

REGIONAL
CONNECTORS
STUDY

WORKING GROUP MEETING

July 9, 2020

Phase 2 Status Report

■ Scenario Planning

- Awaiting model runs for growth scenarios to see if adequate differentiation has been achieved
- Preparing to populate dashboard as model runs are completed

■ Travel Demand Model

- Fine tuning cross harbor adjustments
- Fine tuning technology template
- Fine tuning internal-external trip table

■ Website

- Up to date with minutes, agendas, other documents

■ Schedule

- Early September 2020 completion

Phase 2 Status Report (Cont.)

■ Deliverables

- Scenario Planning Methodology White Paper – **Complete**
- Memo Summarizing Economic Trends and Opportunities – **Complete**
- Memo Summarizing Travel Behavior Data Review – **Late July**
- Memo Summarizing Travel Demand Model Evaluation – **Late July**
- Tech Memo on Drivers, Spatial Assumptions, and Travel Parameters – **Complete**
- Tech Memo on Performance Measures – **Complete**
- Technical Guide on Scenario Evaluation – **Mid-August**

Phase 3 Status Report

- Task 1 – Engagement
 - Uploading agendas, minutes, and reports to website
 - Launched project Facebook page
 - Uploaded FAQ and Project Factsheet
- Task 2 – Preliminary Alternatives
 - Completed review and developed summary of HRCS SEIS Alternatives report
 - Updated cost estimates for mandated segments
- Task 3 – Determination of Candidate Alternatives
 - No activity
- Task 4 – Scenario Planning
 - Nearing completion of VISSIM and FREEVAL analysis for existing condition

Phase 3 Status Report (Cont.)

- Schedule
 - September 2022
- Major Deliverables
 - Summary of Mandated Preliminary Segments - Complete
 - Updated Cost Estimates for Mandated Preliminary Alternatives - Complete
 - Summary of Candidate Alternatives - TBD
 - Tech Memo on Microsimulation Analysis – TBD
 - Scenario Planning Report – TBD
 - Engagement Summary Report – TBD
 - Study Report - TBD

Travel Demand Model Update

Next Steps from June Working Group Meeting

- Finalize cross-harbor adjustments.
- Determine approach to addressing port/internal-external travel issues; implement; and report results.
- Reconcile updates implemented by the consultant team and those contained in VDOT's May 2020 update of the TDM.

Cross-Harbor Adjustments

- Validation of the HRTPO v2.0 travel model (TDM) revealed overestimation of demand across Harbor compared with observed demand. Adjustments implemented to correct.
- Reduce dependence on current adjustments in the TDM that may affect ability of the TDM to forecast future demand for certain land use alternatives and projects.
 - Bridge Distance Penalties (4.2x)
 - Jurisdiction-to-Jurisdiction Adjustment Factors (Commuters)
- Introduce travel time reliability as, at least, a partial explanation for lower observed demand than estimated by the TDM.

Previous Validation – Cross Harbor Travel

HRTPO Model Update

2017 Screenline Validation, Daily Volumes

Screenline	"Stock" HRTPO Model Update			Removal of Cross-Harbor Adj.			Reliability + Modified Adjustments			VDOT Criteria
	Count	Model	Error	Count	Model	Error	Count	Model	Error	
York County	181,869	165,153	-9%	181,869	171,814	-6%	181,869	165,330	-9%	+/- 6%
Hampton/Newport News	388,528	408,370	5%	388,528	441,442	14%	388,528	413,636	6%	+/- 3%
Hampton Roads Harbor	194,391	200,904	3.4%	194,391	229,111	17.9%	194,391	205,179	5.5%	+/- 6%
Isle of Wight/Suffolk	51,312	58,344	14%	51,312	62,053	21%	51,312	58,380	14%	+/- 11%
Suffolk/Chesapeake	281,392	272,902	-3%	281,392	283,802	1%	281,392	274,210	-3%	+/- 5%
Portsmouth	311,106	348,572	12%	311,106	361,652	16%	311,106	350,680	13%	+/- 3%
Norfolk	758,331	764,728	1%	758,331	763,578	1%	758,331	771,804	2%	+/- 4%
Suffolk/Virginia Beach	367,065	363,993	-1%	367,065	366,405	0%	367,065	364,351	-1%	+/- 2%

