,443	1,308	13	41	57	93	1	38,534
Va Bch Waterfront	870	2,618	159	51	18,653	8	6,431	19	21	0	0	0	0	0	28,828
Newport News	1,398	6,044	892	2,000	456	3,148	6	149,796	33,044	654	9,258	13,662	17,983	1,627	239,968
Hampton	1,597	8,111	1,007	1,725	990	2,517	14	41,882	88,431	645	812	1,109	3,165	140	152,144
Poquoson	89	369	51	99	49	160	0	3,931	5,266	3,374	258	349	1,693	97	15,784
Williamsburg	1	3	0	1	0	2	0	340	33	1	6,701	3,437	1,845	31	12,396
James City	3	15	1	8	0	16	0	2,178	217	9	15,704	40,743	8,033	145	67,071
York	167	753	104	215	87	355	1	21,301	11,346	930	9,315	9,562	24,554	1,715	80,405
Gloucester	0	1	0	1	0	2	0	279	50	3	154	175	296	21,126	22,087
Total	271,589	365,493	94,260	91,366	453,471	42,100	24,257	230,047	145,230	5,673	42,371	69,244	57,954	24,882	1,917,936

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	316,540	49,420	61,378	17,270	103,704	4,573	1,644	10,046	8,928	228	1,744	1,123	1,823	0	578,420
Norfolk	20,540	342,373	10,392	2,643	91,244	1,233	1,054	5,855	7,266	173	732	627	1,173	1	485,306
Portsmouth	30,100	10,488	123,506	8,447	9,313	1,709	311	3,756	3,291	68	421	332	592	0	192,335
Suffolk	9,181	2,828	8,187	59,067	4,992	4,279	155	3,995	3,161	88	606	364	718	16	97,636
Virginia Beach	53,931	95,099	9,524	5,193	849,697	2,190	22,851	6,829	7,577	211	1,553	951	1,601	0	1,057,209
Isle of Wight	1,862	1,306	1,491	3,850	2,096	80,362	72	5,717	4,580	111	707	441	868	51	103,514
Va Bch Waterfront	351	670	165	81	13,895	37	6,556	104	166	3	34	14	29	0	22,106
Newport News	2,323	3,316	1,938	2,146	3,907	3,728	125	491,948	94,533	1,972	10,706	6,289	34,667	1,102	658,700
Hampton	1,411	2,763	1,134	1,113	3,041	1,846	114	63,359	257,102	1,591	2,155	1,348	9,548	440	346,965
Poquoson	318	509	194	274	658	383	15	11,289	13,590	16,456	734	553	6,970	154	52,096
Williamsburg	30	32	17	22	68	28	3	775	226	9	17,917	3,677	3,317	27	26,147
James City	571	897	428	452	1,183	583	22	11,700	4,452	207	53,901	116,101	18,675	567	209,739
York	503	803	372	453	1,031	622	35	39,457	18,786	1,916	15,103	6,711	63,525	402	149,718
Gloucester	75	133	63	62	148	74	2	1,161	598	31	406	253	508	35,115	38,629
Total	437,735	510,638	218,789	101,073	1,084,975	101,647	32,960	655,991	424,258	23,063	106,718	138,784	144,015	37,874	4,018,520

Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	110,720	19,736	19,204	5,641	34,162	1,333	346	2,280	1,334	124	194	567	562	131	196,333
Norfolk	19,589	197,217	8,667	1,819	57,470	838	605	2,303	2,336	90	374	903	606	157	292,973
Portsmouth	19,270	8,779	53,714	4,235	5,521	856	96	1,082	744	30	143	357	260	62	95,148
Suffolk	5,809	1,888	4,286	22,727	2,114	2,232	43	1,326	893	40	103	379	263	74	42,176
Virginia Beach	33,869	57,224	5,414	2,031	363,770	1,538	8,378	3,670	2,203	216	231	799	967	230	480,542
Isle of Wight	1,423	903	909	2,311	1,670	33,383	61	2,651	1,754	67	102	446	389	97	46,164
Va Bch Waterfront	345	603	93	41	8,368	56	2,297	104	107	6	8	16	19	7	12,070
Newport News	2,508	2,608	1,192	1,408	4,044</td										

Table H-3 Daily Travel Pattern – Hampton Roads Crossing

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	161,471	43,145	27,226	12,469	24,235	1,212	344	1,088	564	5	14	13	35	0	271,820
Norfolk	14,458	167,780	7,179	1,470	29,078	248	365	1,321	1,203	8	25	28	59	0	223,223
Portsmouth	20,543	18,363	41,049	7,436	2,839	859	49	803	381	4	13	12	29	0	92,379
Suffolk	13,305	8,503	8,356	59,706	1,440	5,578	26	2,678	1,336	12	46	52	93	0	101,133
Virginia Beach	57,452	109,936	8,045	2,650	375,220	309	17,021	833	672	5	0	0	18	0	572,164
Isle of Wight	1,056	1,018	704	4,030	144	27,816	2	2,392	1,205	12	34	43	78	1	38,534
Va Bch Waterfront	871	2,667	165	51	18,622	7	6,409	19	18	0	0	0	0	0	28,828
Newport News	1,018	5,426	712	1,726	440	3,080	5	151,816	32,634	641	9,379	13,566	17,881	1,644	239,968
Hampton	935	7,409	605	1,418	910	2,459	14	41,498	90,549	661	923	1,235	3,375	152	152,144
Poquoson	55	283	35	83	46	153	0	3,970	5,308	3,393	271	362	1,724	102	15,784
Williamsburg	0	2	0	1	0	2	0	335	33	1	6,699	3,450	1,845	29	12,396
James City	2	9	1	5	0	14	0	2,211	225	9	15,552	40,883	8,017	143	67,071
York	112	586	80	178	75	346	0	21,360	11,316	926	9,392	9,619	24,649	1,765	80,405
Gloucester	0	0	0	1	0	2	0	276	50	3	154	174	295	21,132	22,087
Total	271,278	365,127	94,158	91,223	453,049	42,085	24,236	230,600	145,494	5,681	42,503	69,437	58,098	24,968	1,917,936

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	319,418	49,977	61,740	15,636	104,717	4,128	1,652	8,564	8,059	212	1,582	1,004	1,732	0	578,420
Norfolk	20,528	342,387	10,340	2,613	91,291	1,229	1,056	5,762	7,366	175	740	632	1,186	1	485,306
Portsmouth	30,106	10,554	123,995	8,456	9,370	1,709	314	3,476	2,918	78	451	333	575	0	192,335
Suffolk	7,948	2,761	8,044	61,057	4,401	4,372	130	3,958	3,180	82	600	365	724	14	97,636
Virginia Beach	53,734	95,129	9,464	4,716	850,514	1,896	22,894	6,784	7,715	214	1,570	960	1,619	0	1,057,209
Isle of Wight	1,598	1,244	1,456	3,936	1,835	80,807	61	5,773	4,618	111	710	442	872	50	103,514
Va Bch Waterfront	343	670	164	68	13,909	29	6,570	103	169	3	35	15	30	0	22,106
Newport News	1,955	3,214	1,772	2,142	3,792	3,774	121	493,518	93,770	1,958	10,698	6,283	34,611	1,092	658,700
Hampton	1,195	2,723	914	1,112	3,005	1,865	113	62,871	258,145	1,588	2,148	1,340	9,509	437	346,965
Poquoson	296	503	194	263	650	386	15	11,275	13,657	16,452	732	551	6,969	153	52,096
Williamsburg	26	32	17	22	67	28	3	778	228	9	17,919	3,675	3,315	27	26,147
James City	500	887	418	461	1,172	589	22	11,738	4,476	208	53,929	116,100	18,674	565	209,739
York	459	793	346	457	1,020	628	34	39,456	18,852	1,917	15,104	6,708	63,544	399	149,718
Gloucester	63	133	62	63	148	75	2	1,168	604	31	408	254	511	35,108	38,629
Total	438,170	511,008	218,924	101,004	1,085,891	101,513	32,987	655,225	423,755	23,038	106,626	138,661	143,872	37,844	4,018,520

Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	111,424	19,851	19,240	5,202	34,202	1,256	346	2,069	1,231	130	188	539	525	133	196,333
Norfolk	19,712	197,208	8,907	1,714	57,467	802	605	2,202	2,271	82	357	866	627	154	292,973
Portsmouth	19,303	9,022	53,809	4,195	5,523	823	96	976	556	33	135	358	256	62	95,148
Suffolk	5,362	1,787	4,259	23,495	1,922	2,271	34	1,299	878	40	106	385	265	74	42,176
Virginia Beach	33,925	57,234	5,416	1,832	363,907	1,530	8,377	3,675	2,204	216	231	799	967	230	480,542
Isle of Wight	1,340	867	876	2,353	1,672	33,458	54	2,670	1,767	67	103	448	391	97	46,164
Va Bch Waterfront	344	603	93	32	8,370	51	2,298	113	110	6	8	16	19	7	12,070
Newport News	2,281	2,506	1,061	1,383	4,071	2,651	12								

Table H-4 Daily Travel Pattern – Midtown Tunnel & MLK Extension

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	159,896	43,280	27,128	12,438	24,726	1,243	354	1,634	1,015	9	25	22	51	0	271,820
Norfolk	13,281	173,701	4,941	825	28,275	126	357	585	1,039	7	16	21	48	0	223,223
Portsmouth	21,615	14,055	42,949	8,012	2,729	905	47	1,220	747	6	24	25	46	0	92,379
Suffolk	14,826	5,222	9,086	59,373	1,595	5,739	30	3,207	1,759	16	63	87	129	0	101,133
Virginia Beach	55,814	114,236	6,868	2,318	374,525	289	16,967	494	633	5	0	0	16	0	572,164
Isle of Wight	1,162	557	740	4,165	160	27,644	3	2,542	1,344	13	44	61	99	1	38,534
Va Bch Waterfront	846	2,815	137	44	18,553	7	6,397	12	18	0	0	0	0	0	28,828
Newport News	1,542	2,403	996	2,108	305	3,256	3	151,905	33,783	656	9,400	13,867	18,094	1,649	239,968
Hampton	1,663	7,245	1,063	1,745	961	2,513	15	42,043	88,915	649	838	1,145	3,205	143	152,144
Poquoson	93	297	52	97	49	155	0	3,946	5,257	3,393	267	361	1,716	99	15,784
Williamsburg	1	1	0	1	0	2	0	328	32	1	6,723	3,435	1,842	30	12,396
James City	3	5	1	7	0	15	0	2,136	210	9	15,690	40,831	8,018	145	67,071
York	168	569	106	213	82	351	0	21,169	11,219	933	9,406	9,643	24,750	1,795	80,405
Gloucester	0	0	0	1	0	2	0	269	48	3	153	173	291	21,148	22,087
Total	270,910	364,388	94,067	91,348	451,959	42,249	24,174	231,491	146,018	5,700	42,649	69,671	58,304	25,010	1,917,936

