Successful Intermodal Corridor Management in Hampton Roads VA

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Presented to NCHRP Domestic Scan 14-02
Successful Intermodal Corridor Management Practices for Sustainable System Performance
San Diego, CA
1:00pm-2:30pm, Wednesday, October 21, 2015

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

Overview

- Transportation is about **numbers** and **people**.
  - Numbers
    - Travel time
    - Crashes
    - Vehicles per day
  - People
    - Users
    - Government
      - 3 branches

Table 2: 2040 LRTP Highway Candidate Projects

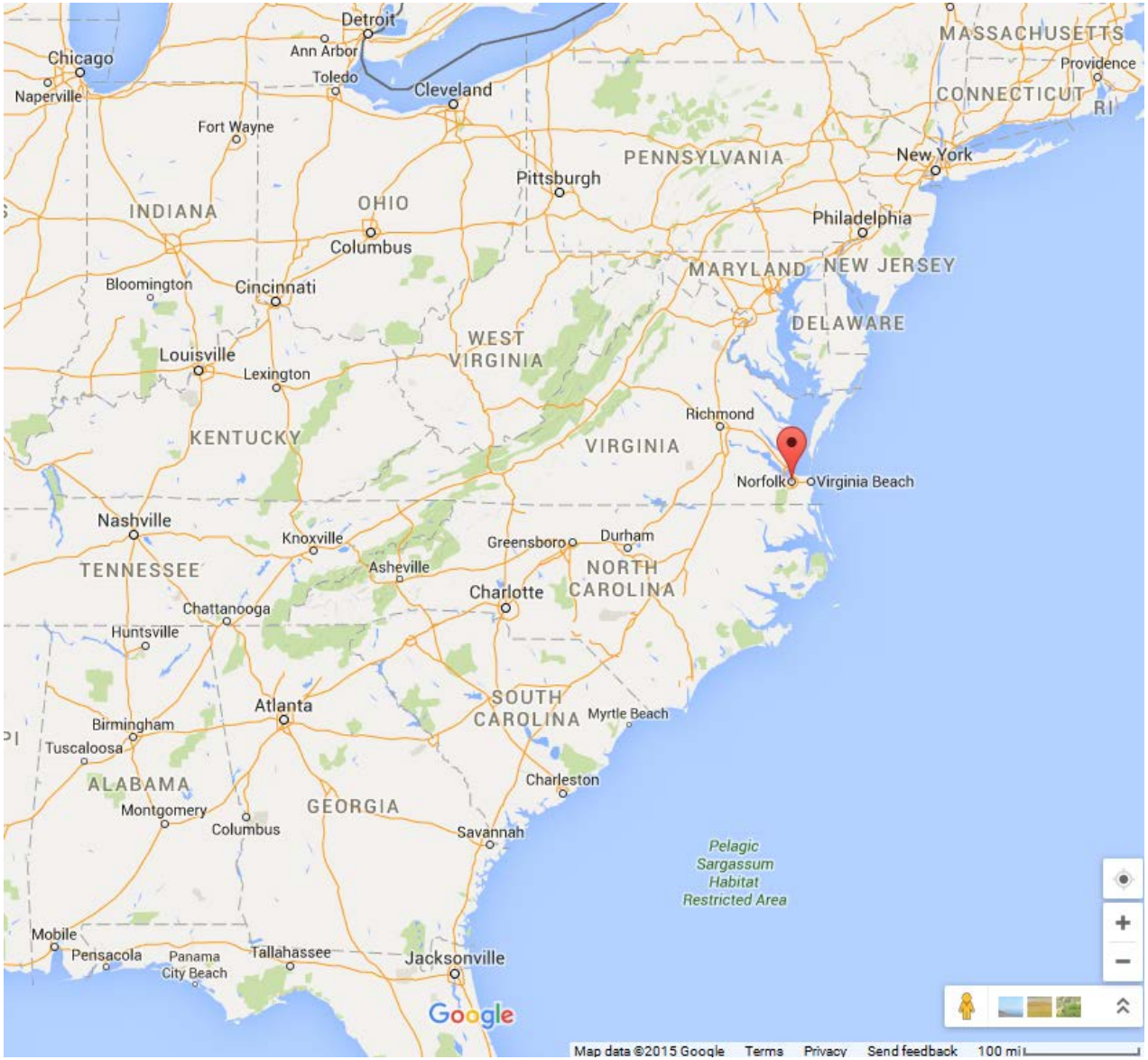
2040 Project ID	Project Name	From	To	Jurisdiction	PROJECT UTILITY TOTAL [MAX 100 POINTS]	ECONOMIC VITALITY TOTAL [MAX 100 POINTS]	PROJECT VIABILITY TOTAL [MAX 100 POINTS]	GRAND TOTAL SCORE [MAX 300 POINTS]
INTERSTATE								
2040-77	I-64 Peninsula (8-Lane Option)	Bland Blvd	New Kent County Line	Multi-jurisdictional	86	85	33	204
PRIMARY								
2040-96	Southeastern Pkwy and Greenbelt	I-264	I-64/I-464	Multi-jurisdictional	70	87	18	178
2040-23	Dominion Blvd Phase II	0.73 mi South of Cedar Rd	Existing 4-lane Segment South of Cedar Rd	Chesapeake	71	25	81	177
2040-189	G.W. Mem Hwy (US 17)	Dare Rd	Denbigh Blvd (Rte 173)	York County	84	46	10	140
2040-40	G.W. Mem Hwy (US 17)	1 mi North of Coleman Bridge	Main St (@ Walmart)	Gloucester	72	63	5	140
2040-188	J. Clyde Morris Blvd / G.W. Hwy (US 17)	Newport News CL	1.39 mi South of Rte 620 (Lakeside Dr / Oriana Rd)	York County	78	54	5	137
2040-82A	US 60 Relocation	Fort Eustis Blvd	Merrimac Trail (Rte 143)	Multi-jurisdictional	66	45	25	136
2040-82	US 60 Relocation	Fort Eustis Blvd	Green Mount Pkwy	Multi-jurisdictional	59	45	26	130
2040-26	Military Hwy	Alison Dr	Virginia Beach CL	Chesapeake	69	56	5	130
2040-26	G.W. Hwy (US 17)	Yadkin Rd	Canal Dr	Chesapeake	67	50	8	125
2040-187	G.W. Mem Hwy (US 17)	Fort Eustis Blvd (Rte 105)	Coleman Bridge	York County	69	50	5	124
2040-16	Centerville Tnpk	Mount Pleasant Rd	Virginia Beach CL	Chesapeake	58	55	5	118
2040-203	Victory Blvd (Rte 171)	Poquoson CL	Hampton Hwy (Rte 134)	Multi-jurisdictional	70	39	5	114
2040-196	G.W. Mem Hwy (US 17)	Denbigh Blvd (Rte 173)	Fort Eustis Blvd (Rte 105)	York County	68	40	5	113
2040-81	Skiffes Creek Connector	Green Mount Pkwy	Merrimac Trail (Rte 143)	James City County	43	33	23	99
2040-202	Victory Blvd (Rte 171)	G.W. Mem Hwy (US 17)	Hampton Hwy (Rte 134)	York County	70	24	5	99
2040-83	US 460/58/13 (8-Lane Option)	Bowers Hill	Suffolk Bypass	Multi-jurisdictional	56	35	0	91
2040-49	US 258	US 460	Sunset Dr	Isle of Wight	70	15	5	90
2040-122	Victory Blvd (Rte 171)	Wythe Creek Rd (Rte 172)	York County CL	Multi-jurisdictional	49	32	15	86
2040-189	Denbigh Blvd (Rte 173)	Newport News CL	G.W. Mem Hwy (US 17)	Multi-jurisdictional	55	28	5	88
2040-41	G.W. Mem Hwy (US 17)	Main St (@ Walmart)	Ark Rd	Gloucester	53	18	5	76

- Any success we've had at HRTPO in ICM is due to "**numbers**" (analysis) and "**people**" (staff, relationships)