Previous Validation – Regional

HRTPO Model Update

2017 Validation by Facility Type, Daily Vehicle-Miles Traveled

Facility Type	"Stock" HRTPO Model Update			Removal of Cross-Harbor Adj.			Reliability + Modified Adjustments			VDOT Criteria
	Count	Model	Error	Count	Model	Error	Count	Model	Error	
Interstate	7,124,081	7,337,125	3.0%	7,124,081	7,559,426	6.1%	7,124,081	7,419,929	4.2%	+/- 7%
Freeway	1,164,317	1,152,257	-1.0%	1,164,317	1,165,200	0.1%	1,164,317	1,152,074	-1.1%	+/- 7%
Principal Arterial	1,564,267	1,571,892	0.5%	1,564,267	1,598,232	2.2%	1,564,267	1,577,976	0.9%	+/- 10%
Major Arterial	464,193	470,129	1.3%	464,193	477,799	2.9%	464,193	471,543	1.6%	+/- 15%
Minor Arterial	2,163,506	2,052,706	-5.1%	2,163,506	2,048,495	-5.3%	2,163,506	2,058,354	-4.9%	+/- 15%
Major Collector	219,716	232,694	5.9%	219,716	235,345	7.1%	219,716	232,282	5.7%	+/- 20%
Minor Collector	493,884	441,211	-10.7%	493,884	441,851	-10.5%	493,884	440,985	-10.7%	+/- 20%
Local	14,632	10,785	-26%	14,632	10,612	-27%	14,632	10,659	-27%	
Total	13,208,596	13,268,799	0.5%	13,208,596	13,536,960	2.5%	13,208,596	13,363,802	1.2%	

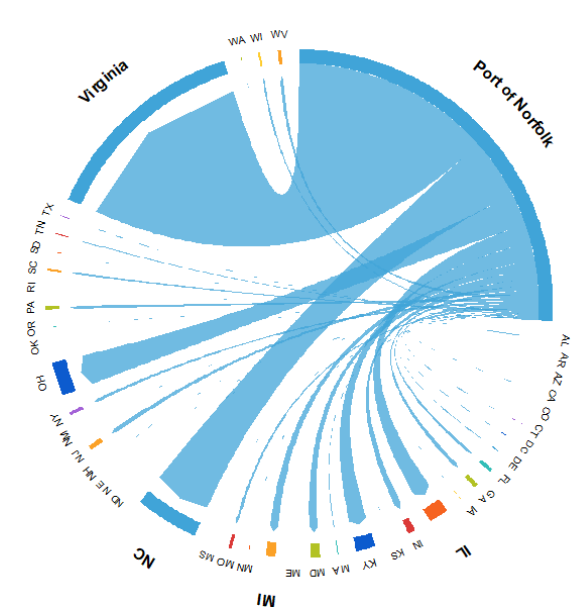
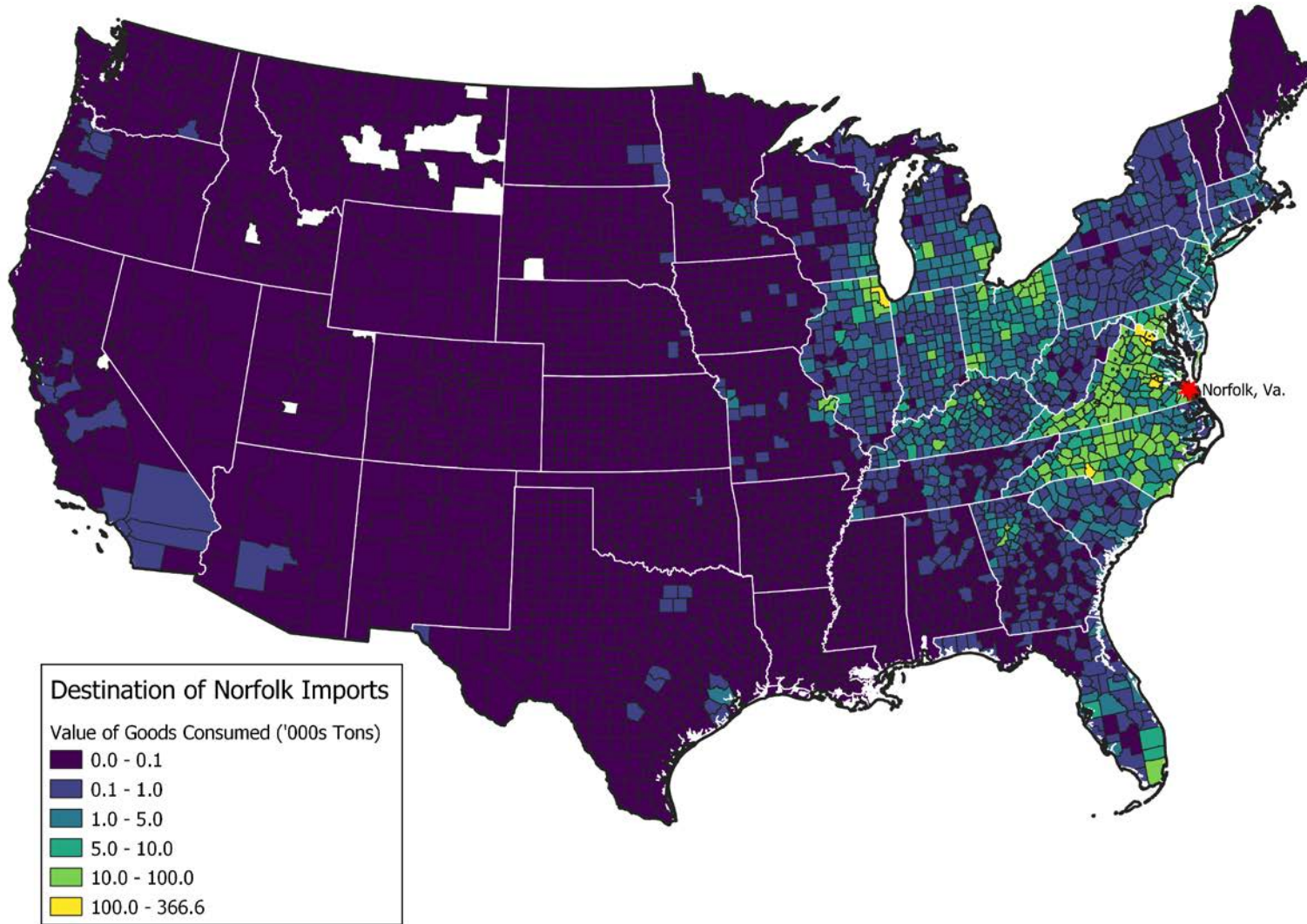
Port Activity and the RCS Scenarios

