



REGIONAL
CONNECTORS
STUDY

WORKING GROUP MEETING

October 8, 2020

Michael Baker

INTERNATIONAL

REGIONAL
CONNECTORS
STUDY

TRAVEL DEMAND MODELING

Recent Activity since August 27 meeting

- Investigated counter-intuitive results
- Travel demand model troubleshooting and fixes
- Regional travel demand model re-calibration/re-validation
- Updated VMT and cross harbor figures

Updated Validation – Regional

HRTPO Model Update

2017 Validation by Facility Type, Daily Vehicle-Miles Traveled

Facility Type	Previous Adjustments			Updated Adjustments			Criteria ¹
	Observed	Estimate	Error	Observed	Estimate	Error	
Interstate	7,124,081	7,467,653	4.8%	7,124,081	6,868,732	-3.6%	+/- 7%
Freeway	1,164,317	1,154,234	-0.9%	1,164,317	1,101,233	-5.4%	+/- 7%
Principal Arterial	1,564,267	1,582,989	1.2%	1,564,267	1,582,464	1.2%	+/- 10%
Major Arterial	464,193	474,346	2.2%	464,193	471,353	1.5%	+/- 15%
Minor Arterial	2,163,506	2,060,497	-4.8%	2,163,506	2,032,184	-6.1%	+/- 15%
Major Collector	219,716	232,954	6.0%	219,716	240,225	9.3%	+/- 20%
Minor Collector	493,884	441,345	-10.6%	493,884	449,316	-9.0%	+/- 20%
Local	14,632	10,754	-27%	14,632	10,813	-26%	
Total	13,208,596	13,424,772	1.6%	13,208,596	12,756,319	-3.4%	

Updated Validation – Cross Harbor Travel

HRTPO Model Update

2017 Screenline Validation, Daily Volumes

Screenline	Previous Adjustments			Updated Adjustments			Criteria ¹
	Count	Model	Error	Count	Model	Error	
York County	181,869	166,226	-9%	181,869	174,654	-4%	+/- 6%
Hampton/Newport News	388,528	416,119	7%	388,528	387,666	0%	+/- 3%
Hampton Roads Harbor	194,391	207,388	6.7%	194,391	204,620	5.3%	+/- 6%
Isle of Wight/Suffolk	51,312	58,635	14%	51,312	55,916	9%	+/- 11%
Suffolk/Chesapeake	281,392	275,249	-2%	281,392	270,696	-4%	+/- 5%
Portsmouth	311,106	352,380	13%	311,106	352,281	13%	+/- 3%
Norfolk	758,331	772,287	2%	758,331	812,844	7%	+/- 4%
Suffolk/Virginia Beach	367,065	364,547	-1%	367,065	355,367	-3%	+/- 2%

Re-Validation Update - Regional Roadway Network (Daily)

Description	2017 Base Year	2045 Baseline w/Tech*	Change**
Vehicle-Miles Traveled	42,225,948	52,106,565	+23.4%
Vehicle-Hours Traveled	1,173,533	1,538,821	+31.1%
Delay (Hours)	221,122	365,076	+65.1%
Average Free-flow Speed (mph)	44.3	44.4	+0.2%
Average Congested Speed (mph)	36.0	33.9	-5.8%