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	316,465	48,734	62,103	17,311	103,638	4,588	1,646	10,071	8,942	228	1,745	1,124	1,826	0	578,420
Norfolk	20,109	347,622	5,859	2,302	91,696	996	1,060	5,654	7,284	174	737	631	1,181	1	485,306
Portsmouth	30,606	6,076	127,215	8,578	9,147	1,746	321	3,839	3,362	70	432	339	605	0	192,335
Suffolk	9,194	2,544	8,255	59,195	5,011	4,299	156	4,013	3,172	88	608	365	720	16	97,636
Virginia Beach	53,848	95,620	9,375	5,185	849,511	2,189	22,840	6,760	7,568	211	1,552	950	1,599	0	1,057,209
Isle of Wight	1,865	1,090	1,507	3,867	2,104	80,499	72	5,735	4,590	111	709	442	871	51	103,514
Va Bch Waterfront	351	675	167	81	13,896	37	6,551	102	166	3	34	14	29	0	22,106
Newport News	2,319	3,247	1,955	2,144	3,862	3,734	122	492,065	94,516	1,971	10,706	6,290	34,664	1,103	658,700
Hampton	1,409	2,779	1,141	1,112	3,043	1,849	114	63,402	257,034	1,591	2,155	1,348	9,547	440	346,965
Poquoson	318	513	195	273	658	383	15	11,291	13,585	16,455	734	553	6,969	154	52,096
Williamsburg	30	33	17	22	68	28	3	775	226	9	17,916	3,678	3,317	27	26,147
James City	570	904	433	452	1,183	583	22	11,699	4,450	207	53,894	116,102	18,673	568	209,739
York	502	809	376	453	1,032	622	35	39,457	18,782	1,916	15,102	6,712	63,519	402	149,718
Gloucester	75	135	63	62	148	74	2	1,160	597	31	406	253	507	35,116	38,629
Total	437,661	510,779	218,660	101,037	1,084,998	101,626	32,960	656,022	424,275	23,065	106,731	138,802	144,028	37,878	4,018,520

Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	110,736	19,270	19,578	5,717	34,151	1,339	346	2,278	1,337	124	195	568	563	131	196,333
Norfolk	19,056	201,374	5,878	1,303	57,809	798	609	1,837	2,211	82	334	890	630	162	292,973
Portsmouth	19,727	5,957	56,060	4,365	5,332	880	89	1,108	760	32	147	363	266	63	95,148
Suffolk	5,894	1,371	4,407	22,972	2,131	2,252	43	1,340	900	41	104	382	265	74	42,176
Virginia Beach	33,779	57,706	5,221	2,032	363,584	1,533	8,369	3,688	2,192	216	231	798	965	229	480,542
Isle of Wight	1,429	867	928	2,327	1,672	33,358	61	2,661	1,758	67	102	446	389	97	46,164
Va Bch Waterfront	344	609	88	41	8,361	56	2,295	112	110	6	8	16	19	7	12,070
Newport News	2,507	2,048	1,214	1,420	4,094	2,									

Table H-5 Daily Travel Pattern – Southeastern Parkway & Greenbelt

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	159,478	42,359	26,522	12,168	26,973	1,221	471	1,558	975	8	22	18	47	0	271,820
Norfolk	12,921	171,734	6,235	1,028	28,987	152	386	613	1,069	8	18	23	50	0	223,223
Portsmouth	20,062	17,040	41,612	7,786	3,000	876	56	1,151	707	6	19	21	42	0	92,379
Suffolk	14,068	6,219	8,975	59,315	1,715	5,698	34	3,107	1,727	16	58	77	124	0	101,133
Virginia Beach	59,108	113,250	7,640	2,579	371,131	325	16,933	526	649	5	0	0	17	0	572,164
Isle of Wight	1,096	672	733	4,197	172	27,611	3	2,501	1,343	13	41	54	96	1	38,534
Va Bch Waterfront	950	2,822	158	51	18,544	7	6,265	12	18	0	0	0	0	0	28,828
Newport News	1,500	2,477	997	2,123	318	3,235	4	151,667	33,980	659	9,378	13,798	18,142	1,689	239,968
Hampton	1,615	7,027	1,087	1,798	978	2,576	15	42,220	88,796	649	849	1,155	3,228	151	152,144
Poquoson	90	289	53	101	50	161	0	3,936	5,251	3,394	263	354	1,733	109	15,784
Williamsburg	1	1	0	1	0	2	0	321	31	1	6,724	3,447	1,840	27	12,396
James City	3	5	1	6	0	14	0	2,121	212	8	15,696	40,844	8,022	138	67,071
York	161	558	108	219	83	362	1	21,372	11,164	929	9,391	9,644	24,637	1,777	80,405
Gloucester	0	0	0	1	0	2	0	272	50	3	152	170	293	21,142	22,087
Total	271,053	364,455	94,122	91,372	451,950	42,242	24,168	231,378	145,971	5,698	42,612	69,607	58,272	25,035	1,917,936

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	317,131	48,916	61,146	17,370	103,313	4,611	1,668	10,181	9,111	226	1,750	1,128	1,870	0	578,420
Norfolk	20,377	342,751	10,407	2,623	91,357	1,213	1,052	5,598	7,228	173	731	625	1,171	1	485,306
Portsmouth	29,912	10,518	123,670	8,442	9,317	1,707	311	3,757	3,288	68	421	332	592	0	192,335
Suffolk	9,167	2,827	8,206	59,032	5,004	4,283	155	4,004	3,164	88	607	364	719	16	97,636
Virginia Beach	53,659	95,277	9,517	5,161	849,933	2,188	22,834	6,764	7,564	211	1,552	950	1,599	0	1,057,209
Isle of Wight	1,854	1,299	1,495	3,846	2,101	80,358	72	5,727	4,583	111	708	442	869	51	103,514
Va Bch Waterfront	351	672	165	81	13,898	37	6,553	102	166	3	34	14	29	0	22,106
Newport News	2,325	3,226	1,942	2,141	3,865	3,726	122	492,107	94,508	1,972	10,709	6,291	34,662	1,103	658,700
Hampton	1,417	2,763	1,136	1,111	3,048	1,845	114	63,419	257,033	1,592	2,155	1,348	9,545	440	346,965
Poquoson	322	510	194	273	659	383	15	11,289	13,585	16,458	734	553	6,967	154	52,096
Williamsburg	30	32	17	22	68	28	3	775	226	9	17,917	3,678	3,317	27	26,147
James City	564	898	429	451	1,185	582	22	11,699	4,450	207	53,903	116,110	18,672	567	209,739
York	506	804	373	452	1,033	621	35	39,459	18,786	1,917	15,105	6,712	63,513	402	149,718
Gloucester	74	134	63	62	149	74	2	1,160	597	31	406	253	507	35,117	38,629
Total	437,689	510,628	218,758	101,068	1,084,929	101,654	32,958	656,042	424,288	23,065	106,730	138,800	144,032	37,877	4,018,520

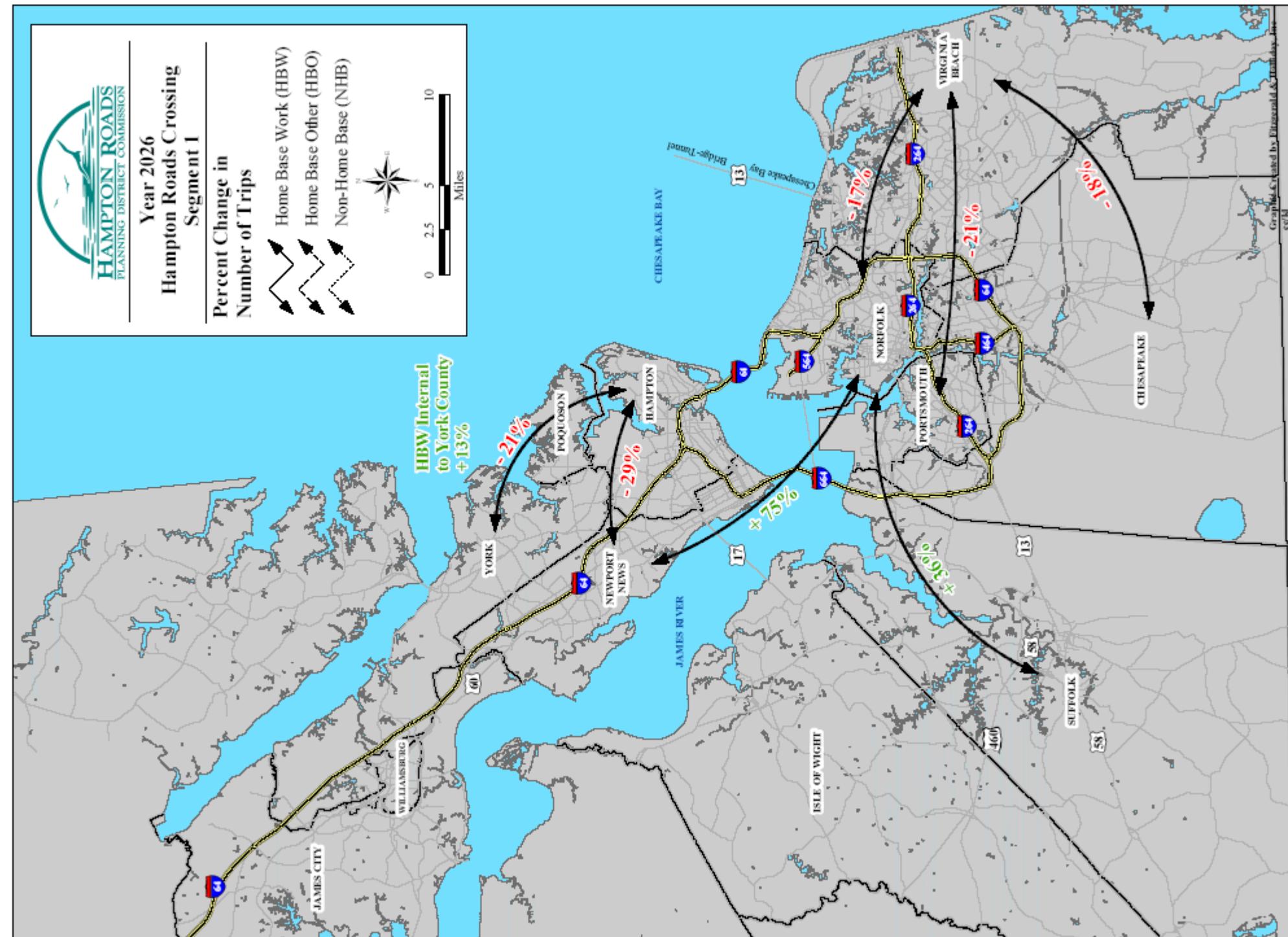
Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	111,238	19,449	19,036	5,652	34,016	1,342	341	2,307	1,337	131	199	577	575	134	196,333
Norfolk	19,266	198,387	8,639	1,576	57,577	788	605	1,845	2,201	82	333	886	627	161	292,973
Portsmouth	19,121	8,765	53,832	4,275	5,522	858	96	1,084	744	30	143	357	260	62	95,148
Suffolk	5,849	1,639	4,325	22,867	2,120	2,243	43	1,332	896	40	103	380	263	74	42,176
Virginia Beach	33,665	57,426	5,422	2,040	363,755	1,534	8,373	3,691	2,195	216	231	799	966	230	480,542
Isle of Wight	1,449	851	911	2,321	1,669	33,394	61	2,654	1,754	67	102	446	389	97	46,164
Va Bch Waterfront	339	605	93	41	8,366	56	2,293	112	110	6	8	16	19	7	12,070
Newport News	2,516	2,056	1,199	1,420	4,085</td										