Port Driver	Greater Growth on the Water	Greater Growth in Urban Centers	Greater Suburban / Greenfield Growth
Containerized volume (TEUs)	↑	-	↑
Rail mode share	↑↑	↑	↓
Barge mode share	↑	-	-
Truck mode share	↓	↓	↑↑
Internal versus external markets	More external	-	More internal (regional industry growth)

Connecting Scenarios to TDM

- Need to relate port volumes to both internal regional truck traffic and internal-external truck flows.
 - TDM internal-external truck trip generation does not reflect the unique trip characteristics of the ports.
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- Need to adapt in order to handle future scenario narratives.
 - Port I/E flows have potential relevance to harbor crossings.

Understanding the Port's Market Reach



2018 – Containerized Imports, Moving by Truck to their Destination

Source: vFreight, 2018

Derived from FAF, WisierTrade (US Census Foreign Trade Database), and IMPLAN (county economic activity and I/O data)

Internal-External Travel Adjustments

- Addressed port demand issues by using vFreight data to develop validation and forecast targets for the relative amount of truck demand internal to the Hampton Roads Region

Year	Type	Volume *	% Internal	Target	Model Estimate	
					Previous	Updated
2018	Imports	7,100	10.6%	9.0%	84.3% (2017)	9.0% (2017)
	Exports	7,479	7.4%			
2045	Imports	14,358	10.9%	9.6%	-	-
	Exports	14,853	8.5%			

* Annual containerized tons

Updated Validation – Cross Harbor Travel

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Hampton/Newport News	388,528	413,636	6%	388,528	416,119	7%	+/- 3%
Hampton Roads Harbor	194,391	205,179	5.5%	194,391	207,388	6.7%	+/- 6%
Isle of Wight/Suffolk	51,312	58,380	14%	51,312	58,635	14%	+/- 11%
Suffolk/Chesapeake	281,392	274,210	-3%	281,392	275,249	-2%	+/- 5%
Portsmouth	311,106	350,680	13%	311,106	352,380	13%	+/- 3%
Norfolk	758,331	771,804	2%	758,331	772,287	2%	+/- 4%
Suffolk/Virginia Beach	367,065	364,351	-1%	367,065	364,547	-1%	+/- 2%