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

The Situation

Hampton Roads

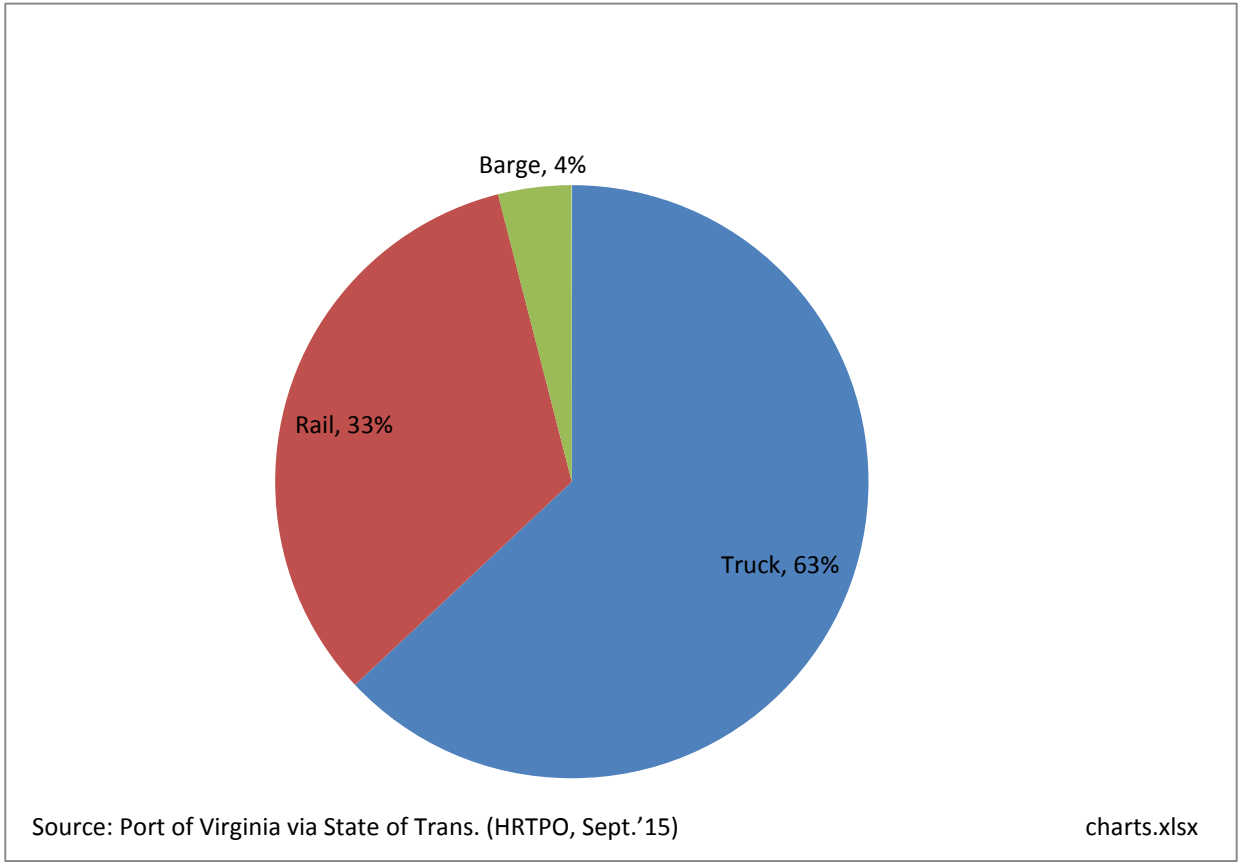


the heartbeat of HAMPTON ROADS TPO
Transportation Planning Organization

HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION

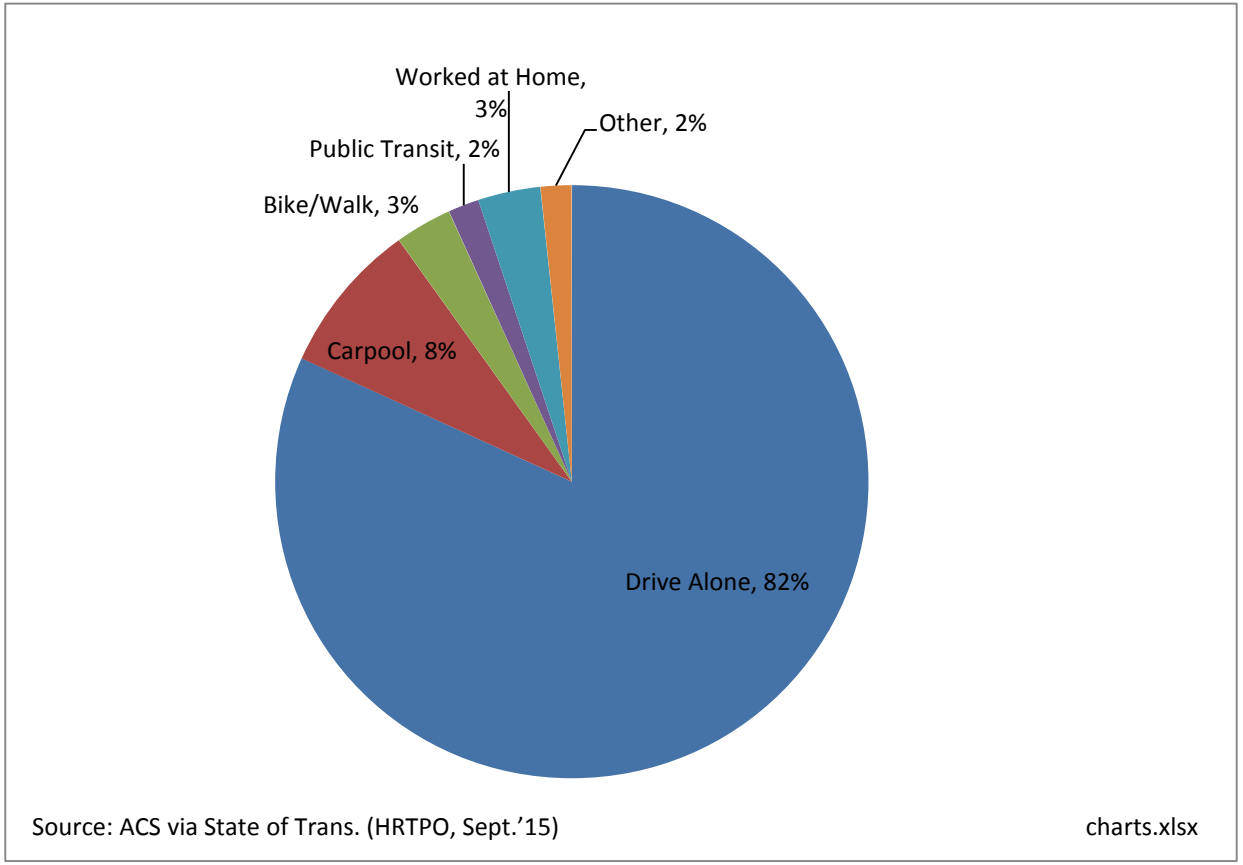
Hampton Roads Transportation Planning Organization
723 Woodlake Drive
Chesapeake, VA 23320
757-420-8300

Modes- Freight



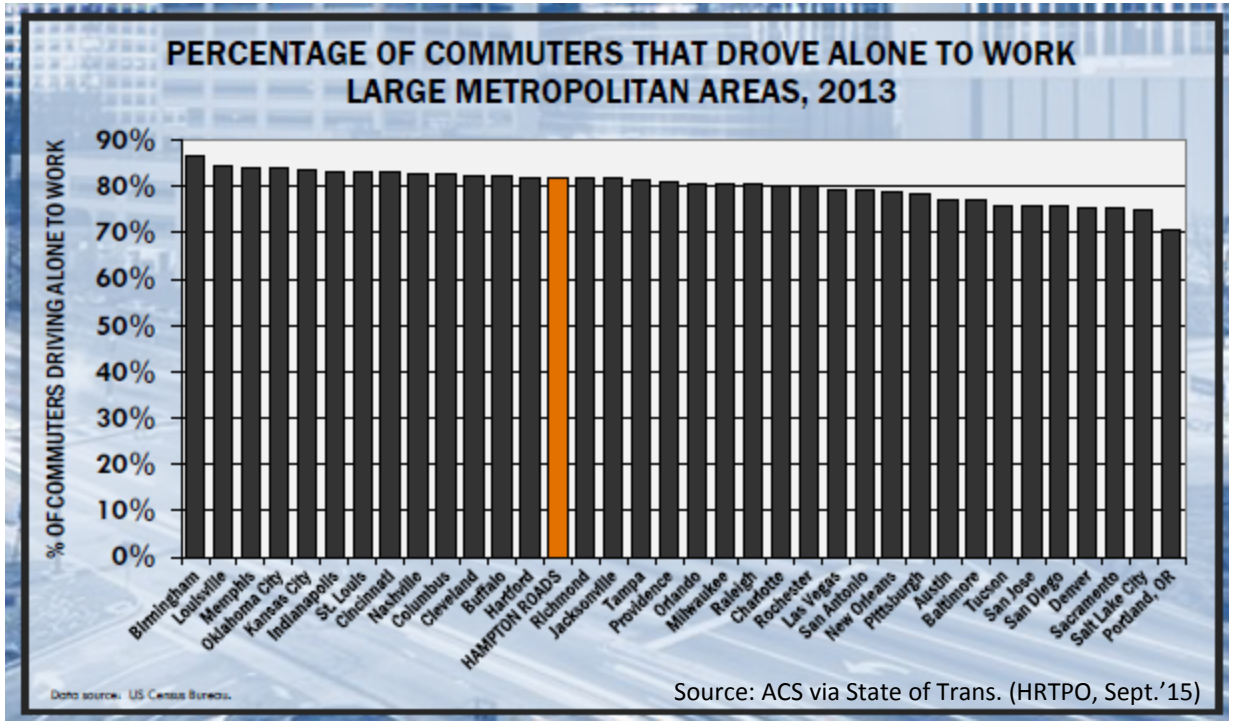
Port of Virginia, General Cargo, 2014

Modes- People



Hampton Roads, Journey to Work, 2013

Modes- People

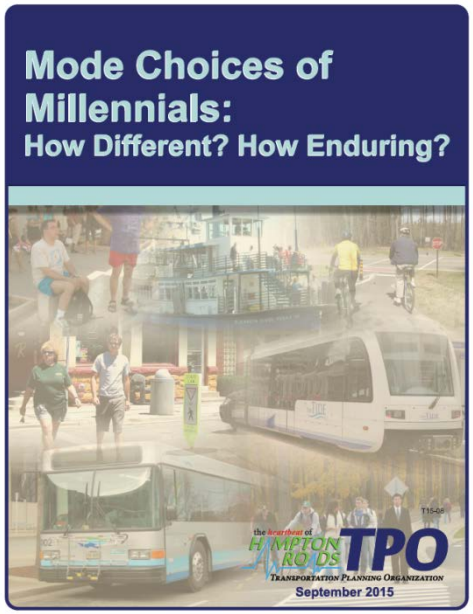


Source: ACS via State of Trans. (HRTPO, Sept.'15)

Metros 1-3million, Journey to Work, 2013

Transit in the U.S.

- National Household Travel Survey (NHTS)
- 1983, 1995, 2008/9
- Originally for study of Millennial Mode Choice
- Seven Factors
  1. Era
  2. Age
  3. Generation
  4. Gender
  5. Income
  6. MSA size
  7. Area (Urban/Rural)



- Post-study: transit usage based on 170k worker surveys

Transit

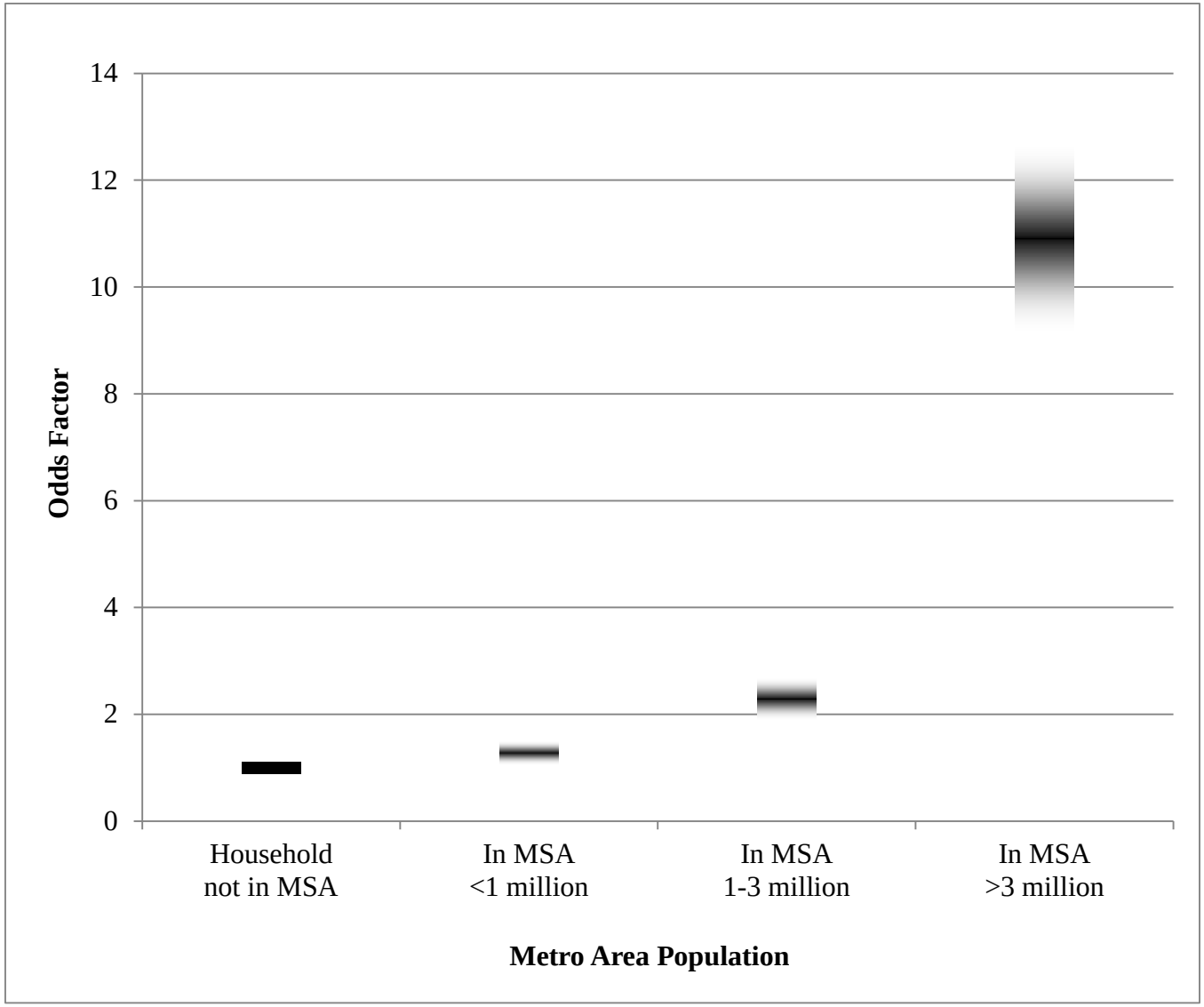
Basis Variables

Variable Set	Basis Variable (to which other variables are compared)
Era	Reagan Era (1983)
Age	16-17
Generation	Baby Boomer Generation
Gender	Female
Total Annual Household Income	$40,000-59,999
MSA Population	Household not in MSA
Urbanized Area	Household not in Urbanized Area

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B) Lower	Upper
Step 1[a]	Period_1995	-.314	.065	23.617	1	.000	.730	.643	.829
	Period_2009	-1.007	.074	184.447	1	.000	.365	.316	.422
	Age_1834	.625	.128	23.826	1	.000	1.869	1.454	2.402
	Age_3554	.519	.135	14.880	1	.000	1.681	1.291	2.188
	Age_5574	.521	.145	12.844	1	.000	1.683	1.266	2.238
	Age_75	.245	.221	1.220	1	.269	1.277	.827	1.971
	Lost_Gen18831900	1.723	1.496	1.328	1	.249	5.604	.299	105.071
	G.I._Gen19011924	.076	.159	.228	1	.633	1.079	.790	1.474
	Silent_Gen19251945	-.153	.050	9.388	1	.002	.858	.778	.946
	GenX19651981	.072	.042	2.964	1	.085	1.075	.990	1.167
	Millennial19822000	.066	.081	.668	1	.414	1.068	.912	1.252
	Male	-.073	.027	7.117	1	.008	.929	.881	.981
	HH_Inc$20K	1.180	.055	464.819	1	.000	3.253	2.922	3.621
	HH_Inc$2040K	.430	.050	75.146	1	.000	1.537	1.395	1.695
	HH_Inc$60100KK	-.050	.044	1.285	1	.257	.951	.872	1.037
	HH_Inc$100K	.045	.046	.942	1	.332	1.046	.955	1.144
	MSA1m	.236	.092	6.616	1	.010	1.266	1.058	1.516
	MSA_1m3m	.816	.089	83.377	1	.000	2.262	1.898	2.695
	MSA3m	2.378	.083	830.227	1	.000	10.786	9.175	12.680
	MSA_Size_not_IDd	.662	.274	5.850	1	.016	1.939	1.134	3.316
	In_urbanizedarea	1.209	.049	596.739	1	.000	3.350	3.041	3.692
	Unknown_URBAN_Status	.723	.286	6.414	1	.011	2.061	1.178	3.608
	Constant	-5.768	.165	1220.780	1	.000	.003		

Transit

All other things being equal (e.g. income), **living in large MSA increases** worker's odds of using transit **10-fold**.