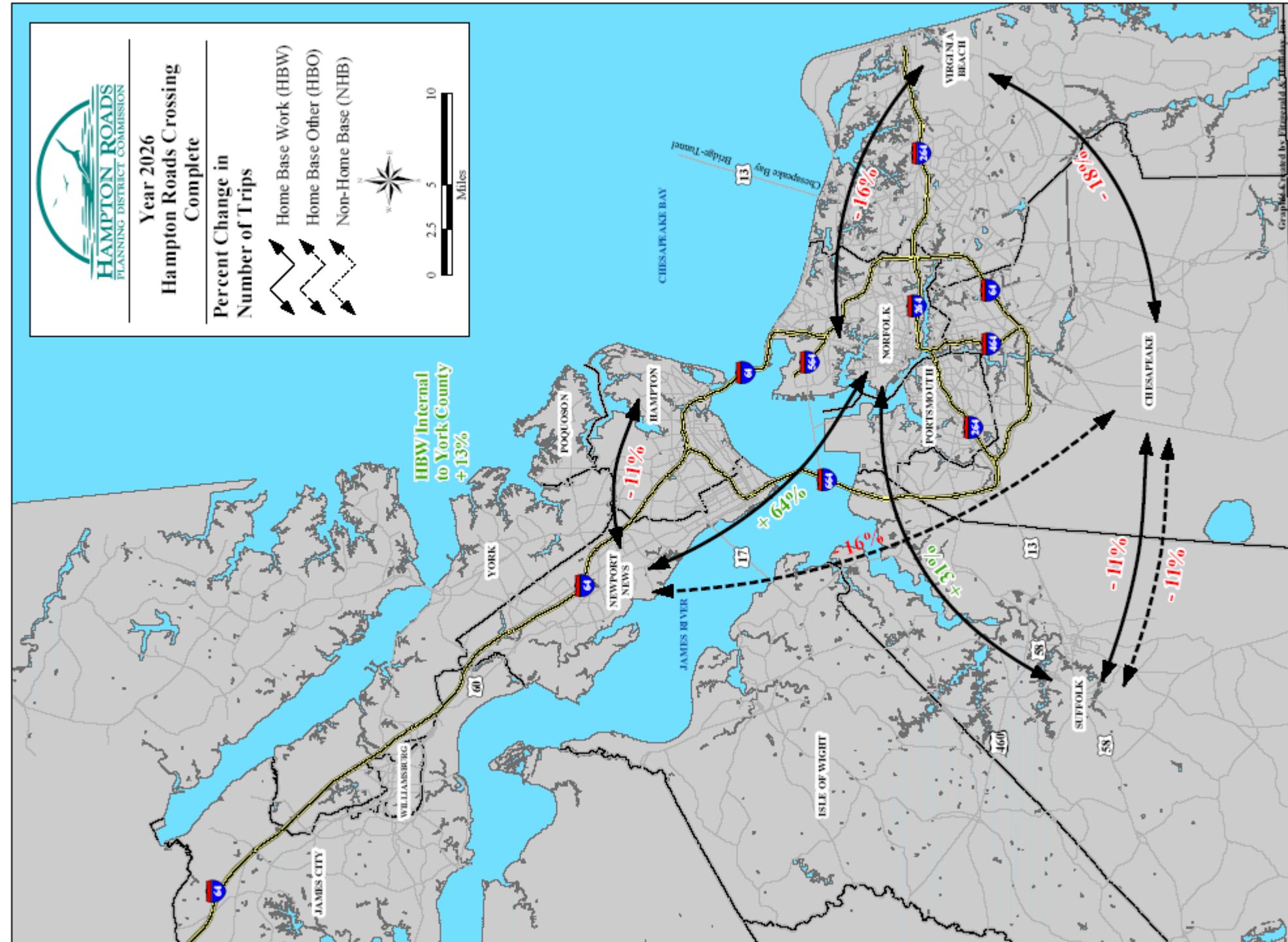
Table H-6 Daily Travel Pattern – Route 460 Realignment

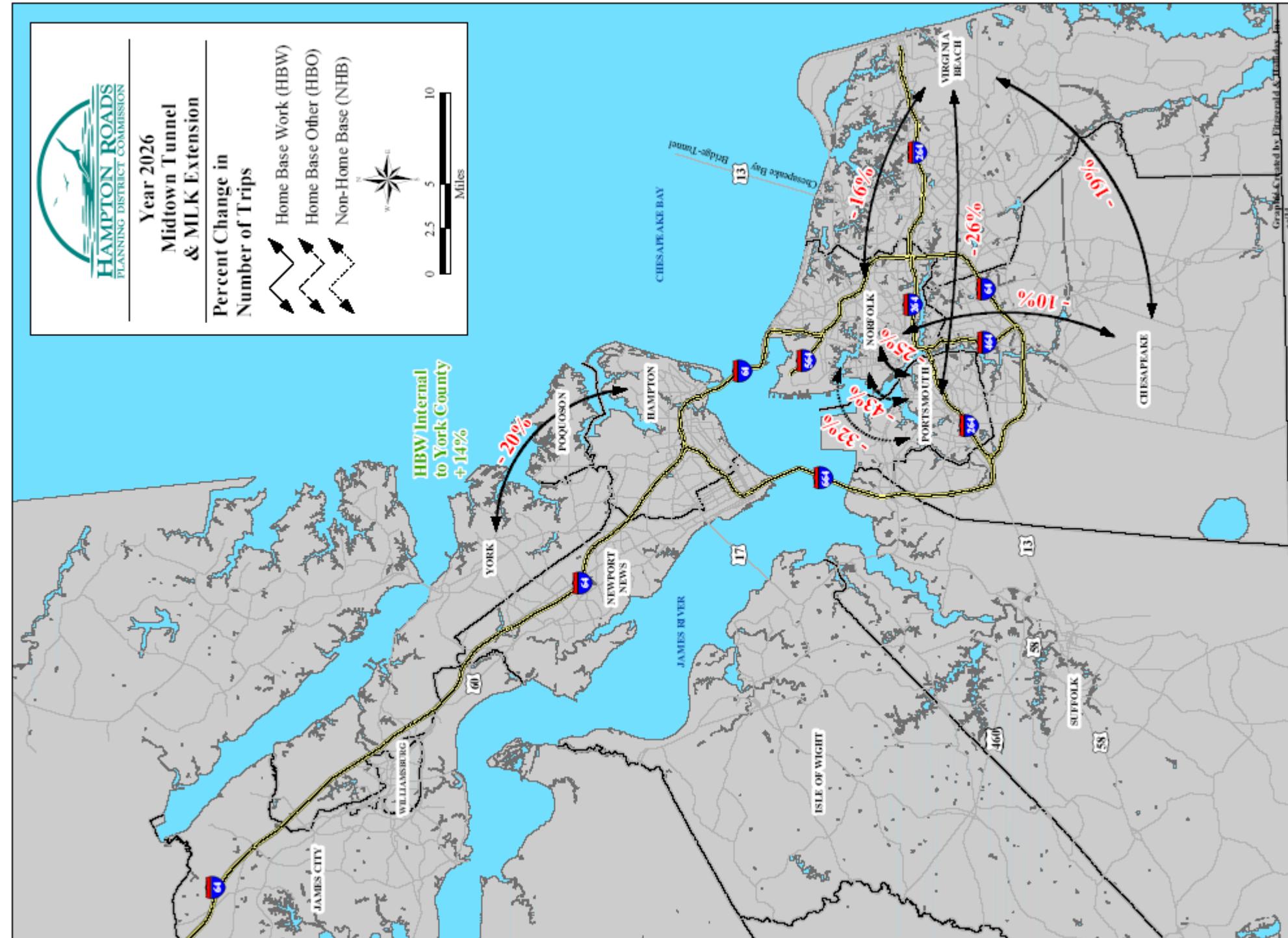
Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	160,015	43,509	27,248	11,546	25,065	1,102	374	1,714	1,077	9	29	37	62	0	271,787
Norfolk	13,896	170,696	6,115	915	29,035	136	390	697	1,192	9	39	40	64	0	223,223
Portsmouth	21,109	16,177	41,908	7,330	2,836	789	53	1,252	772	6	31	37	53	0	92,353
Suffolk	13,720	5,470	8,388	60,218	1,425	5,718	29	3,149	1,721	16	69	100	134	0	100,157
Virginia Beach	56,572	114,016	7,209	2,118	373,653	247	16,993	582	739	6	0	3	26	0	572,163
Isle of Wight	1,036	575	653	4,304	136	26,684	2	2,487	1,300	13	50	68	102	1	37,411
Va Bch Waterfront	893	2,912	152	43	18,465	5	6,321	15	21	0	0	0	0	0	28,828
Newport News	1,613	2,768	1,057	2,018	366	3,184	5	150,474	34,732	664	9,796	14,369	18,029	872	239,948
Hampton	1,741	7,452	1,095	1,657	1,067	2,403	16	42,505	87,309	648	1,151	1,513	3,497	68	152,122
Poquoson	97	305	56	92	54	152	0	3,962	5,207	3,371	303	413	1,745	27	15,782
Williamsburg	1	4	1	2	0	3	0	397	51	2	6,627	3,487	1,815	8	12,396
James City	6	21	4	11	1	22	0	2,604	328	12	15,595	40,419	8,006	42	67,071
York	182	618	117	214	98	369	1	21,641	11,359	940	9,231	9,716	24,897	1,018	80,402
Gloucester	0	0	0	0	0	2	0	195	40	2	87	105	193	21,462	22,087
Total	270,881	364,523	94,002	90,467	452,203	40,816	24,185	231,673	145,848	5,699	43,008	70,305	58,623	23,498	1,915,731