Updated Validation – Regional

HRTPO Model Update

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Facility Type	Previous Adjustments			Updated Adjustments			Criteria
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Interstate	7,124,081	7,419,929	4.2%	7,124,081	7,467,653	4.8%	+/- 7%
Freeway	1,164,317	1,152,074	-1.1%	1,164,317	1,154,234	-0.9%	+/- 7%
Principal Arterial	1,564,267	1,577,976	0.9%	1,564,267	1,582,989	1.2%	+/- 10%
Major Arterial	464,193	471,543	1.6%	464,193	474,346	2.2%	+/- 15%
Minor Arterial	2,163,506	2,058,354	-4.9%	2,163,506	2,060,497	-4.8%	+/- 15%
Major Collector	219,716	232,282	5.7%	219,716	232,954	6.0%	+/- 20%
Minor Collector	493,884	440,985	-10.7%	493,884	441,345	-10.6%	+/- 20%
Local	14,632	10,659	-27%	14,632	10,754	-27%	
Total	13,208,596	13,363,802	1.2%	13,208,596	13,424,772	1.6%	

Effect on Cross-Harbor Growth (2017 to 2045 E+C)

Crossing	Direction	"Stock" HRTPO Model Update					Previous Adjustments					Updated Adjustments				
		2017		2045 E+C		Growth	2017		2045 E+C		Growth	2017		2045 E+C		Growth
		Volume	V/C*	Volume	V/C		Volume	V/C	Volume	V/C		Volume	V/C	Volume	V/C	
Hampton Roads Bridge-Tunnel	NB	47,411	0.95	71,253	0.78	50.3%	47,149	0.94	75,575	0.83	60.3%	47,344	0.95	76,018	0.83	60.6%
	SB	49,247	0.98	74,188	0.81	50.6%	48,665	0.97	79,276	0.87	62.9%	48,812	0.98	79,801	0.87	63.5%
Monitor Merrimac Memorial Bridge-Tunnel	NB	34,440	0.67	40,308	0.78	17.0%	36,874	0.72	44,078	0.86	19.5%	37,435	0.73	44,032	0.86	17.6%
	SB	37,442	0.73	41,722	0.81	11.4%	39,907	0.78	45,143	0.88	13.1%	40,543	0.79	45,026	0.87	11.1%
James River Bridge	NB	16,905	0.51	22,407	0.68	32.5%	16,938	0.51	23,605	0.72	39.4%	17,259	0.52	23,687	0.72	37.2%
	SB	15,459	0.47	20,534	0.62	32.8%	15,645	0.48	21,544	0.65	37.7%	15,994	0.49	21,603	0.66	35.1%
TOTAL		200,904	0.75	270,412	0.77	34.6%	205,178	0.76	289,221	0.82	41.0%	207,387	0.77	290,167	0.83	39.9%

Note: Raw travel model daily volumes

* Volume-to-capacity ratio

Still Able to Minimize Reliance on Original Adjustments

- Bridge Distance Penalties
 - Removed
- Jurisdiction-to-Jurisdiction Adjustment Factors (Commuters)

Movement	"Stock"	Modified
Newport News to Norfolk	-4.00x	-2.50x
Hampton to Norfolk	-6.67x	-1.82x

* - a value of '1.0' indicates no adjustment

Review of TDM Updates

Update/Modification	RCS Model	HRTPO Model ¹
Cross-Harbor Adjustments (Travel Time Reliability)	✓	
Port Internal-External Trip Generation	✓	
Technology Template		
Zero-Passenger Vehicle (ZPV) ² Trip Distribution Script Fixes and Calibration	✓	✓
ZPV Trip Generation (Conventional)	✓	
Model Choice Model Script Fixes (Utility Calculations & Reporting)	✓	✓

1 - July 2020 Release
 2 - Conventional MaaS vehicles w/o passengers and autonomous zero-occupant vehicles

Next Steps

- Run model for different growth scenarios with and without technology
- Discern if adequate differentiation has been achieved
- August 13 Working Group Meeting
- August 27 Working Group Meeting
- Early September Joint Working Group/Steering (Policy) Committee Meeting