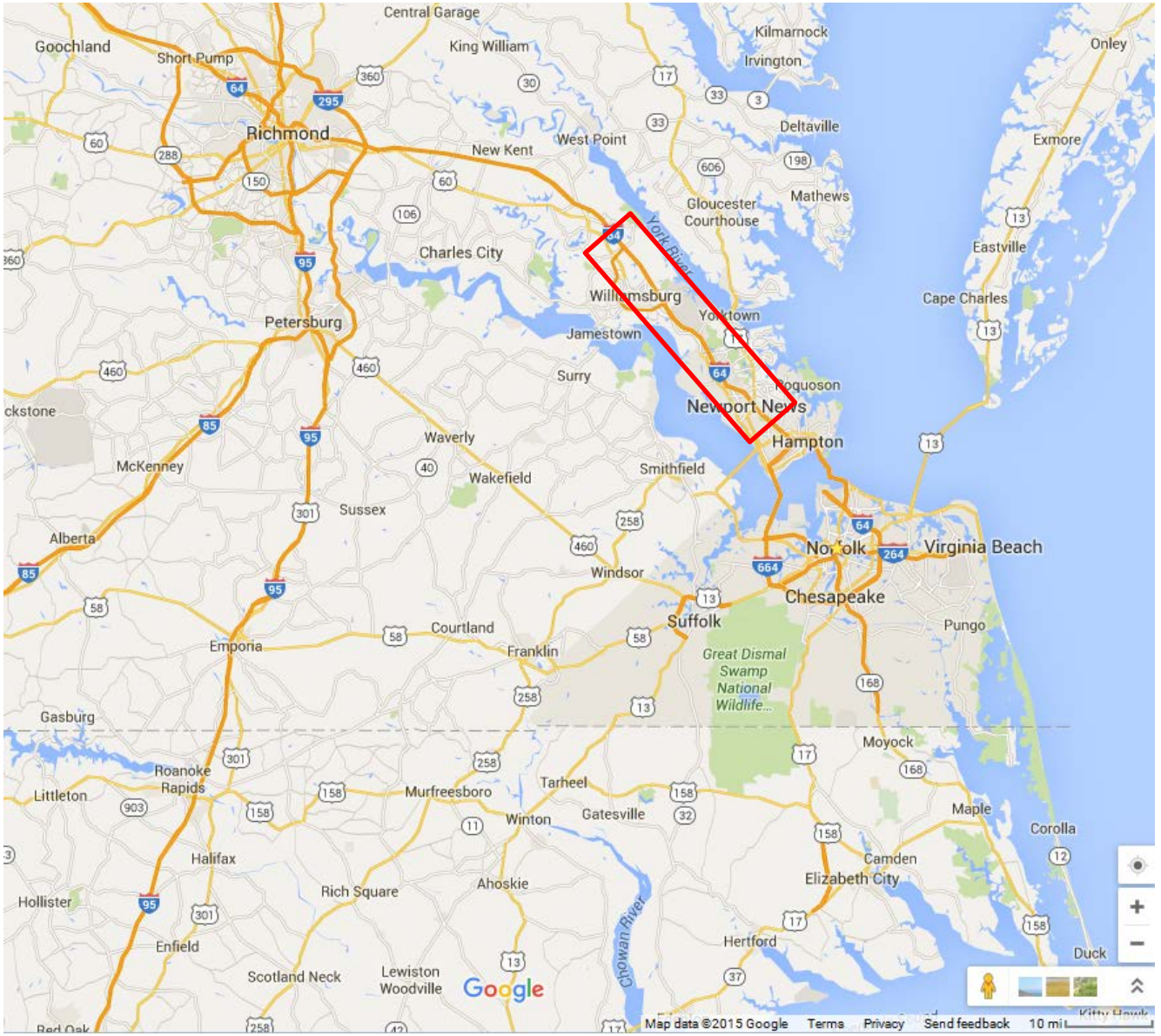
Specific Corridors

- "successful" measure of success
- "intermodal" modes
- "corridor management" corridors & players

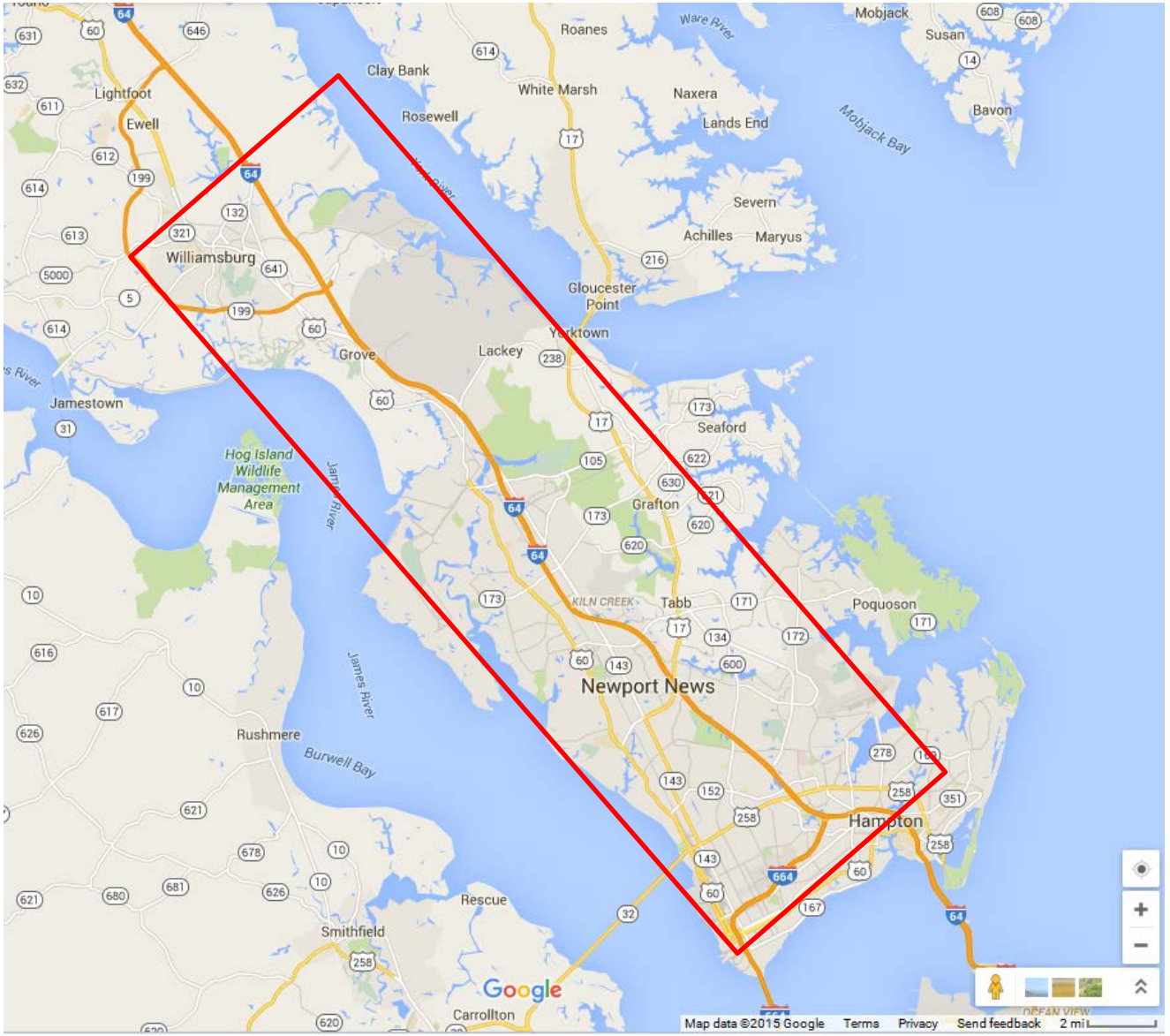
- bottom line:
  - "success? (y/n)"
  - "cause of success/failure (lesson learned)"
    - Technology, decision-making, relationships

Unit of analysis: the corridor

Peninsula Corridor



Peninsula Corridor



“successful”

- Goal- to improve:
  - Throughput (people, goods)
  - Travel time
  - Safety

“intermodal management”

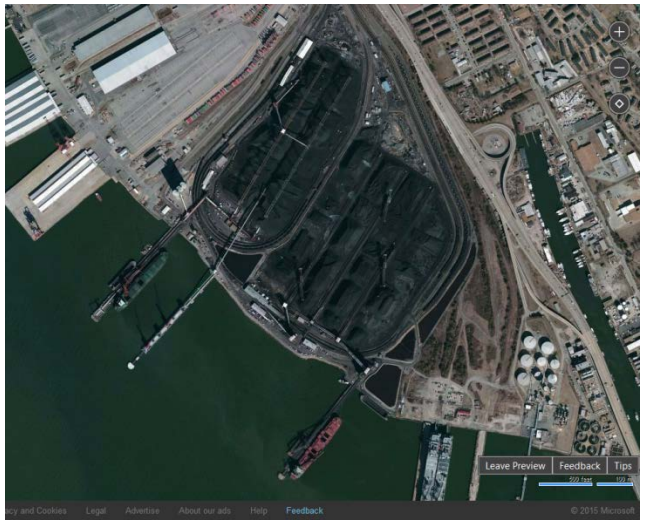
- Modes & Players:
  - Highway VDOT, HRTAC
  - Rail CSX, VDRPT, Amtrak
  - Transit HRT & WATA- 2% share

Current Modal Usage- persons

- Say Newport News (NN) to Richmond (RVA), 70 miles:
  - Highway
    - Volume at metro edge — 47,000 vpd (I-64 only)
    - Portion making 70+ mile trip: — say 50%
    - Occupancy — say 1.2 persons/vehicle
      - NN-RVA trips — 28,000 ppd
  - Rail
    - Passengers — 113,000 per year
      - NN-RVA trips — 400 ppd (1.5%)

Current Modal Usage- freight

- Say Newport News (NN) to Richmond (RVA), 70 miles:
  - Highway - *Trucks*
    - Volume at metro edge — 6,000 vpd (I-64 only)
    - Portion making 70+ mile trip: — say 75%
      - NN-RVA trips — 4,000 vpd
  - Rail
    - Tons of coal
    - Can trucks compete?



Current/Planned Project

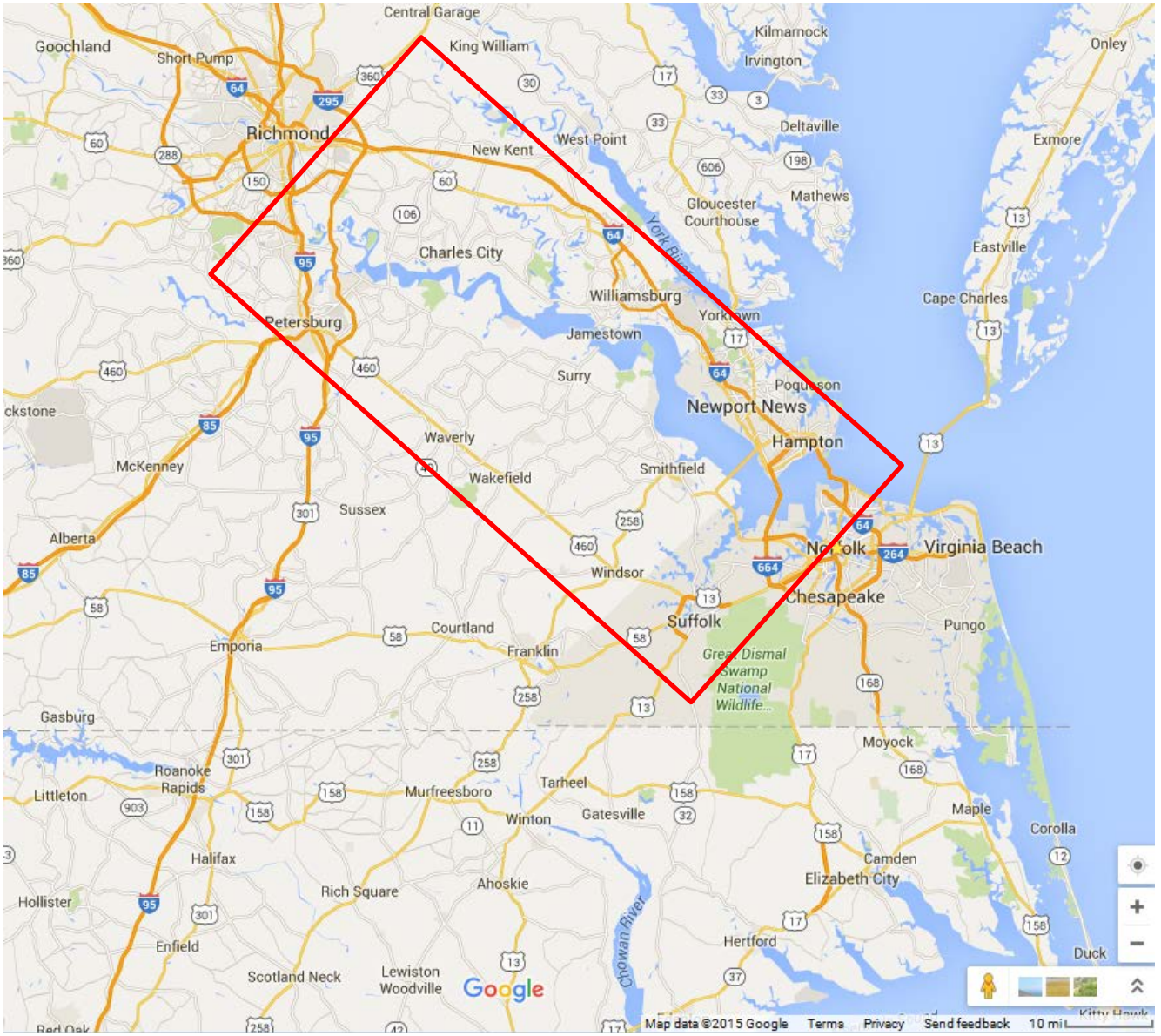
- Widening I-64
  - On edge of region (existing: 4 lanes; w/ project: 6+2*)
  - 20 miles
  - Approx. $1B