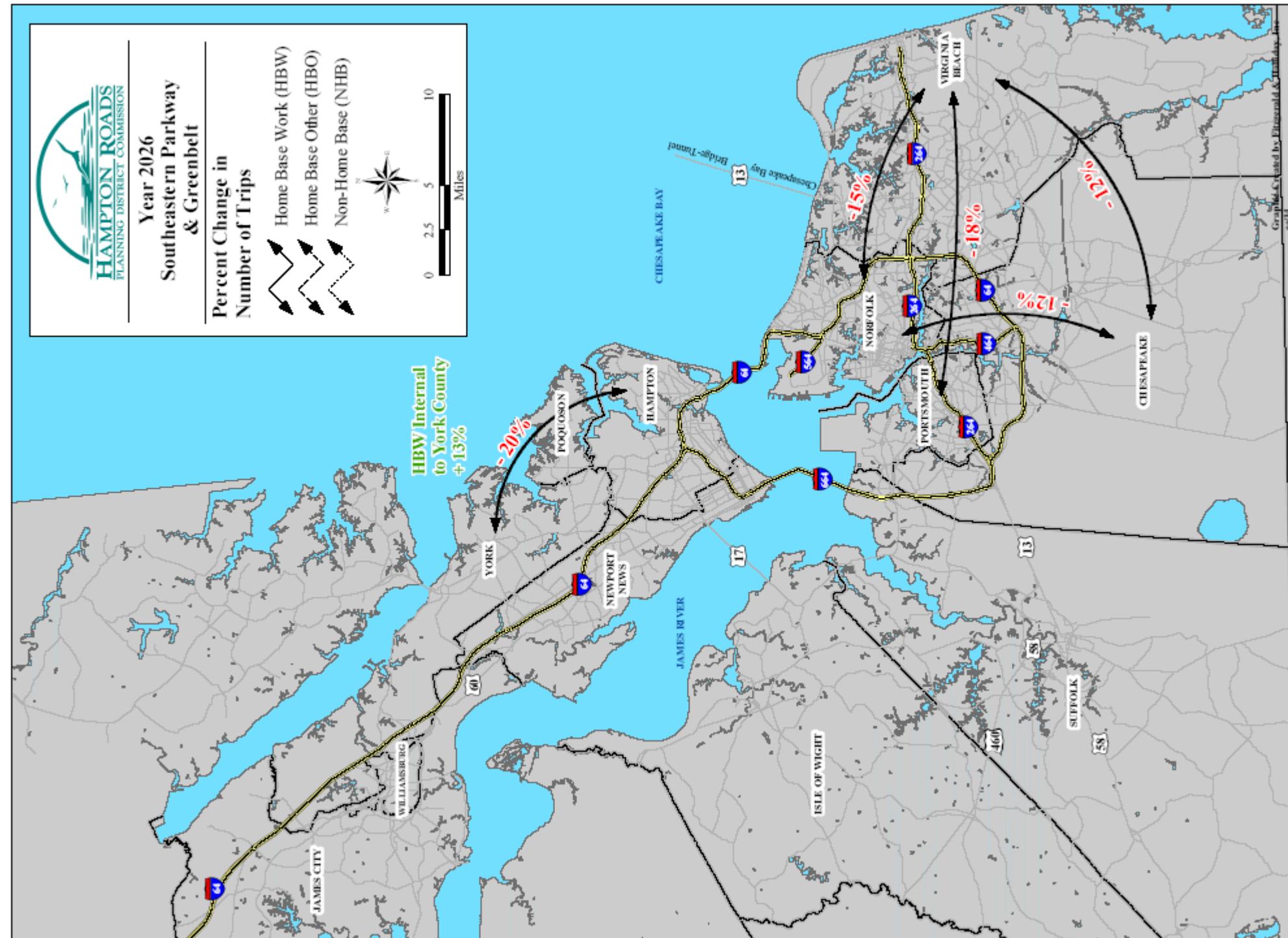
Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	307,337	46,966	59,176	17,824	98,446	5,193	1,538	9,190	8,181	209	1,582	1,014	1,661	0	558,316
Norfolk	20,723	338,346	10,707	2,975	90,095	1,471	1,037	5,456	7,065	169	702	598	1,138	1	480,482
Portsmouth	29,216	9,686	119,904	8,565	8,583	1,918	287	3,426	3,003	62	378	297	537	0	185,863
Suffolk	8,198	2,196	7,369	53,300	3,887	4,097	118	3,117	2,468	69	460	273	551	14	86,118
Virginia Beach	54,471	94,066	9,844	5,882	839,267	2,710	22,566	6,582	7,391	206	1,493	910	1,550	0	1,046,938
Isle of Wight	1,520	988	1,222	3,348	1,610	72,678	52	4,636	3,731	85	531	339	681	42	91,465
Va Bch Waterfront	360	666	171	92	13,754	46	6,486	100	163	3	33	14	29	0	21,917
Newport News	2,438	3,234	2,042	2,448	3,874	4,375	122	487,206	93,645	1,963	10,480	6,141	34,322	1,063	653,353
Hampton	1,476	2,761	1,192	1,264	3,043	2,158	114	62,755	254,500	1,578	2,099	1,308	9,422	423	344,091
Poquoson	330	507	202	308	655	442	15	11,075	13,366	16,225	710	533	6,840	147	51,354
Williamsburg	32	33	18	26	69	34	3	783	229	9	17,878	3,660	3,311	26	26,111
James City	610	920	461	529	1,213	719	23	11,795	4,514	210	53,767	115,422	18,629	559	209,370
York	527	808	393	519	1,037	746	35	39,016	18,621	1,903	15,010	6,647	62,896	388	148,545
Gloucester	81	139	68	73	153	94	2	1,185	612	32	409	254	517	34,977	38,595
Total	427,319	501,317	212,769	97,153	1,065,686	96,679	32,397	646,322	417,489	22,724	105,533	137,409	142,082	37,639	3,942,519

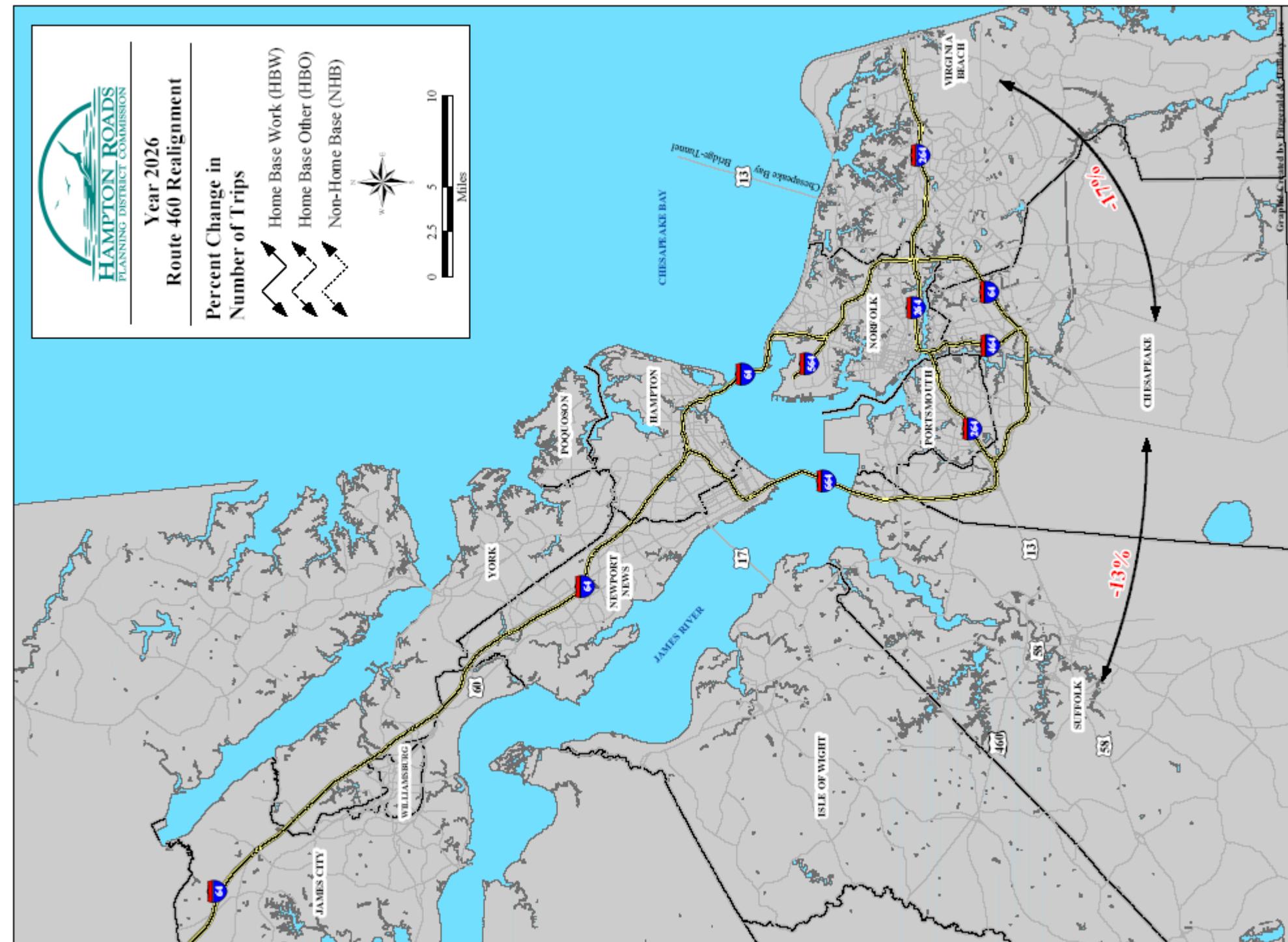
Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	109,825	19,658	19,051	5,611	34,042	1,305	345	2,268	1,329	123	195	566	560	129	195,007
Norfolk	19,422	197,656	8,541	1,534	57,369	762	604	1,840	2,196	81	333	885	625	159	292,005
Portsmouth	19,153	8,680	53,391	4,222	5,484	841	94	1,084	744	30	143	357	260	61	94,544
Suffolk	5,823	1,618	4,294	22,100	2,087	2,161	43	1,307	877	39	102	374	258	71	41,155
Virginia Beach	33,634	57,209	5,363	1,965	362,730	1,498	8,347	3,686	2,189	215	231	798	964	226	479,056
Isle of Wight	1,412	845	900	2,243	1,663	32,127	60	2,609	1,754	67	106	453	396	98	44,733
Va Bch Waterfront	342	603	92	40	8,338	54	2,288	112	110	6	8	16	19	7	12,034
Newport News	2,479	2,043	1,183	1,364	4,071	2,56									