*portion designed: 3 regular lanes & 1 shoulder lane in each direction

Bottom Line

- Widening I-64
  - Outcome?
    - Increase throughput: success
    - Increase safety: success
    - Improve travel time: success
  - Cause of Outcome?
    - Technology: shoulder running
    - Decision-making: only interstate access to HR
    - Relationships: individuals (with sound ideas) can do

James Corridor



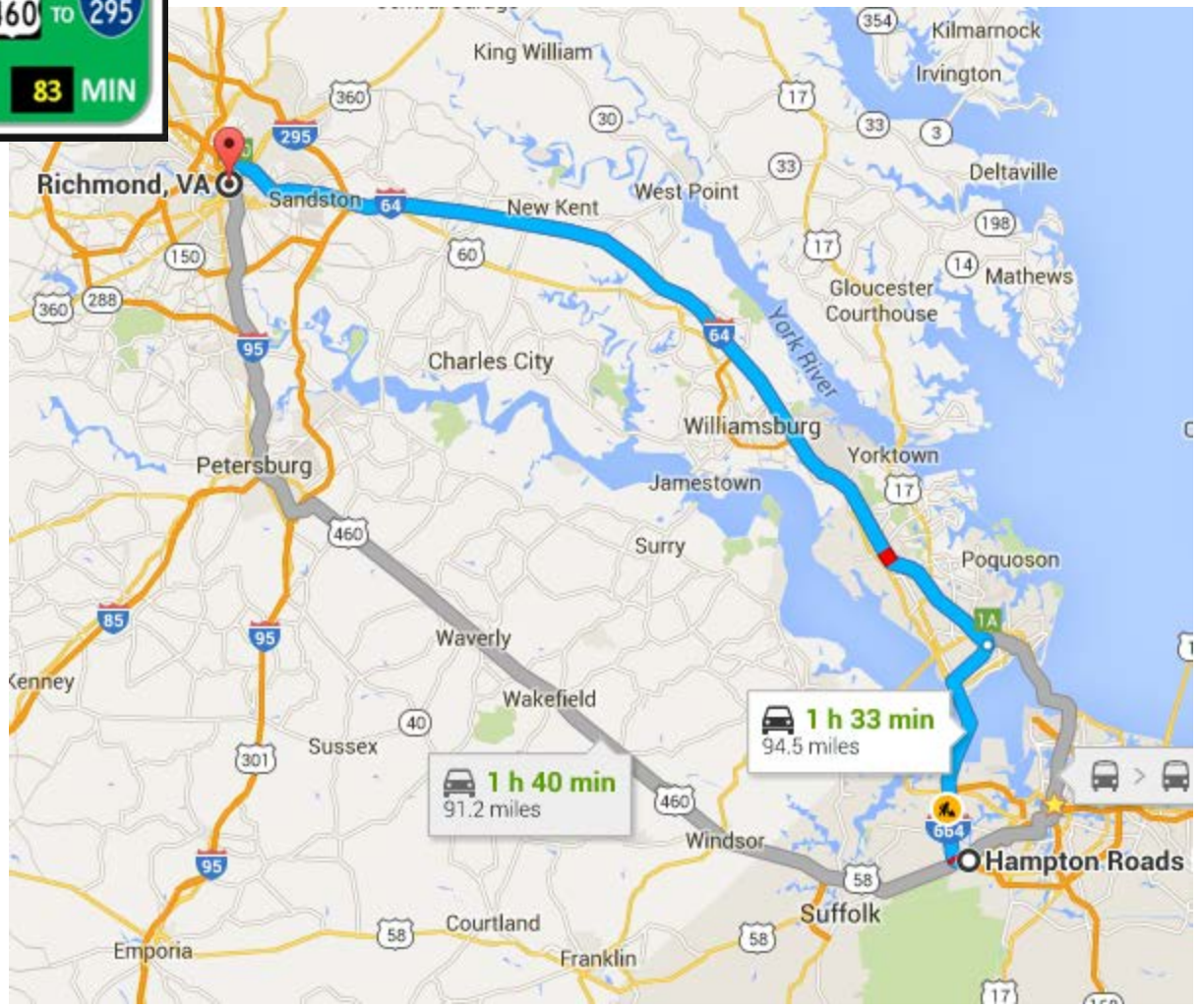
“successful”

- Goals:
  - Throughput (people, goods)
  - Travel time
  - Safety
    - Existing 4-lane undivided US 460 w/ high crash rate

“intermodal management”

- Modes & Players (key: **not in Peninsula corridor**):
  - Highway VDOT, HRTAC
  - Rail CSX, **Norfolk Southern**
  - Barge **James River Barge Line**

Inter-route management



James

The James corridor carries the majority of external truck trips.

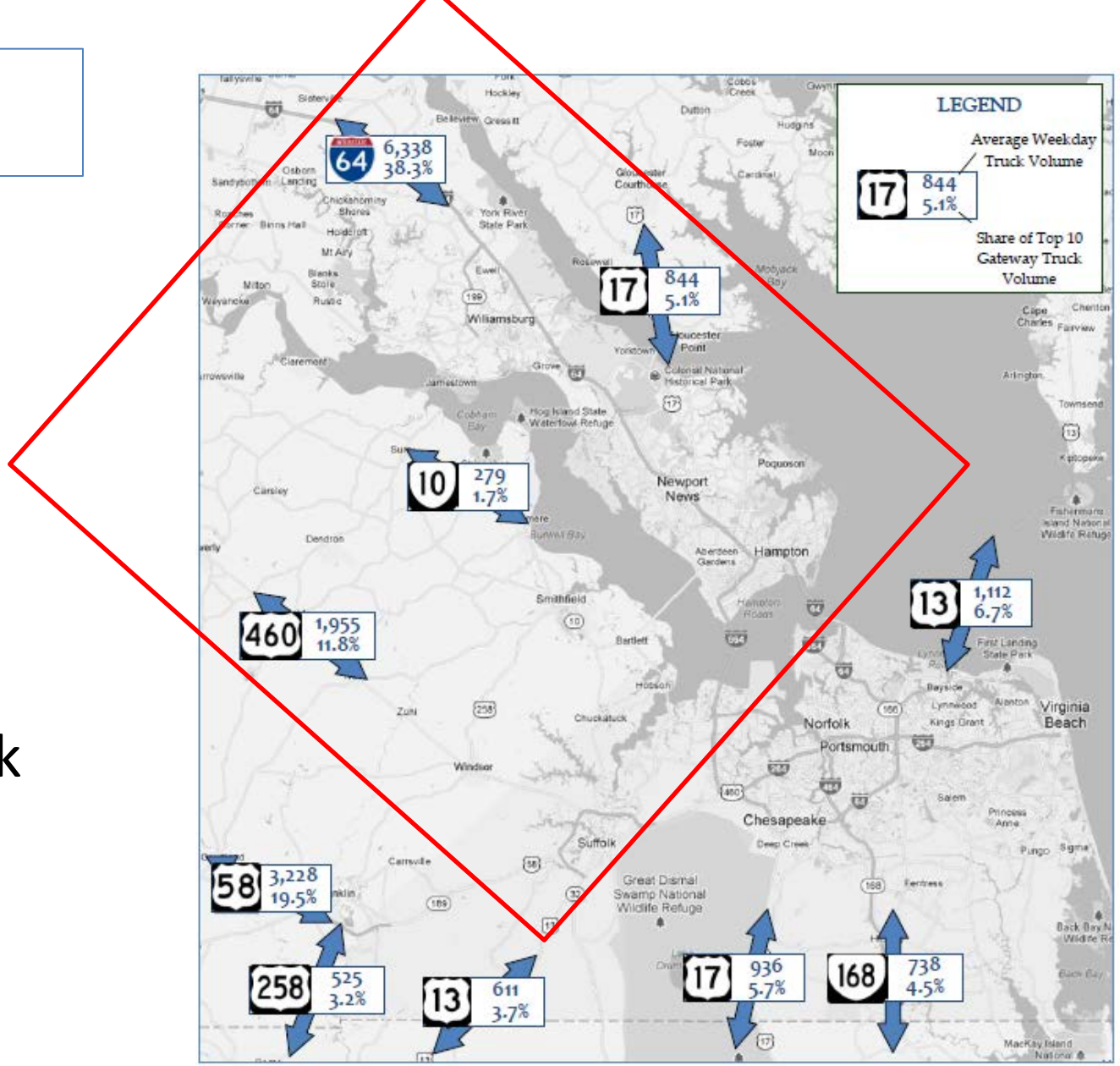


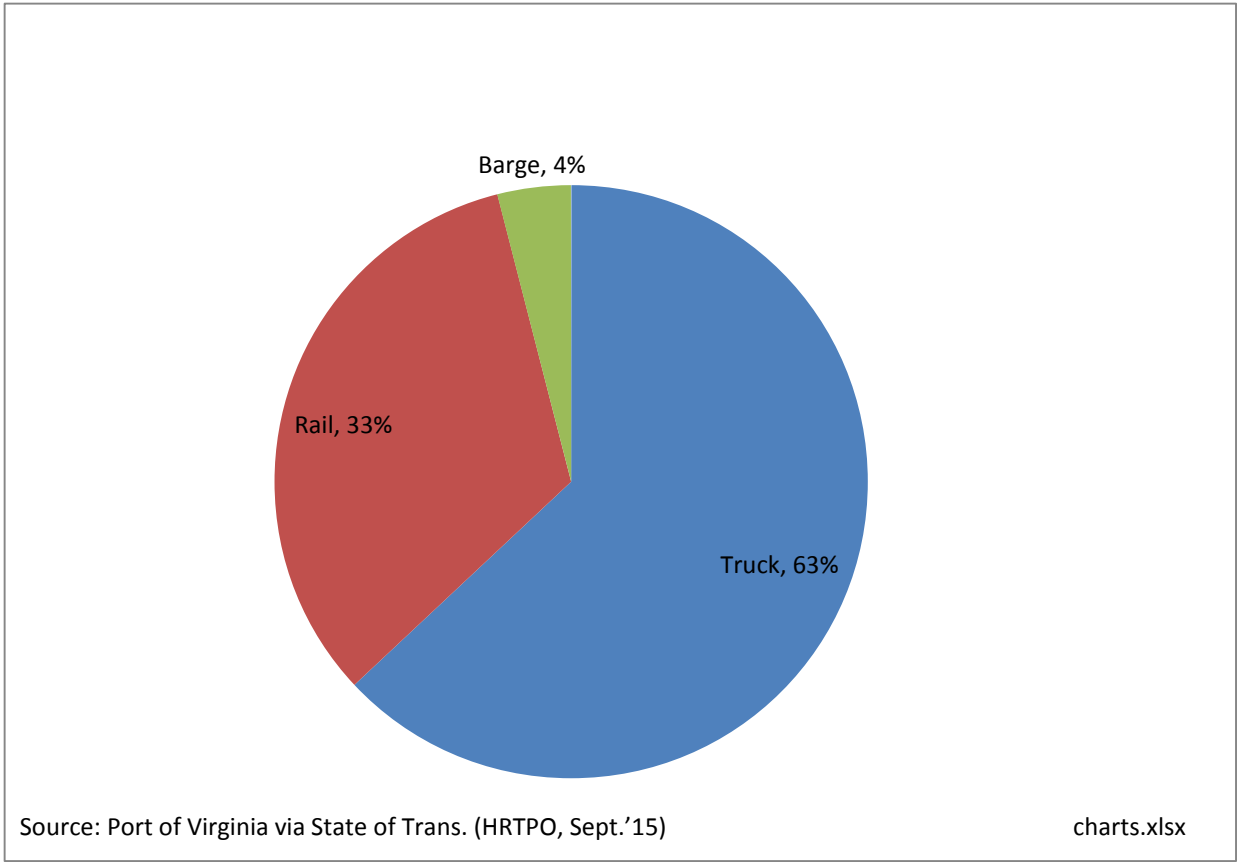
Figure 28 – Number and Share of Trucks Passing Through the Top 10 Regional Gateways Each Weekday, 2011

Source: HRTPO analysis of VDOT and CBBT data. Background map source: Google.

Source: HR Regional Freight Study (HRTPO, Sept.'12)

Current Modal Usage- containers

For containers, truck and rail compete in the James corridor.

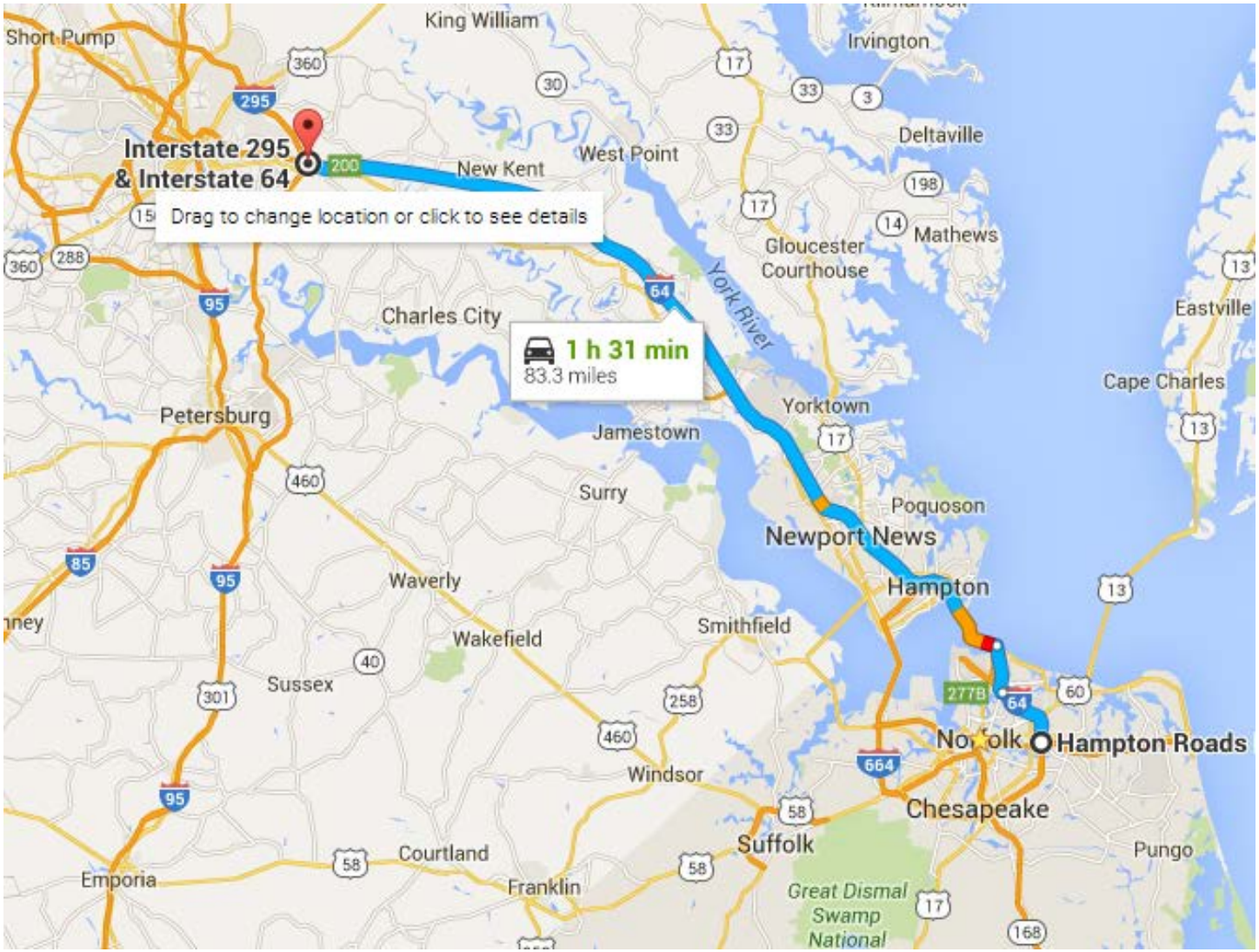


Port of Virginia, General Cargo, 2014

Current Modal Usage- freight

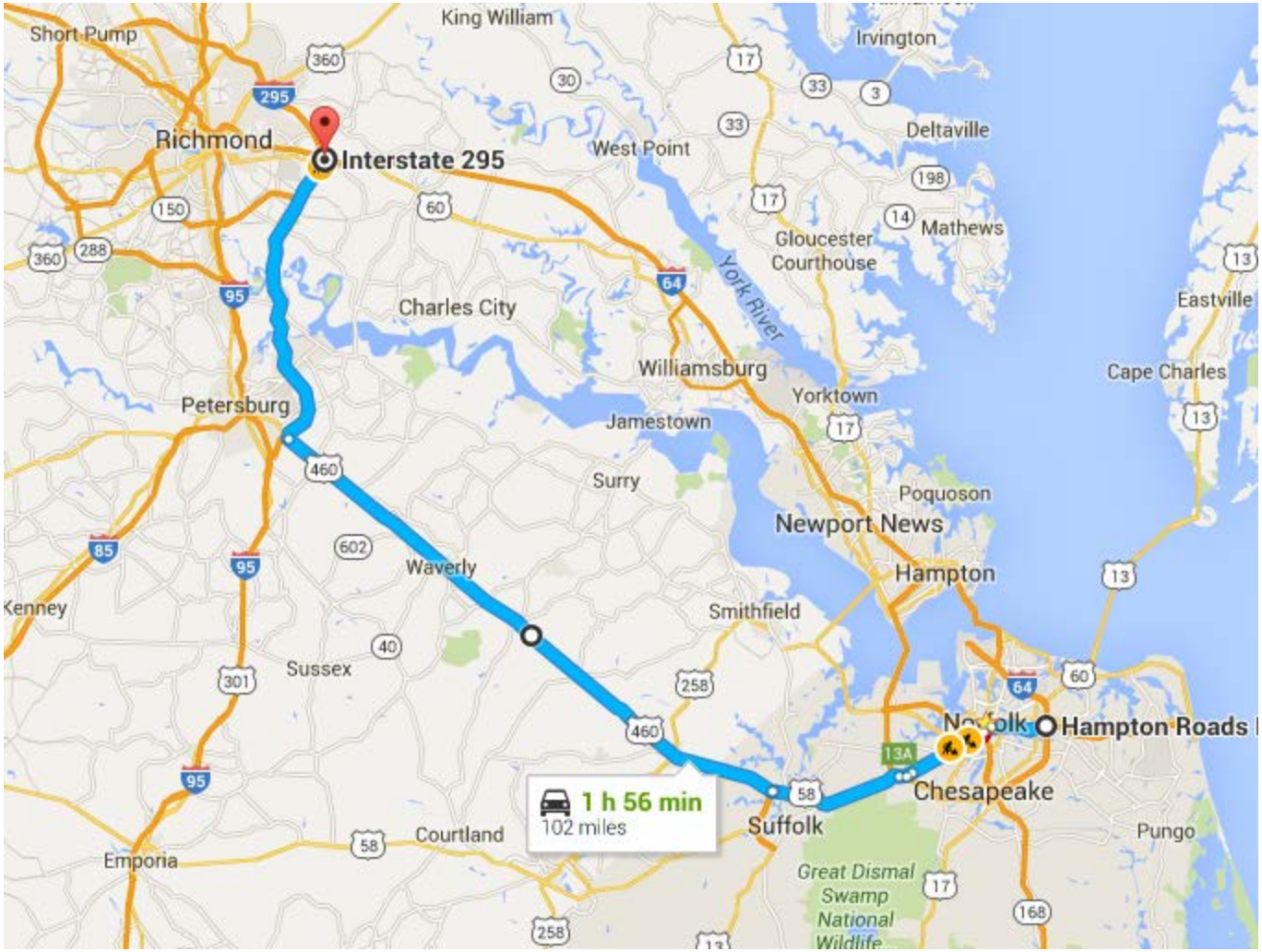
- Say Newport News (NN) to Richmond (RVA), 70 miles:
  - Highway - *Trucks*
    - Volume at metro edge — 6,000 vpd (I-64 only)
    - Portion making 70+ mile trip: — say 75%
      - NN-RVA trips — 4,000 vpd
  - Rail
    - Tons of coal — n.a.
  - Barge
    - Containers per year — approx. 10,000
    - Containers per day — approx. 40

Distances, Travel Times, Volumes



Current midpoint volume : 50k

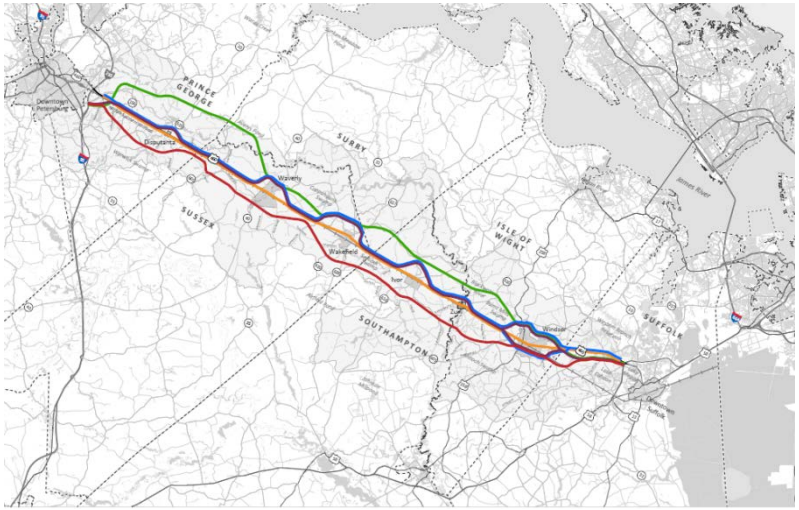
Distances & Travel Times



Current midpoint volume : 10k

Current/Planned Project

- US 460
  - On edge of region
  - Details
    - Existing:
      - 4 lanes, signalized, 10-20k vpd
    - Original proposal:
      - new alignment, 4 lanes, high design, 50 mi
      - 2005 joint toll study: could raise $454m in bonds/loans backed by $321m in highway funds
      - P3, $1.4B (paid $300m upfront, before permit)
    - Current proposal:
      - hybrid alignment, hybrid design, 17 mi
      - $400m