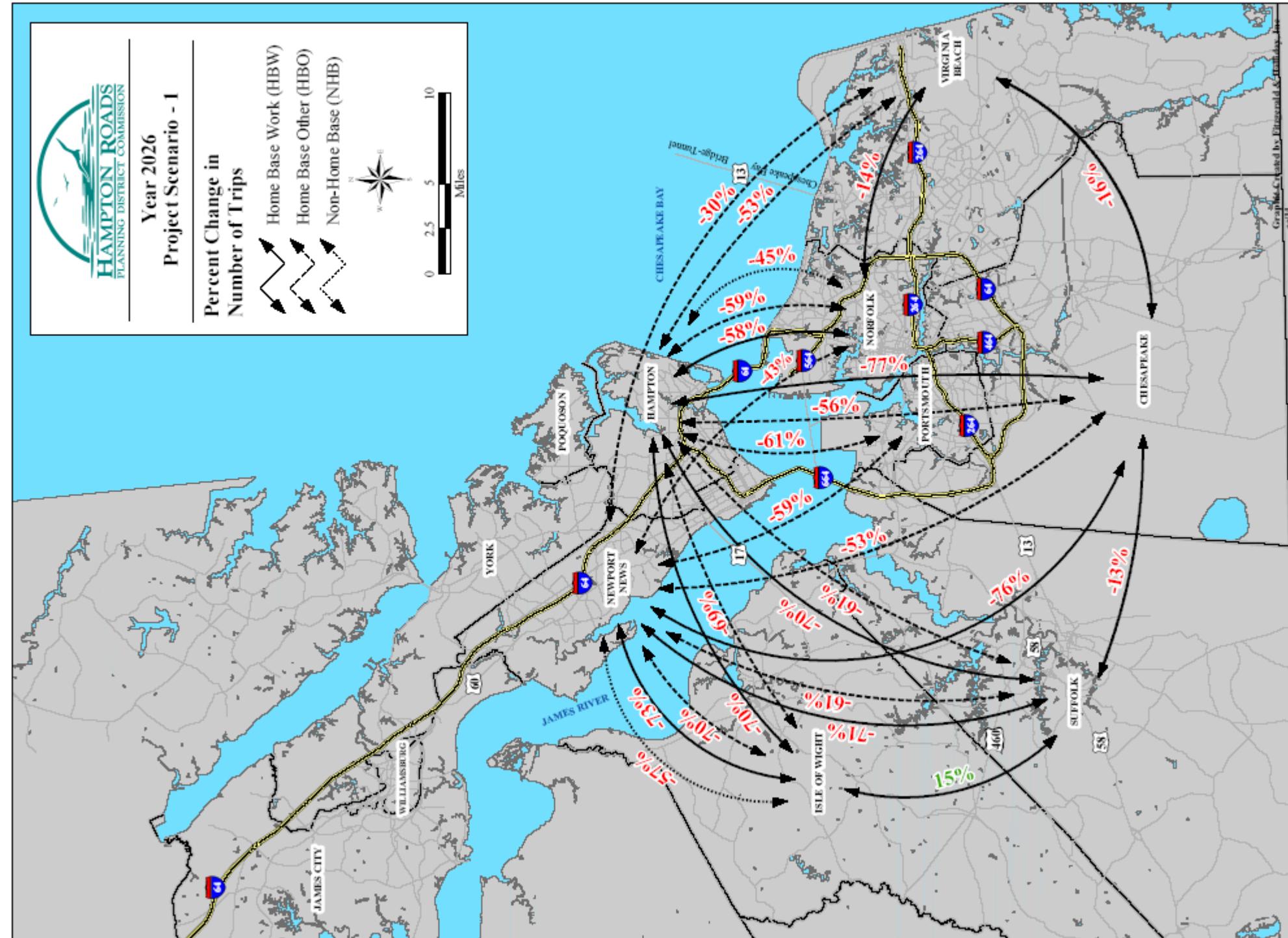


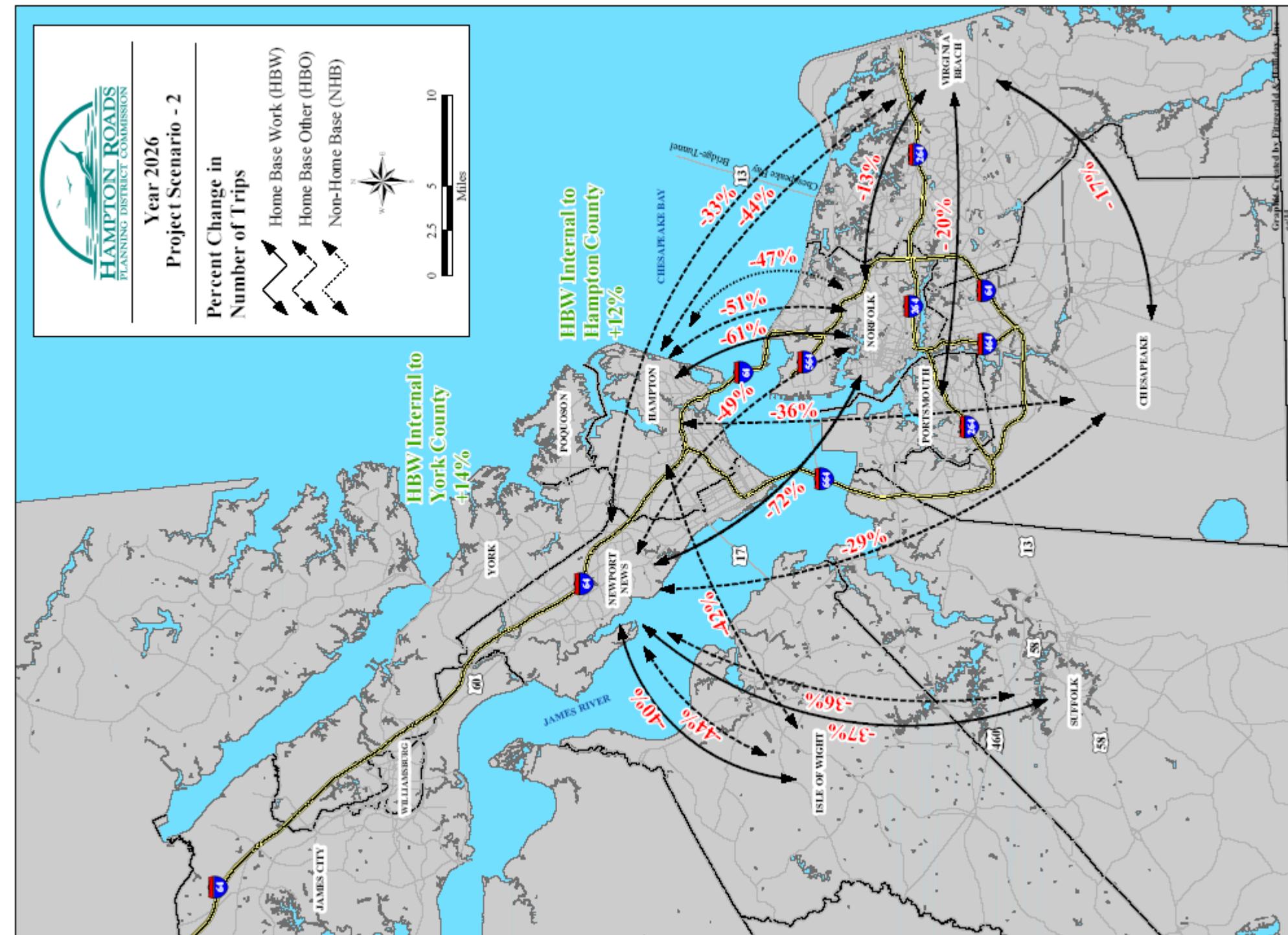


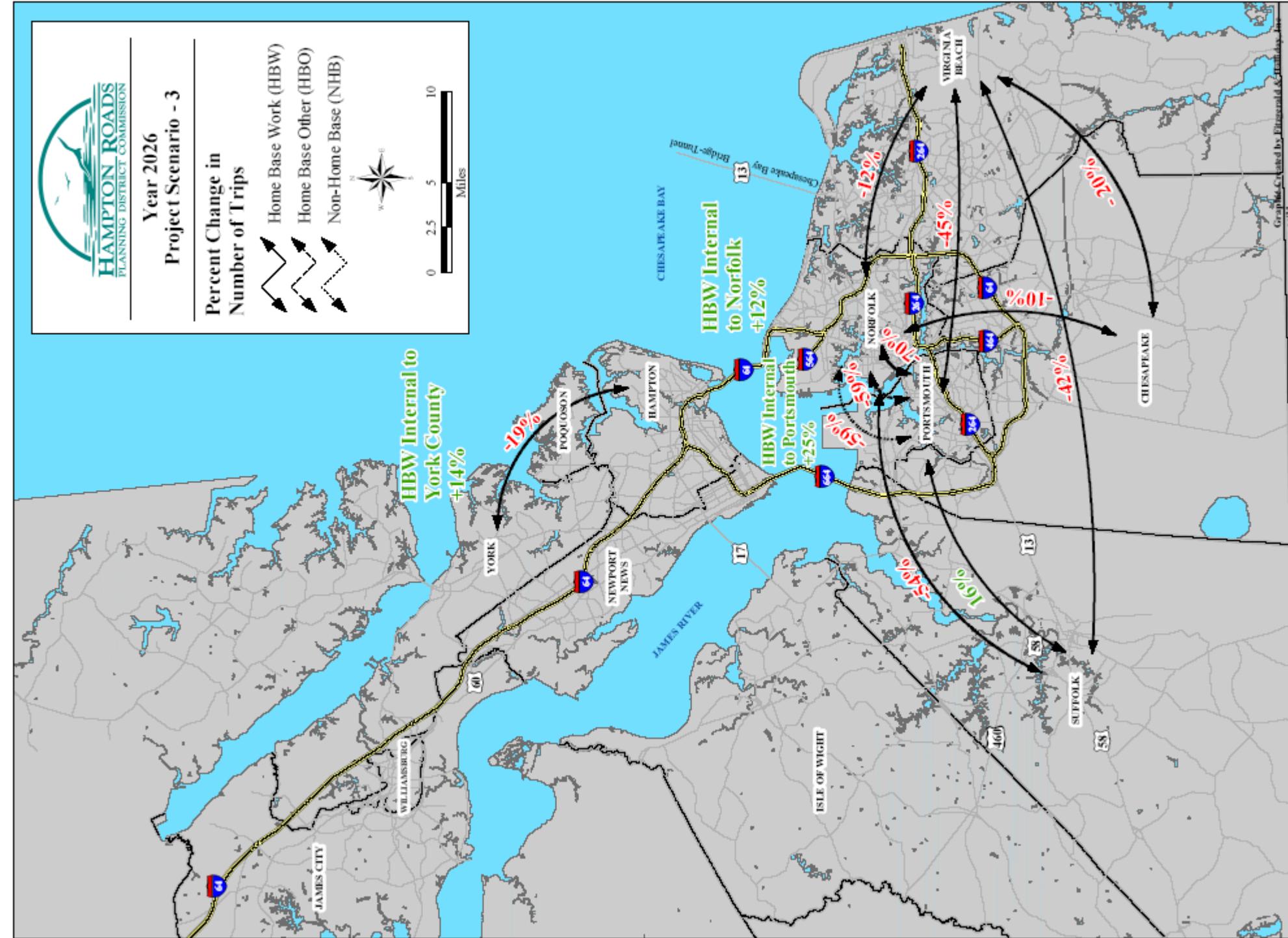












Toll Feasibility Study

Addendum- Appendix B

Reduced Tolls – Travel Patterns

Note: Definition of Project Scenarios:

Features	Project Scenario #1	Project Scenario #2	Project Scenario #3
Projects	<ul style="list-style-type: none">HRX	<ul style="list-style-type: none">Improved HRBT (1)	<ul style="list-style-type: none">Midtown & MLK
Existing/Unimproved, Tolled Roadways	<ul style="list-style-type: none">MMMBTJRBHRBT	<ul style="list-style-type: none">MMMBTJRBHRBT	<ul style="list-style-type: none">Downtown Tunnel

(3) Hampton Roads Crossing Study, Alternative #1

MMMBT – Monitor Merrimac Bridge Tunnel

JRB – James River Bridge

HRBT – Hampton Roads Bridge Tunnel

Table B-1 Daily Travel Pattern – No Project

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	148,431	44,148	27,401	13,387	33,083	1,575	586	1,894	1,078	12	50	71	105	0	271,820
Norfolk	16,135	158,210	7,365	1,226	37,042	204	599	840	1,339	13	64	81	106	0	223,223
Portsmouth	21,277	16,915	39,175	7,715	3,947	1,057	90	1,304	717	8	45	54	73	0	92,379
Suffolk	15,610	6,047	8,353	57,799	2,371	5,664	55	3,203	1,611	21	92	122	181	3	101,133
Virginia Beach	63,196	123,746	8,727	3,090	354,912	432	16,144	818	944	12	27	35	82	0	572,164
Isle of Wight	1,417	759	807	4,116	259	26,439	7	2,939	1,427	20	77	99	163	5	38,534
Va Bch Waterfront	1,153	3,171	218	71	17,554	12	6,597	23	27	1	0	0	2	0	28,828
Newport News	1,789	3,196	997	2,116	548	3,742	12	144,128	38,092	1,029	9,549	13,696	19,260	1,813	239,968
Hampton	1,661	6,872	895	1,497	1,330	2,453	25	44,717	82,527	940	1,712	2,265	4,950	301	152,144
Poquoson	88	325	46	87	67	161	2	4,467	5,194	2,488	398	527	1,825	108	15,784
Williamsburg	2	10	2	3	1	5	0	492	100	5	6,308	3,649	1,777	42	12,396
James City	15	66	9	19	6	38	0	2,847	562	25	15,715	39,584	8,019	166	67,071
York	233	799	125	254	156	470	4	23,198	11,678	1,093	8,894	10,134	21,735	1,633	80,405
Gloucester	1	6	1	2	0	5	0	300	72	4	122	149	277	21,147	22,087
Total	271,010	364,270	94,122	91,381	451,276	42,257	24,119	231,170	145,367	5,671	43,054	70,467	58,554	25,219	1,917,936

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	316,538	49,404	61,376	17,272	103,700	4,575	1,644	10,060	8,932	228	1,744	1,123	1,823	0	578,420
Norfolk	20,550	342,581	10,403	2,635	91,294	1,217	1,055	5,612	7,250	173	733	627	1,175	1	485,306
Portsmouth	30,099	10,486	123,502	8,448	9,312	1,710	311	3,761	3,293	68	421	332	592	0	192,335
Suffolk	9,182	2,813	8,188	59,072	4,991	4,281	155	4,000	3,163	88	606	364	718	16	97,636
Virginia Beach	53,935	95,090	9,525	5,194	849,748	2,191	22,855	6,771	7,582	211	1,554	951	1,602	0	1,057,209
Isle of Wight	1,862	1,293	1,490	3,850	2,095	80,369	72	5,723	4,581	111	707	441	868	51	103,514
Va Bch Waterfront	351	670	165	81	13,896	37	6,557	102	166	3	34	14	29	0	22,106
Newport News	2,322	3,215	1,937	2,145	3,858	3,728	122	492,108	94,534	1,971	10,704	6,288	34,664	1,102	658,700
Hampton	1,411	2,753	1,133	1,113	3,039	1,846	114	63,409	257,071	1,591	2,154	1,347	9,545	439	346,965
Poquoson	318	509	193	273	657	383	15	11,292	13,590	16,455	734	553	6,970	154	52,096
Williamsburg	30	32	17	22	68	28	3	776	226	9	17,917	3,677	3,317	27	26,147
James City	571	895	428	452	1,182	583	22	11,704	4,453	207	53,900	116,099	18,675	567	209,739
York	502	802	372	453	1,031	622	35	39,461	18,788	1,916	15,103	6,711	63,522	402	149,718
Gloucester	75	133	63	62	148	74	2	1,161	598	31	406	253	508	35,115	38,629
Total	437,746	510,675	218,793	101,073	1,085,020	101,643	32,961	655,941	424,228	23,062	106,715	138,781	144,009	37,873	4,018,520

Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	110,696	19,739	19,205	5,672	34,164	1,333	346	2,271	1,331	124	194	566	561	131	196,333
Norfolk	19,558	198,192	8,615	1,573	57,519	786	605	1,842	2,198	82	333	884	626	161	292,973
Portsmouth	19,272	8,746	53,711	4,268	5,522	857	96	1,083	743	30	143	356	260	61	95,148
Suffolk	5,849	1,640	4,324	22,866	2,121	2,241	43	1,333	896	40	103	380	263	74	42,176
Virginia Beach	33,865	57,352	5,412	2,034	363,655	1,536	8,366	3,690	2,193	216	231	798	965	229	480,542
Isle of Wight	1,426	852	911	2,323	1,673	33,405	61	2,657	1,755	67	102	446	389	97	46,164
Va Bch Waterfront	345	604	92	41	8,359	56	2,294	112	110	6	8	16	19	7	12,070
Newport News	2,508	2,057	1,1												

Table B-2 Daily Travel Pattern – Project Scenario #1

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	159,499	43,763	27,403	12,684	24,710	1,327	376	1,294	691	6	17	14	36	0	271,820
Norfolk	15,493	164,344	7,881	1,906	29,790	346	409	1,758	1,149	8	38	35	65	0	223,223
Portsmouth	20,442	19,191	39,937	7,454	2,964	917	55	890	461	4	15	17	31	0	92,379
Suffolk	13,329	9,537	8,167	59,048	1,602	6,196	29	1,999	1,046	9	42	52	78	0	101,133
Virginia Beach	58,248	109,236	8,300	2,947	374,159	380	16,943	1,209	710	5	0	1	24	0	572,164
Isle of Wight	1,122	1,175	739	4,372	175	28,495	3	1,500	812	8	32	40	61	0	38,534
Va Bch Waterfront	951	2,753	187	58	18,405	8	6,410	34	21	0	0	0	0	0	28,828
Newport News	1,123	6,997	737	1,342	618	2,156	9	150,139	33,446	652	9,382	13,648	18,021	1,698	239,968
Hampton	1,137	7,313	767	1,191	824	1,764	14	42,803	89,944	667	949	1,269	3,345	156	152,144
Poquoson	63	342	37	70	43	118	0	4,012	5,287	3,355	268	367	1,716	104	15,784
Williamsburg	1	6	0	1	0	2	0	366	43	2	6,629	3,475	1,843	30	12,396
James City	3	27	1	5	0	13	0	2,387	269	10	15,603	40,576	8,027	151	67,071
York	119	746	83	150	81	242	1	21,425	11,212	936	9,367	9,792	24,463	1,790	80,405
Gloucester	0	1	0	0	0	1	0	282	51	3	148	173	295	21,131	22,087
Total	271,529	365,431	94,241	91,228	453,371	41,965	24,251	230,099	145,143	5,666	42,489	69,458	58,007	25,059	1,917,936

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	320,951	50,436	62,101	16,216	105,788	4,184	1,678	7,352	6,229	158	1,237	697	1,393	0	578,420
Norfolk	20,534	343,796	10,456	2,659	91,858	1,287	1,062	6,005	5,109	127	834	630	950	0	485,306
Portsmouth	30,246	10,939	124,784	8,465	9,540	1,708	319	2,706	2,349	48	412	318	502	0	192,335
Suffolk	8,537	2,982	8,283	62,411	4,805	4,567	150	2,543	2,247	55	359	249	448	0	97,636
Virginia Beach	53,602	95,322	9,395	4,796	852,907	1,881	22,944	6,875	5,974	148	1,296	701	1,367	0	1,057,209
Isle of Wight	1,835	1,468	1,638	4,295	2,098	85,083	71	3,086	2,601	60	436	291	550	1	103,514
Va Bch Waterfront	342	671	163	73	13,962	29	6,590	140	78	4	20	5	29	0	22,106
Newport News	1,542	3,049	1,166	1,122	3,505	1,446	137	496,120	95,760	1,964	10,755	6,266	34,826	1,040	658,700
Hampton	848	1,653	684	620	1,970	765	51	62,828	262,590	1,580	2,135	1,319	9,510	412	346,965
Poquoson	165	386	159	139	412	156	21	11,432	14,102	16,617	740	551	7,072	146	52,096
Williamsburg	19	31	15	13	56	17	2	781	235	9	17,958	3,666	3,320	25	26,147
James City	337	803	346	272	803	307	10	11,901	4,650	211	54,377	116,361	18,818	544	209,739
York	331	590	273	239	814	309	34	39,731	19,282	1,922	15,167	6,703	63,941	382	149,718
Gloucester	38	119	48	34	79	44	0	1,232	651	33	430	265	537	35,119	38,629
Total	439,329	512,247	219,511	101,353	1,088,597	101,782	33,069	652,730	421,856	22,935	106,155	138,024	143,263	37,669	4,018,520

Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	111,257	19,980	19,177	5,390	34,196	1,304	346	1,969	1,336	106	149	477	518	127	196,333
Norfolk	19,861	196,522	9,281	1,948	57,437	934	604	2,532	1,778	80	355	867	620	155	292,973
Portsmouth	19,233	9,378	53,534	4,225	5,564	864	96	1,006	490	48	111	276	267	56	95,148
Suffolk	5,532	2,015	4,282	23,466	2,028	2,368	37	1,027	653	54	107	303	247	58	42,176
Virginia Beach	33,944	57,172	5,457	1,945	363,819	1,534	8,379	3,612	2,336	227	218	754	917	227	480,542
Isle of Wight	1,397	1,009	924	2,469	1,672	35,043	58	1,550	1,057	61	111	429	308	76	46,164
Va Bch Waterfront	345	602	93	35	8,370	54	2,299	97	123	3	7	17	19	7	12,070
Newport News	2,199	2,854	1,105	1,086	3,995	1,538	107	177,572</td							

Table B-3 Daily Travel Pattern – Project Scenario #2

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	158,757	43,814	27,359	12,866	25,192	1,341	389	1,251	764	7	20	16	43	0	271,820
Norfolk	14,193	169,896	6,549	1,120	29,268	169	408	551	972	7	20	23	47	0	223,223
Portsmouth	21,142	17,136	40,803	7,899	2,951	928	58	874	510	5	17	19	36	0	92,379
Suffolk	15,071	6,390	9,013	59,213	1,747	5,978	36	2,238	1,223	11	51	65	97	0	101,133
Virginia Beach	56,645	114,290	7,614	2,638	372,705	343	16,862	445	602	4	0	0	15	0	572,164
Isle of Wight	1,253	730	783	4,308	183	28,241	4	1,859	996	10	38	49	79	1	38,534
Va Bch Waterfront	924	2,926	171	55	18,335	8	6,381	10	17	0	0	0	0	0	28,828
Newport News	1,233	1,985	765	1,581	264	2,674	3	152,397	34,710	660	9,674	13,927	18,345	1,750	239,968
Hampton	1,268	6,191	820	1,304	877	2,037	15	43,569	89,518	666	998	1,326	3,396	158	152,144
Poquoson	71	242	39	77	43	128	0	4,014	5,294	3,381	275	376	1,736	108	15,784
Williamsburg	1	1	0	1	0	2	0	364	41	2	6,629	3,488	1,838	30	12,396
James City	3	6	1	6	0	15	0	2,391	269	10	15,551	40,664	8,002	153	67,071
York	138	440	86	164	70	301	0	21,543	11,142	934	9,400	9,846	24,502	1,838	80,405
Gloucester	0	0	0	0	0	2	0	273	50	3	146	170	289	21,153	22,087
Total	270,699	364,049	94,002	91,233	451,636	42,168	24,156	231,779	146,107	5,698	42,819	69,970	58,425	25,192	1,917,936

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	319,265	50,123	62,111	17,513	105,229	4,620	1,674	7,632	6,635	159	1,325	711	1,424	0	578,420
Norfolk	20,623	346,166	10,403	2,638	92,289	1,198	1,066	3,648	4,926	127	826	554	842	0	485,306
Portsmouth	30,442	10,735	124,901	8,557	9,547	1,733	319	2,645	2,176	52	457	314	458	0	192,335
Suffolk	9,426	2,928	8,399	60,557	5,197	4,477	161	2,796	2,440	62	392	278	521	0	97,636
Virginia Beach	53,899	95,602	9,460	5,170	854,252	2,170	22,970	5,268	5,874	147	871	375	1,151	0	1,057,209
Isle of Wight	1,999	1,390	1,596	4,119	2,266	83,820	78	3,620	3,049	84	462	333	687	10	103,514
Va Bch Waterfront	350	674	164	81	13,979	37	6,594	119	79	4	1	1	24	0	22,106
Newport News	1,555	1,812	1,126	1,239	2,738	1,763	117	497,715	95,748	1,976	10,757	6,251	34,878	1,025	658,700
Hampton	933	1,637	650	691	1,990	912	51	63,265	261,988	1,577	2,094	1,314	9,460	402	346,965
Poquoson	170	350	134	166	412	248	20	11,488	14,065	16,564	739	549	7,048	143	52,096
Williamsburg	19	32	15	15	41	18	0	784	234	9	17,972	3,664	3,320	25	26,147
James City	315	630	337	328	399	370	3	11,998	4,641	212	54,543	116,558	18,868	537	209,739
York	329	497	244	288	721	408	30	39,901	19,192	1,919	15,179	6,699	63,935	375	149,718
Gloucester	38	87	47	44	36	49	0	1,261	653	33	438	269	547	35,127	38,629
Total	439,362	512,661	219,587	101,406	1,089,097	101,821	33,083	652,141	421,701	22,925	106,054	137,872	143,162	37,646	4,018,520

Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	110,927	19,775	19,306	5,747	34,194	1,371	348	1,979	1,311	108	160	470	511	126	196,333
Norfolk	19,597	198,954	8,639	1,588	57,600	807	608	1,986	1,541	86	195	624	617	130	292,973
Portsmouth	19,379	8,768	53,943	4,324	5,536	884	96	979	493	42	107	276	264	57	95,148
Suffolk	5,929	1,660	4,383	23,146	2,142	2,324	44	1,095	684	43	111	316	239	62	42,176
Virginia Beach	33,894	57,451	5,422	2,050	364,048	1,562	8,404	3,320	2,365	215	190	632	765	225	480,542
Isle of Wight	1,481	881	949	2,429	1,717	34,607	63	1,846	1,200	70	110	423	307	80	46,164
Va Bch Waterfront	346	606	93	42	8,394	57	2,306	59	121	3	4	17	16	7	12,070
Newport News	2,184	2,215	1,088	1,175	3,731	1,865	65	177,869	37,485	1,					

Table B-4 Daily Travel Pattern – Project Scenario #3

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	158,849	43,608	26,618	12,639	25,578	1,287	394	1,680	1,049	9	26	26	56	0	271,820
Norfolk	13,947	172,174	4,363	833	29,526	128	409	635	1,094	8	24	27	55	0	223,223
Portsmouth	21,231	12,907	44,376	8,120	2,630	933	49	1,255	768	6	27	28	49	0	92,379
Suffolk	14,994	5,055	9,445	58,951	1,712	5,669	35	3,201	1,766	16	65	91	134	0	101,133
Virginia Beach	56,235	116,678	5,983	2,429	372,387	309	16,883	544	688	6	0	1	21	0	572,164
Isle of Wight	1,200	548	789	4,162	171	27,433	3	2,607	1,389	13	46	65	106	2	38,534
Va Bch Waterfront	915	2,981	130	50	18,344	7	6,367	14	19	0	0	0	0	0	28,828
Newport News	1,566	2,542	1,054	2,072	341	3,298	5	150,632	34,370	656	9,542	13,865	18,265	1,761	239,968
Hampton	1,691	6,997	1,112	1,753	1,014	2,613	16	42,562	88,132	668	916	1,231	3,281	158	152,144
Poquoson	96	282	56	106	51	180	0	3,966	5,204	3,366	270	368	1,731	108	15,784
Williamsburg	1	2	0	1	0	2	0	352	40	2	6,641	3,481	1,844	30	12,396
James City	4	10	2	8	0	17	0	2,286	255	10	15,627	40,666	8,031	154	67,071
York	169	559	111	215	86	368	1	21,367	11,070	933	9,399	9,814	24,468	1,844	80,405
Gloucester	0	0	0	1	0	2	0	274	49	3	147	171	290	21,149	22,087
Total	270,897	364,344	94,039	91,340	451,840	42,248	24,164	231,373	145,893	5,695	42,731	69,835	58,330	25,207	1,917,936

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	316,515	48,922	61,832	17,299	103,696	4,586	1,646	10,064	8,938	228	1,746	1,124	1,825	0	578,420
Norfolk	20,230	348,747	4,320	2,306	91,934	984	1,064	5,678	7,308	175	741	633	1,186	1	485,306
Portsmouth	30,372	4,748	128,938	8,575	9,003	1,744	315	3,836	3,358	70	432	339	605	0	192,335
Suffolk	9,199	2,531	8,318	59,172	4,996	4,296	155	4,007	3,167	88	607	364	719	16	97,636
Virginia Beach	53,877	95,724	9,248	5,198	849,459	2,193	22,845	6,769	7,579	211	1,554	952	1,602	0	1,057,209
Isle of Wight	1,867	1,068	1,528	3,869	2,101	80,502	72	5,734	4,589	111	709	442	870	51	103,514
Va Bch Waterfront	351	675	166	82	13,894	37	6,552	102	166	3	34	14	29	0	22,106
Newport News	2,322	3,246	1,983	2,147	3,856	3,735	122	492,047	94,509	1,971	10,705	6,290	34,662	1,103	658,700
Hampton	1,411	2,778	1,156	1,114	3,039	1,850	114	63,402	257,022	1,591	2,155	1,348	9,547	440	346,965
Poquoson	318	513	198	274	657	383	15	11,290	13,584	16,454	734	553	6,969	154	52,096
Williamsburg	30	33	17	22	68	28	3	775	226	9	17,916	3,678	3,317	27	26,147
James City	570	904	439	452	1,181	584	22	11,698	4,449	207	53,892	116,100	18,673	568	209,739
York	502	809	381	453	1,030	623	35	39,456	18,781	1,916	15,102	6,711	63,517	402	149,718
Gloucester	75	135	64	62	148	74	2	1,160	597	31	406	253	507	35,116	38,629
Total	437,639	510,831	218,588	101,024	1,085,061	101,618	32,962	656,019	424,273	23,065	106,732	138,803	144,028	37,878	4,018,520

Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	110,773	19,407	19,386	5,714	34,170	1,339	346	2,279	1,337	124	195	568	563	131	196,333
Norfolk	19,194	201,893	5,082	1,296	57,929	809	610	1,842	2,214	82	335	892	632	162	292,973
Portsmouth	19,511	5,199	57,090	4,382	5,240	884	86	1,116	763	32	147	366	268	64	95,148
Suffolk	5,892	1,361	4,440	22,958	2,128	2,251	43	1,339	900	41	103	382	264	74	42,176
Virginia Beach	33,813	57,817	5,082	2,034	363,567	1,534	8,371	3,691	2,194	216	231	798	966	230	480,542
Isle of Wight	1,429	877	938	2,327	1,670	33,343	61	2,661	1,757	67	102	446	389	97	46,164
Va Bch Waterfront	344	610	83	41	8,362	56	2,296	112	110	6	8	16	19	7	12,070
Newport News	2,507	2,049	1,229	1,420	4,090										