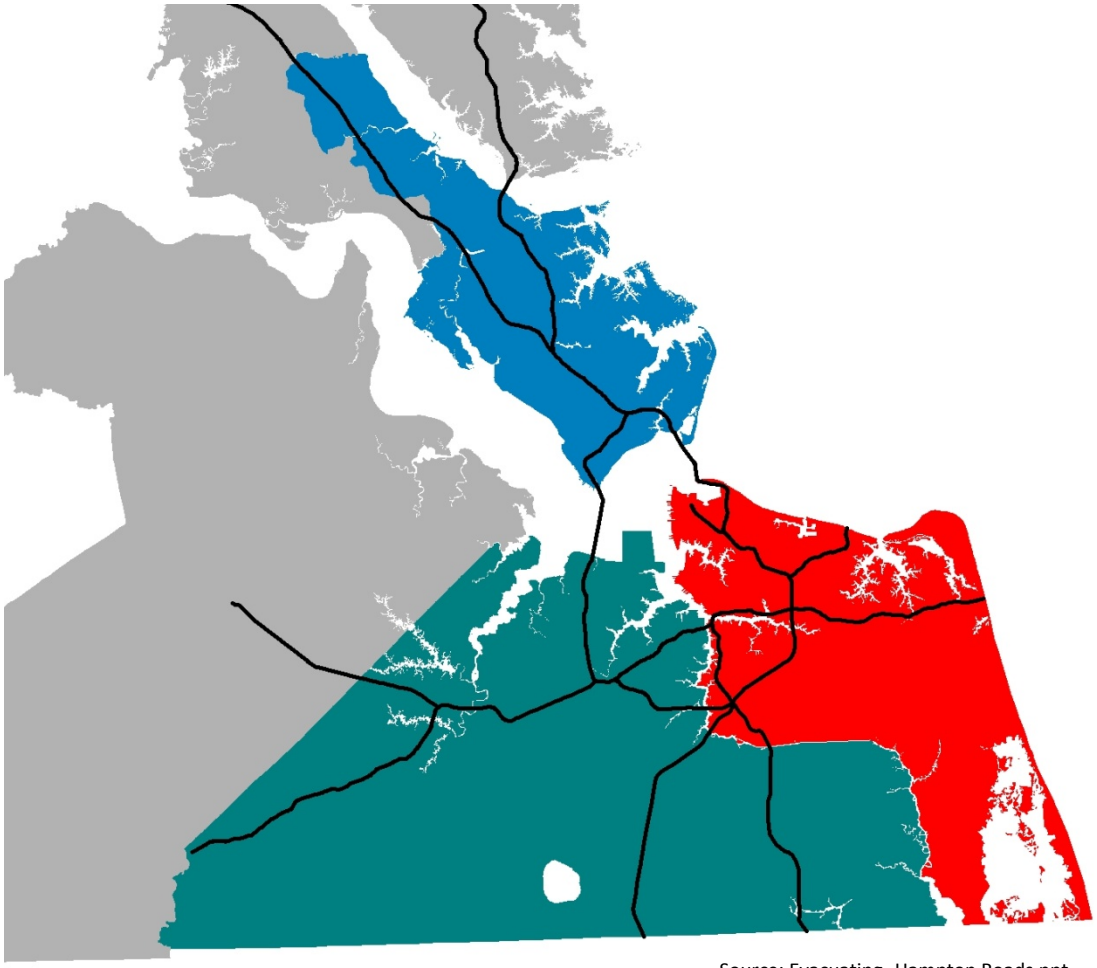
Source: VDOT website

Source: VDOT website

Bottom Line

- US 460
  - Outcome?
    - Increase throughput: not to I-95
    - Increase safety: for 17 miles
    - Improve travel time: for portion of 17 miles
  - Cause of Outcome?
    - Technology: n.a.
    - Decision-making: governors, response to MTT/DTT
    - Relationships: VDOT, USACE, Port, FTAC

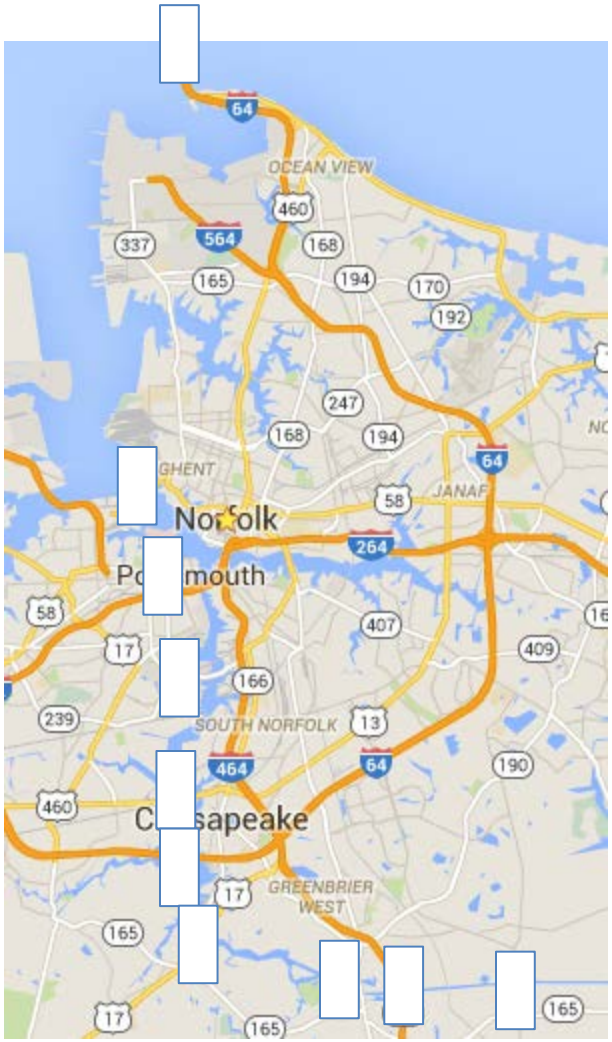
Island Cordon



Source: Evacuating- Hampton Roads.ppt

Island Cordon

Highway Crossing



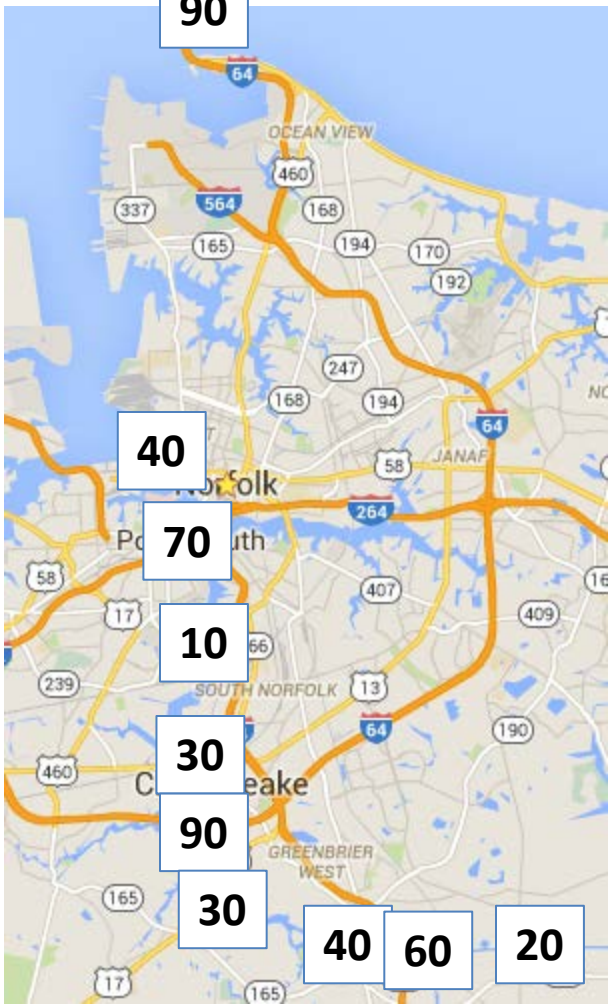
“successful”

- Goals:
  - Throughput (people, goods)
  - Travel time
  - Safety

“intermodal management”

- Modes & Players:
  - Highway — VDOT, HRTAC, ERC, SNJB, Chesapeake
  - Rail — Norfolk Southern, Amtrak
  - Transit — HRT (bus and ferry)

Island Cordon- 480,000 vpd highway



Current Volume, 1,000s vpd

Ferry: approx. 1,000/day

Amtrak: 42k/year or approx. 100/day

Island Cordon

Current LOS

Under construction

Current/Planned Projects

- Highway
  - HRBT- widening- 3-4-3 design($?)
    - SEIS underway
  - Patriot's Crossing- new alignment ($4B)
    - SEIS underway
  - Midtown Tunnel- widening ($21B+ over 58 years)
    - Under construction
  - South Norfolk Jordon Bridge- new alignment ($? [private])
    - Completed in 2012
  - Gilmerton Bridge- replacement ($100m)
    - Completed in 2015
  - Hi-Rise Bridge- widening (& replacement?) ($2B)
    - EA completed in 2014
  - US 17 Bridge- widening & high design ($300m)
    - Under construction

Current/Planned Projects

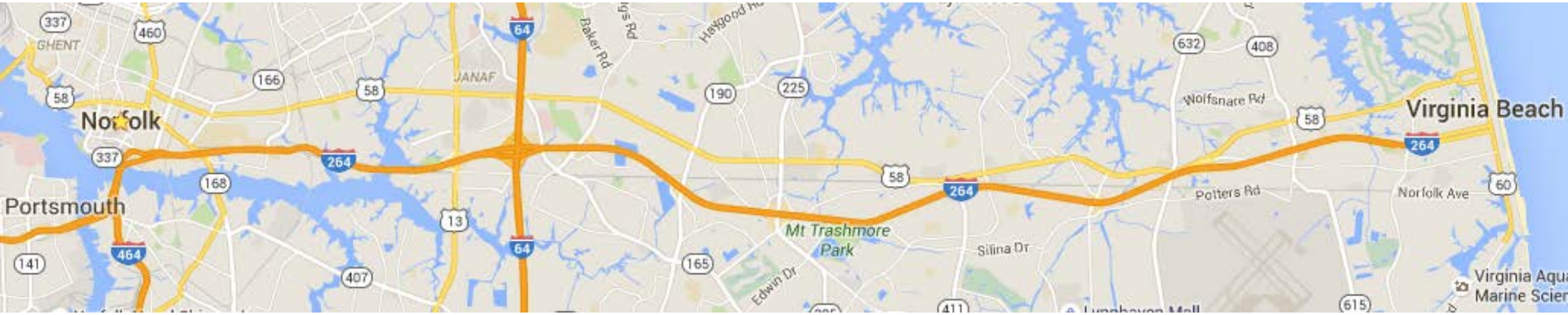
- Port
  - 4th terminal (Craney Island)
  - Expansion at Va. International Gateway (owned by APM)
  - Expansion at Norfolk International Terminals

Seanews.com.tr

Bottom Line

- Highway projects
  - Outcome?
    - Increase throughput: YES
    - Increase safety: YES
    - Improve travel time: YES
  - Cause of Outcome?
    - Technology: electronic toll collection
    - Decision-making and relationships:
      - VDOT and P3 Office
      - MPO and HRTAC
      - SNJB and Chesapeake

Norfolk-VB Corridor



“successful”

- Goal- to improve:
  - Throughput (people, goods)
  - Travel time
  - Safety
- Informal LRT Goals:
  - Highway congestion relief
  - Giving commuter options
  - Economic development

“intermodal management”

- Modes & Players:
  - Highway VDOT, HRTAC, Norfolk, Va. Beach
  - Rail (LRT) HRT
  - Bus HRT

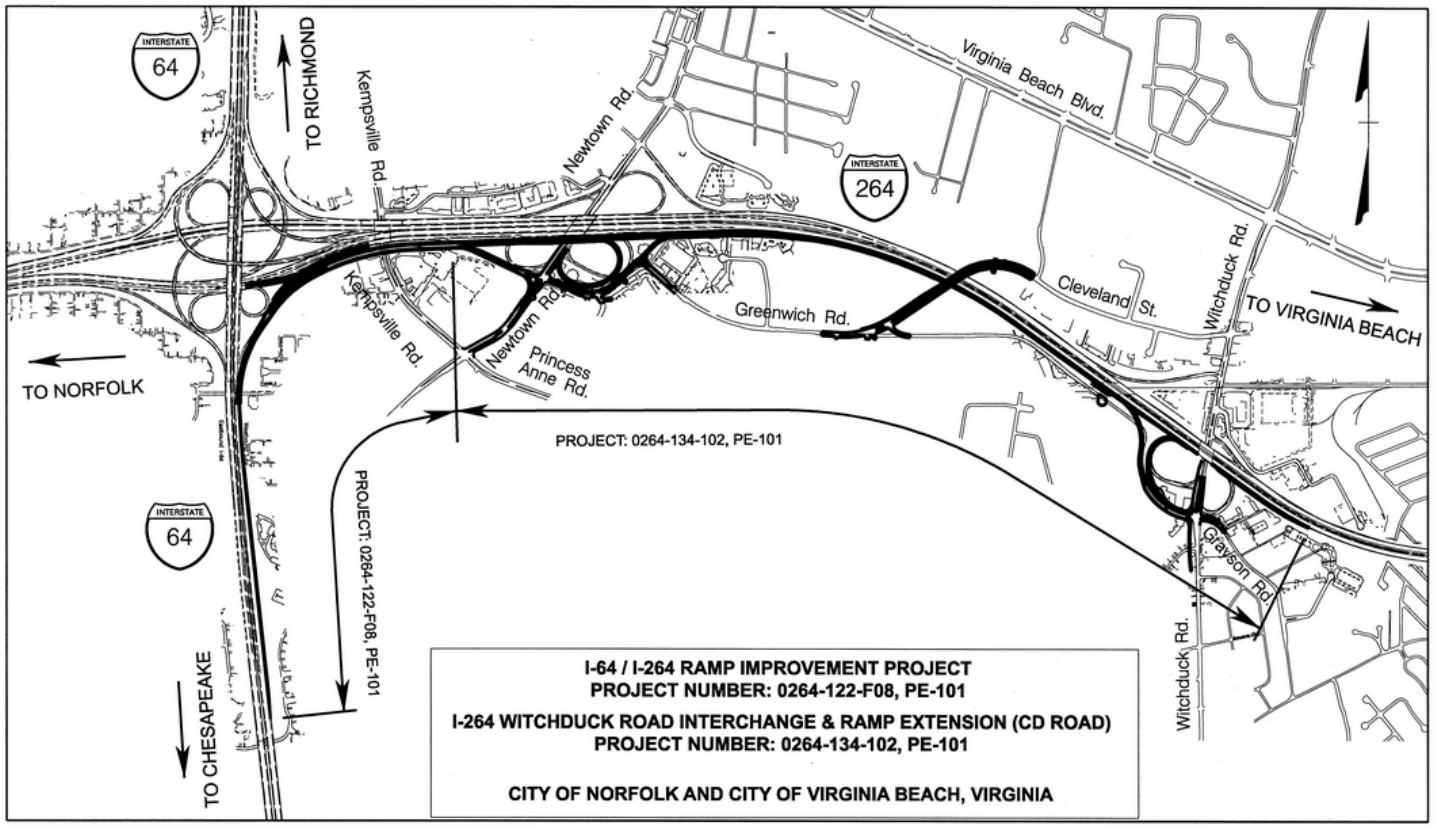
Current Modal Usage- persons

- Between Military Hwy & I-64
  - Highway
    - Volume- Interstate — 120,000 vpd (I-264)
    - Volume- US Hwy — 30,000 vpd (US 58)
    - Volume- total — 150,000 vpd
    - Occupancy — say 1.2 persons/vehicle
    - Persons — 125,000 ppd
  - Rail (LRT)
    - Total Boardings — 5,000 per day
    - Portion at subject point — say 50%
    - Persons — 2,500 ppd (2% share)
  - Bus
    - Total Boardings (Rt. 20) — 4,000 per day
    - Portion at subject point — say 25%
    - Persons — 1,000 per day (1% share)

Note: No need for "jump to LRT" signs because LRT does not avoid the location of recurring congestion (Berkley Bridge).

Current/Planned Projects

- I-64/I-264 Interchange
  - Approx. $350m



Current/Planned Projects

- LRT Extension
  - Approx. $300m (3 miles to Town Center)

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Possibility for Current HRTPO Study

- <u>Trail in advance of LRT</u>
  - 8 miles, Town Center to Birdneck Rd
- Note
  - 3 miles, existing LRT to Town Center: station access paths
  - 1 mile, Birdneck Rd to oceanfront: existing path

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Current Rail-Trail Project

- Map Layers
  - Available R/R ROW's
  - Existing active trans'ers
  - Parks and schools
  - Existing active facilities
- Model to forecast usage
  - Developing
- Model to forecast cost
  - Using existing

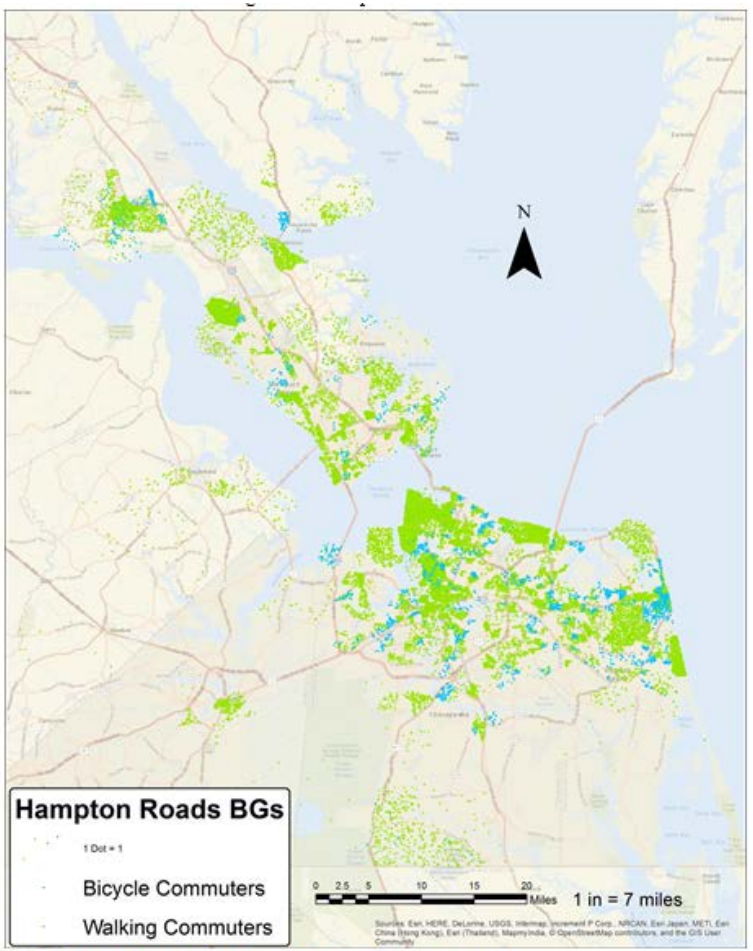


FIGURE XX Active Transportation Users in Hampton Roads
Source: Active Trans Usage.jpg

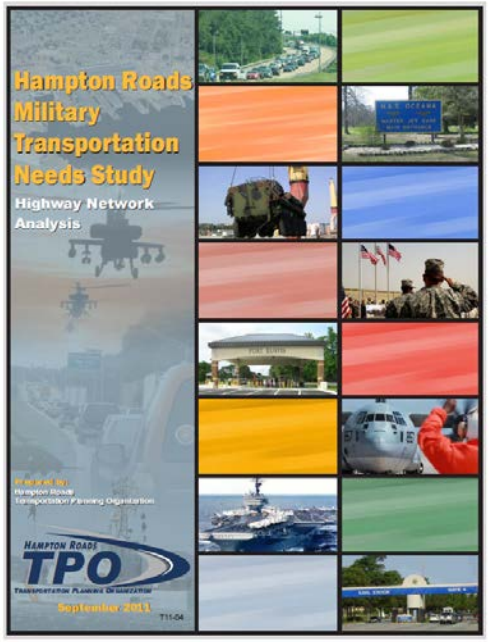
Bottom Line

- I-64/I-264 Interchange, LRT Extension
  - Outcome?
    - Increase throughput: success
    - Increase safety: success
    - Improve travel time: success
  - Cause of Outcome?
    - Technology: shoulder running
    - Decision-making: travel between two of state's largest cities
    - Relationships: HRT, FTA; VB, HRTPO, HRTAC

Requested Topics

HRTPO and the Military

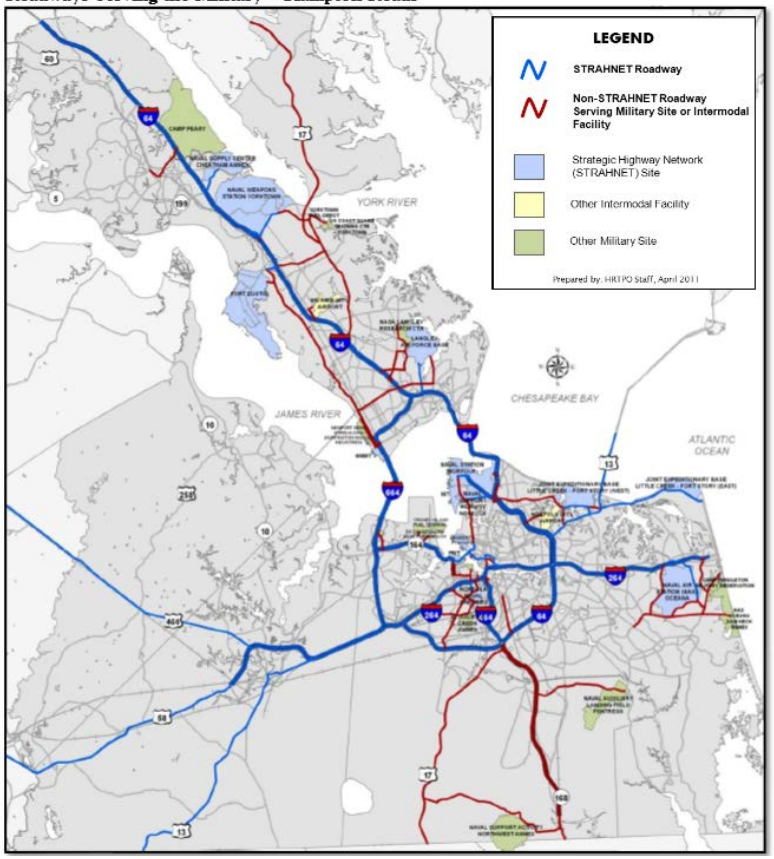
- *Hampton Roads Military Transportation Needs Study-* ***Highway Network Analysis*** (HRTPO, 2011)
  - STRAHNET + Others = "Roadways Serving the Military"
    - Given points in Project Prioritization Tool
    - Condition of this military highway network
      - Congestion
      - Deficient bridges
      - Vertical clearances and lane widths
  - Recommendations
    - Highway, rail, transit



HRTPO and the Military

- ***Highway Network Analysis*** (HRTPO, 2011)

Roadways Serving the Military – Hampton Roads



Appendix D – Roadways Serving the Military in Hampton Roads – Interstates and Freeways/Expressways

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	DIR	SEGMENT LENGTH (MILES)	WEEKDAY VOLUMES (INCLUDES HOV LANES) ONE-WAY EXISTING	TWO-WAY EXISTING	COUNT YEAR	2009 LANES	2009 PM PEAK HR LOS*	STRAHNET ROUTE?
CHES	I-64	CITY LINE RD/VA BEACH CL	GREENBRIER PKWY	EB	1.30	68,875	132,632	2007	4	D	YES
				WB		63,757		2010	4	A-C	YES
CHES	I-64	GREENBRIER PKWY	BATTLEFIELD BLVD	EB	1.42	62,857	128,219	2009	4	D	YES
				WB		65,362		2005	4	A-C	YES
CHES	I-64	BATTLEFIELD BLVD	I-464	EB	1.08	51,960	102,982	2008	4	A-C	YES
				WB		51,022		2008	4	A-C	YES
CHES	I-64	I-464	GEORGE WASHINGTON HWY	EB	4.38	42,327	85,174	2009	2	E	YES
				WB		42,847		2009	2	E	YES
CHES	I-64	GEORGE WASHINGTON HWY	MILITARY HWY	EB	1.53	39,096	78,486	2009	2	D	YES
				WB		39,390		2009	2	E	YES
CHES	I-64	MILITARY HWY	I-264&664	EB	2.31	39,623	77,216	2010	2	E	YES
				WB		37,593		2010	2	E	YES
CHES	I-264	I-64&664	WCL PORTSMOUTH	EB	1.23	28,920	58,141	2009	2	A-C	YES
				WB		29,221		2009	2	D	YES
CHES	I-464	I-64	MILITARY HWY	NB	1.00	30,266	56,899	2009	3	A-C	YES
				SB		26,633		2009	3	A-C	YES
CHES	I-464	MILITARY HWY	FREEMAN AVE	NB	0.97	26,982	50,487	2009	3	A-C	YES
				SB		23,505		2009	3	A-C	YES
CHES	I-464	FREEMAN AVE	POINDEXTER ST	NB	1.90	26,444	49,106	2010	3	A-C	YES
				SB		22,662		2010	3	A-C	YES
CHES	I-464	POINDEXTER ST	NORFOLK CL	NB	0.72	27,535	50,200	2009	2	A-C	YES
				SB		22,665		2009	2	A-C	YES
CHES	I-664	I-64 & I-264	ROUTES 13/58/460	EB	1.70	60,548	121,718	2009	4	A-C	YES
				WB		61,170		2009	4	A-C	YES
CHES	I-664	ROUTES 13/58/460	DOCK LANDING RD	EB	1.25	48,415	96,336	2009	2	E	YES
				WB		47,921		2009	2	E	YES
CHES	I-664	DOCK LANDING RD	PORTSMOUTH BLVD	EB	1.14	47,767	95,206	2009	2	E	YES
				WB		47,439		2009	2	D	YES
CHES	I-664	PORTSMOUTH BLVD	PUGHSVILLE RD	EB	2.06	45,295	90,031	2009	2	E	YES
				WB		44,736		2009	2	D	YES
CHES	I-664	PUGHSVILLE RD	SUFFOLK CL	EB	0.83	39,832	80,445	2008	3	A-C	YES
				WB		40,613		2008	3	A-C	YES
CHES	CHESAPEAKE EXPWY	GALLBUSH RD	BATTLEFIELD BLVD (NEAR INDIAN CREEK)	NB	2.61	5,333	10,665	2010	2	A-C	NO
				SB		5,332		2010	2	A-C	NO
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (NEAR INDIAN CREEK)	HILLCREST PKWY	NB	2.63	6,271	12,103	2006	2	A-C	NO
				SB		5,832		2006	2	A-C	NO
CHES	CHESAPEAKE EXPWY	HILLCREST PKWY	BATTLEFIELD BLVD (S OF GREAT BRIDGE)	NB	2.21	13,362	26,628	2006	2	A-C	NO
				SB		13,266		2006	2	A-C	NO
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (S OF GREAT BRIDGE)	HANBURY RD	NB	0.59	13,666	26,075	2008	2	A-C	NO
				SB		12,409		2008	2	A-C	NO
CHES	CHESAPEAKE EXPWY	HANBURY RD	MT PLEASANT RD	NB	1.31	21,971	42,143	2008	2	A-C	NO
				SB		20,172		2008	2	A-C	NO
CHES	CHESAPEAKE EXPWY	MT PLEASANT RD	BATTLEFIELD BLVD (N OF GREAT BRIDGE)	NB	2.31	32,791	63,350	2008	2	A-C	NO
				SB		30,559		2008	2	F	NO
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (N OF GREAT BRIDGE)	DOMINION BLVD	NB	1.90	30,592	62,861	2008	2	A-C	NO
				SB		32,269		2008	2	F	NO
CHES	CHESAPEAKE EXPWY	DOMINION BLVD	I-64	NB	0.57	28,581	65,998	2009	3	A-C	NO
				SB		37,417		2009	3	A-C	NO
CHES	ROUTE 13/58/460	SUFFOLK CL	I-664	EB	2.50	35,319	70,456	2010	3	A-C	YES
				WB		35,137		2010	3	A-C	YES
HAM	I-64	NEWPORT NEWS CL	HRC PARKWAY	EB	2.24	83,629	165,780	2010	4	D	YES
				WB		82,151		2010	4	F	YES
HAM	I-64	HRC PARKWAY	MAGRUDER BLVD	EB	0.77	74,462	147,276	2010	4	A-C	YES
				WB		72,814		2010	4	D	YES