Table B-5 Daily Travel Pattern – Southeastern Parkway and Greenbelt

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	154,737	44,795	27,307	12,525	28,038	1,248	471	1,602	993	8	25	22	50	0	271,820
Norfolk	13,913	170,433	6,124	1,021	29,392	152	403	613	1,076	8	17	22	49	0	223,223
Portsmouth	20,828	16,989	40,859	7,721	3,103	870	58	1,150	705	6	23	24	43	0	92,379
Suffolk	14,495	6,211	8,827	58,999	1,764	5,677	34	3,123	1,711	15	62	86	127	0	101,133
Virginia Beach	61,602	112,080	7,953	2,740	369,305	349	16,892	562	658	5	0	0	17	0	572,164
Isle of Wight	1,147	676	728	4,159	178	27,583	3	2,515	1,326	13	44	61	100	1	38,534
Va Bch Waterfront	964	2,822	158	49	18,525	7	6,273	12	18	0	0	0	0	0	28,828
Newport News	1,553	2,480	990	2,115	330	3,258	4	151,562	33,852	659	9,443	13,805	18,230	1,687	239,968
Hampton	1,674	7,089	1,067	1,778	1,018	2,559	16	42,149	88,848	645	844	1,142	3,177	138	152,144
Poquoson	94	291	52	101	52	160	0	3,930	5,270	3,387	268	358	1,719	101	15,784
Williamsburg	1	1	0	1	0	2	0	325	31	1	6,716	3,450	1,840	28	12,396
James City	3	5	1	7	0	15	0	2,156	211	8	15,658	40,853	8,011	144	67,071
York	169	562	106	219	86	371	1	21,378	11,199	939	9,367	9,627	24,613	1,767	80,405
Gloucester	0	0	0	1	0	3	0	271	50	3	151	169	294	21,145	22,087
Total	271,180	364,435	94,172	91,436	451,791	42,254	24,156	231,349	145,948	5,698	42,619	69,618	58,271	25,011	1,917,936

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	316,939	49,203	60,961	17,286	103,834	4,559	1,661	10,038	9,030	227	1,735	1,114	1,832	0	578,420
Norfolk	20,449	342,670	10,449	2,633	91,269	1,217	1,053	5,612	7,246	173	733	627	1,174	1	485,306
Portsmouth	29,893	10,481	123,765	8,444	9,282	1,707	310	3,755	3,286	68	420	332	591	0	192,335
Suffolk	9,157	2,816	8,212	59,071	4,986	4,283	155	4,002	3,162	88	606	364	718	16	97,636
Virginia Beach	53,875	95,186	9,558	5,182	849,684	2,195	22,843	6,781	7,583	212	1,555	952	1,603	0	1,057,209
Isle of Wight	1,847	1,294	1,496	3,851	2,094	80,377	72	5,724	4,580	111	707	441	868	51	103,514
Va Bch Waterfront	351	671	166	82	13,896	37	6,555	102	166	3	34	14	29	0	22,106
Newport News	2,319	3,217	1,945	2,145	3,854	3,730	122	492,128	94,504	1,972	10,708	6,290	34,665	1,102	658,700
Hampton	1,412	2,755	1,137	1,113	3,038	1,847	114	63,433	257,037	1,591	2,155	1,348	9,545	440	346,965
Poquoson	322	509	194	273	657	383	15	11,292	13,587	16,455	734	553	6,968	154	52,096
Williamsburg	30	32	17	22	68	28	3	775	226	9	17,917	3,677	3,317	27	26,147
James City	562	895	430	452	1,181	583	22	11,702	4,451	207	53,904	116,107	18,676	567	209,739
York	504	802	374	453	1,030	622	35	39,461	18,787	1,916	15,104	6,711	63,518	402	149,718
Gloucester	74	133	63	62	148	74	2	1,161	598	31	406	253	508	35,115	38,629
Total	437,734	510,666	218,767	101,067	1,085,022	101,643	32,961	655,965	424,244	23,063	106,718	138,783	144,014	37,874	4,018,520

Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	110,765	19,698	19,083	5,660	34,251	1,338	346	2,265	1,341	125	194	570	566	131	196,333
Norfolk	19,515	198,219	8,628	1,573	57,520	787	605	1,843	2,199	82	333	885	626	161	292,973
Portsmouth	19,168	8,754	53,802	4,270	5,525	857	96	1,083	743	30	143	356	260	62	95,148
Suffolk	5,835	1,641	4,330	22,873	2,122	2,243	43	1,333	896	40	103	381	264	74	42,176
Virginia Beach	33,945	57,354	5,417	2,036	363,565	1,536	8,369	3,688	2,192	216	231	798	965	229	480,542
Isle of Wight	1,436	852	911	2,323	1,671	33,399	61	2,656	1,755	67	102	446	389	97	46,164
Va Bch Waterfront	345	604	93	41	8,362	56	2,292	112	110	6	8	16	19	7	12,070
Newport News	2,489	2,057	1,199	1,420	4,089</										

Table B-6 Daily Travel Pattern – Route 460 Realignment

Home-Based Work	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	159,927	43,557	27,197	11,470	25,088	1,207	378	1,717	1,076	9	30	38	62	0	271,757
Norfolk	13,944	170,456	6,173	919	29,129	148	397	706	1,196	9	40	41	64	0	223,221
Portsmouth	21,064	16,207	41,884	7,275	2,840	866	54	1,249	769	6	32	38	53	0	92,336
Suffolk	13,637	5,446	8,327	59,852	1,416	6,049	29	3,144	1,718	15	69	101	132	0	99,935
Virginia Beach	56,632	114,091	7,210	2,120	373,482	283	16,980	588	740	6	1	4	26	0	572,161
Isle of Wight	1,090	606	692	4,558	145	25,946	3	2,511	1,315	13	51	70	102	0	37,102
Va Bch Waterfront	891	2,915	153	43	18,464	7	6,318	15	21	0	0	0	0	0	28,828
Newport News	1,599	2,777	1,046	2,012	365	3,240	5	150,584	34,717	655	9,781	14,373	17,875	911	239,938
Hampton	1,728	7,411	1,088	1,659	1,061	2,454	16	42,597	87,235	644	1,161	1,528	3,468	63	152,114
Poquoson	97	308	55	92	54	153	0	3,941	5,210	3,382	309	420	1,735	25	15,781
Williamsburg	1	4	1	2	0	3	0	396	52	2	6,630	3,487	1,810	9	12,396
James City	7	21	4	11	1	23	0	2,608	334	12	15,614	40,411	7,986	40	67,071
York	178	631	115	213	97	367	1	21,427	11,424	944	9,209	9,702	25,113	978	80,401
Gloucester	0	0	0	0	0	1	0	188	37	2	87	101	199	21,471	22,087
Total	270,794	364,429	93,944	90,226	452,144	40,747	24,182	231,671	145,845	5,699	43,012	70,312	58,625	23,498	1,915,128

Home-Based Other	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	307,335	46,966	59,176	17,823	98,445	5,193	1,538	9,190	8,181	209	1,582	1,014	1,661	0	558,312
Norfolk	20,723	338,345	10,707	2,975	90,095	1,471	1,037	5,456	7,065	169	702	598	1,138	1	480,481
Portsmouth	29,215	9,686	119,902	8,565	8,582	1,918	287	3,426	3,003	62	378	297	537	0	185,859
Suffolk	8,198	2,196	7,370	53,302	3,887	4,097	118	3,118	2,468	69	460	273	551	14	86,121
Virginia Beach	54,471	94,066	9,844	5,882	839,265	2,709	22,566	6,582	7,391	206	1,493	910	1,550	0	1,046,937
Isle of Wight	1,520	988	1,222	3,348	1,611	72,684	52	4,637	3,732	85	532	339	681	42	91,474
Va Bch Waterfront	360	667	171	92	13,754	46	6,486	100	163	3	33	14	29	0	21,917
Newport News	2,438	3,234	2,042	2,448	3,874	4,374	122	487,205	93,645	1,963	10,480	6,141	34,322	1,063	653,352
Hampton	1,476	2,761	1,192	1,264	3,043	2,157	114	62,755	254,500	1,578	2,099	1,308	9,422	423	344,090
Poquoson	330	507	202	308	655	442	15	11,075	13,366	16,225	710	533	6,840	147	51,354
Williamsburg	32	33	18	26	69	34	3	783	229	9	17,878	3,660	3,311	26	26,111
James City	610	920	461	529	1,213	719	23	11,795	4,514	210	53,767	115,422	18,629	559	209,370
York	527	808	393	519	1,037	746	35	39,016	18,621	1,903	15,010	15,647	62,895	388	148,545
Gloucester	81	139	68	73	153	93	2	1,185	612	32	409	254	517	34,977	38,595
Total	427,317	501,316	212,768	97,154	1,065,684	96,683	32,397	646,322	417,489	22,724	105,533	137,409	142,082	37,639	3,942,517

Non Home-Based	Chesapeake	Norfolk	Portsmouth	Suffolk	Virginia Beach	Isle of Wight	Va Bch Waterfront	Newport News	Hampton	Poquoson	Williamsburg	James City	York	Gloucester	Total
	1	2	3	4	5	6	7	11	12	13	14	15	16	17	
Chesapeake	109,821	19,658	19,050	5,610	34,043	1,314	345	2,268	1,329	123	195	566	561	129	195,011
Norfolk	19,420	197,663	8,541	1,533	57,369	754	603	1,840	2,196	81	333	885	625	159	292,003
Portsmouth	19,152	8,681	53,388	4,222	5,484	842	94	1,084	744	30	143	357	260	61	94,541
Suffolk	5,822	1,618	4,294	22,093	2,087	2,165	43	1,307	877	39	102	375	258	71	41,151
Virginia Beach	33,632	57,210	5,363	1,964	362,732	1,497	8,346	3,686	2,190	215	231	798	964	226	479,055
Isle of Wight	1,423	836	901	2,247	1,662	32,120	61	2,609	1,754	67	106	453	396	98	44,733
Va Bch Waterfront	342	603	92	40	8,337	55	2,288	112	110	6	8	16	19	7	12,034
Newport News	2,479	2,043	1,183	1,364	4,071	2,562</									