HRTPO and the Military

- *Hampton Roads Military Transportation Needs Study-* ***Military Commuter Survey*** (HRTPO, 2012)
  - On-line
  - 10,994 completed surveys

Q: IMPORTANT: Please tell us the locations where these problems occur.*

Note: 8,135 (76%) of 10,634 polled respondents specified that congestion occurs on public roadways. T

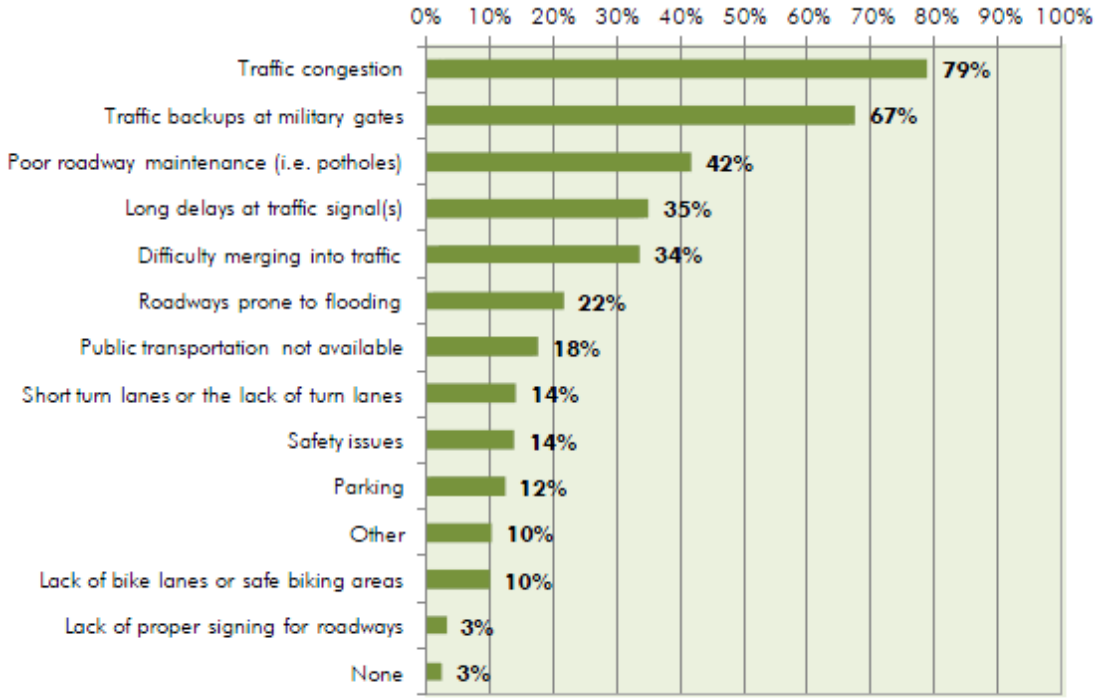
Rank	Congested Location	Responses	Share
1	Downtown Tunnel (I-264)	467	6%
2	I-564	441	5%
3	I-64 & I-564	424	5%
4	Midtown Tunnel (Rte 58)	359	4%
5	Hampton Roads Bridge Tunnel (I-64)	356	4%
6	I-64 & I-264	339	4%
7	Hampton Blvd	332	4%
8	I-64 (I-564/Wards Corner to I-264/Va Beach	154	2%

Rank	Congested Location
47	General Booth & Dam Neck
50	Dominion & Cedar
50	Little Creek Rd
52	I-264 & Effingham
53	I-264 (I-64/Bowers Hill to I-64/Va Beach Inte
53	I-64 & Norview
55	I-64 & Chesapeake
55	Bay Ave

HRTPO and the Military

- ***Military Commuter Survey*** (HRTPO, 2012)

Q: What transportation problems do you face on your commute to/from work?*

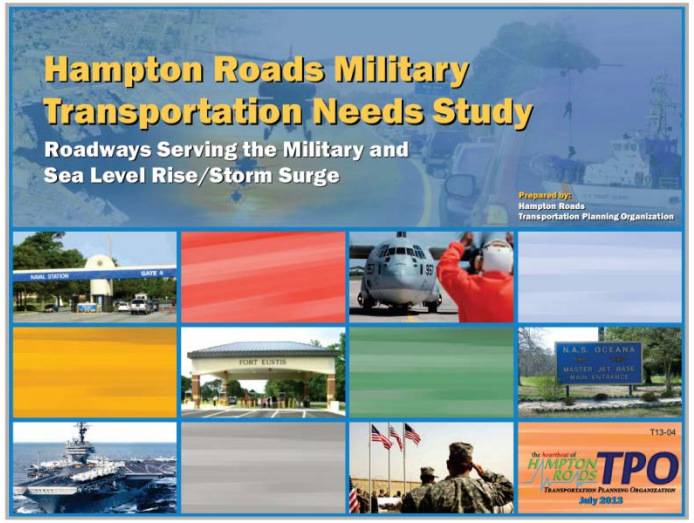


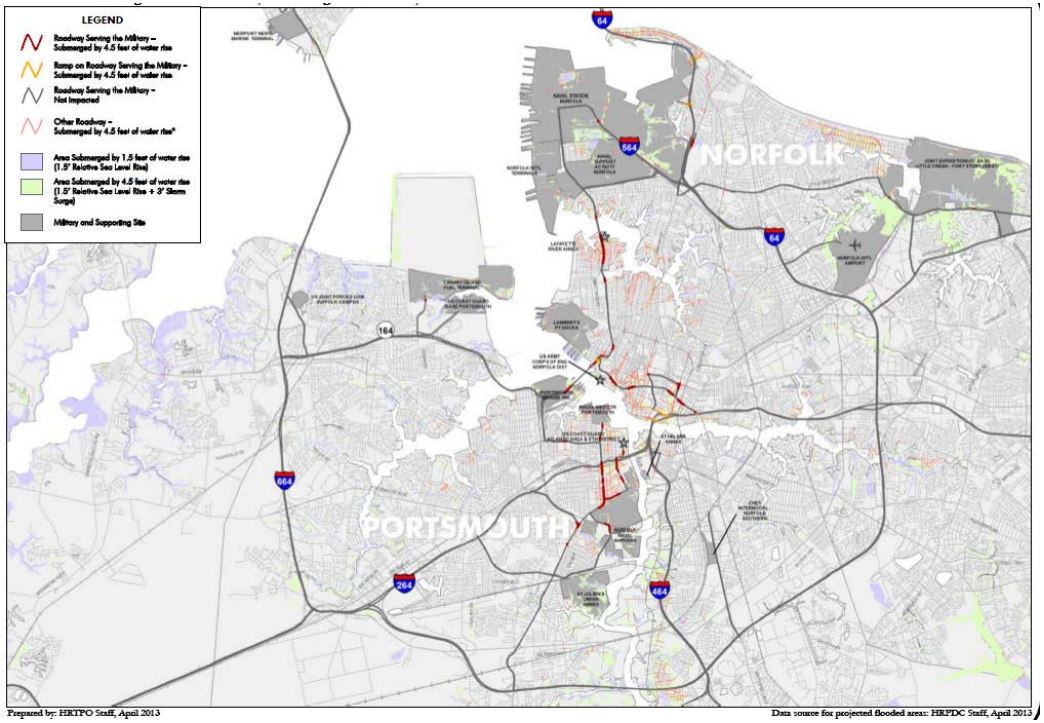
HRTPO and the Military

- ***Military Commuter Survey*** (HRTPO, 2012)
  - Recommendations
    - Congested highways
    - Congested gates
    - LRT
    - Rail
    - Bus
    - TDM
    - Ped
    - Bike
    - Lighting
    - HOV

HRTPO and the Military

- *Roadways Serving the Military and* ***Sea Level Rise / Storm Surge*** (HRTPO, 2013)
  - Scenarios:
    1) **1.5 foot relative sea level rise**
    2) **4.5 foot total relative water level rise (1.5 foot relative sea level rise + 3 foot storm surge)**





A General Key to Success- making decisions based on **numbers**

- MPO Staff that can perform the analysis
  - Degrees
    - 1 Associates
    - 2 Bachelors
    - 9 Masters
    - 2 PhDs

A General Key to Success- making **decisions** based on numbers

- LRTP Project Selection: **prioritization tool**

- Sub-tools:
  1. Highway
  2. Interchange
  3. Intermodal
  4. Bridge & Tunnel
  5. Transit
  6. Active Transp.

"Highways" Weighting Factors Criteria and *Subcriteria*	Weighting
PROJECT UTILITY	
Congestion Level:	**30**
% Reduction in Existing and Future V/C Ratios	*10*
Existing V/C Ratio	*10*
Impact to Nearby Roadways	*10*
System Continuity and Connectivity *Degree of Regional Impact*	**25**
Safety and Security:	**15**
Critical Crash Ratio	*8*
Improvements to Incident Management or Evacuation Routes	*7*
Cost Effectiveness (Cost/VMT)	**15**
Land Use/Future Development Compatibility	**10**
Modal Enhancements:	**5**
Enhances Other Categories	*3*
Improves Vehicular Access	*2*
PROJECT UTILITY TOTAL	***100***
ECONOMIC VITALITY	
Total Reduction in Travel Time	**30**
Labor Market Access:	**20**
Increases Travel Time Reliability	*10*
Increases Access for Major Employment Centers	*10*
Addresses the Needs of Basic Sector Industries:	**30**
Increases Access to Tourist Destinations	*10*
Increases Access for Defense Installations	*6*
Increase Access for Defense Installations – STRAHNET	*4*
Increases Access to Port Facilities	*10*
Increases Opportunity:	**20**
Provides New or Increased Access	*10*
Supports Plans for Future Growth	*10*
ECONOMIC VITALITY TOTAL	***100***
PROJECT VIABILITY	
Funding	**50**
Percentage of Funding Committed	*50*
Process/Project Readiness	**50**
Prior Commitment (is project in LRTP)	*10*
Percentage of Project Design Complete	*10*
Environmental Documents Complete	*15*
Environmental Decisions Obtained	*5*
ROW Obtained and Utilities Coordinated	*5*
Additional Environmental Permits Obtained	*5*
PROJECT VIABILITY TOTAL	***100***

Hampton Roads Transportation Planning Organization | Prioritization of Transportation Projects | Page 51

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

A General Key to Success- making decisions based on numbers

- Fund Allocation Tools
  - MPO
    - CMAQ — based on cost per ton of pollutant removed
    - RSTP — similar to LRTP tool but simpler
  - VDOT
    - HB2 — similar to HRTPO LRTP tool
  - HRTAC
    - HRTF — legislation specifies **congestion** as the MOE (HRTPO selected 5 Regional Priority projects)