* includes MaaS

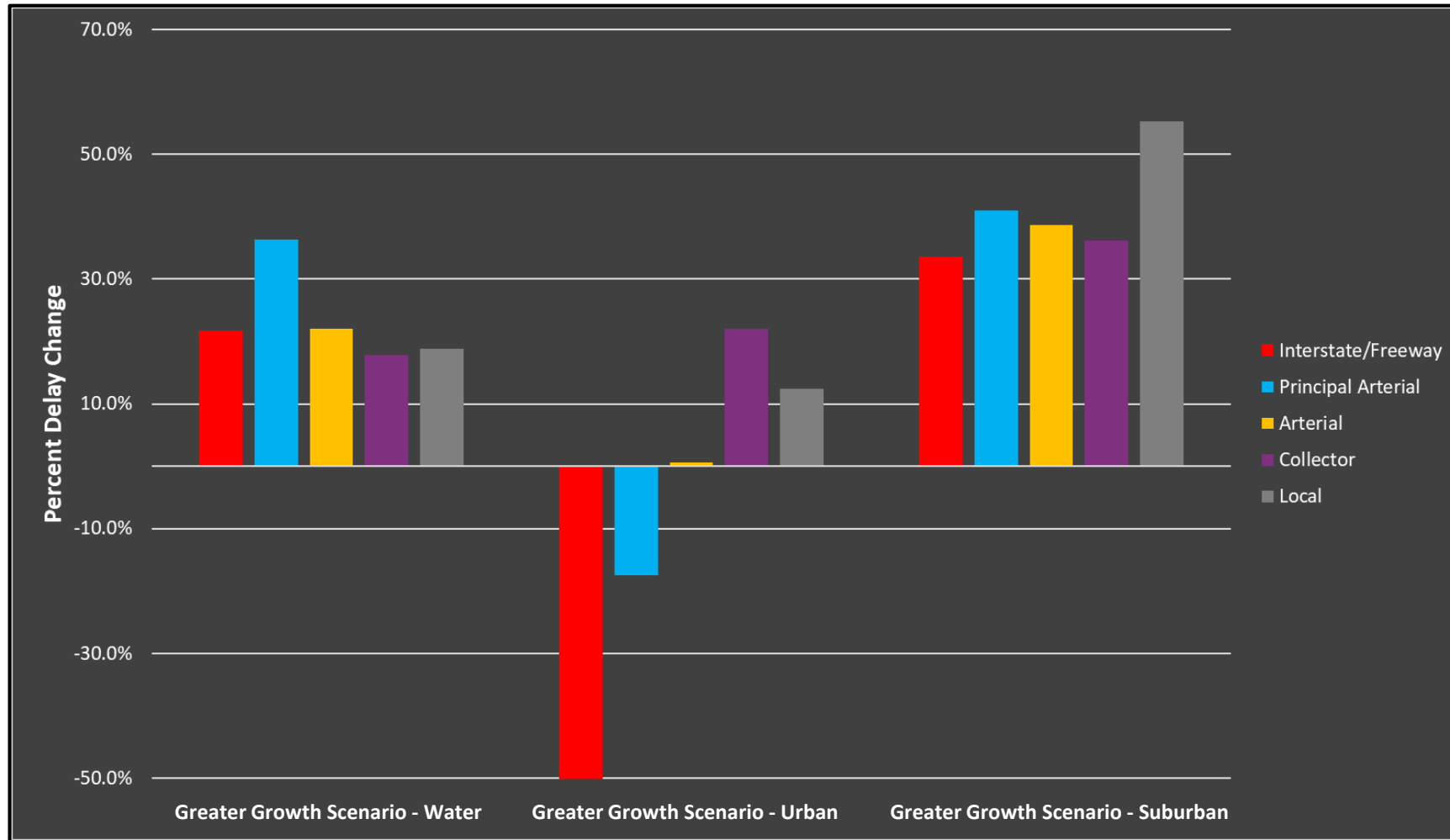
**compared with 2017 Base Year

Re-Validation Update - Regional Roadway Network (Daily)

Description	2045 Baseline w/Tech	2045 Greater Growth Scenario - Water	Change*	2045 Greater Growth Scenario - Urban	Change*	2045 Greater Growth Scenario - Suburban	Change*
Vehicle-Miles Traveled	52,106,565	55,576,661	+6.6%	56,351,507	+8.2%	61,889,830	+18.8%
Vehicle-Hours Traveled	1,538,821	1,708,757	+11.0%	1,569,875	+2.0%	1,922,009	+25.0%
Delay (Hours)	365,076	450,519	+23.4%	291,644	-20.1%	496,414	+36.0%
Average Free-flow Speed (mph)	44.4	44.2	-0.4%	44.1	-0.7%	43.4	-2.3%
Average Congested Speed (mph)	33.9	32.5	-4.1%	35.9	+5.9%	32.2	-5.0%

*compared with 2045 Baseline w/ Tech

Re-Validation Update - Change* in 2045 Daily Delay by Facility Type

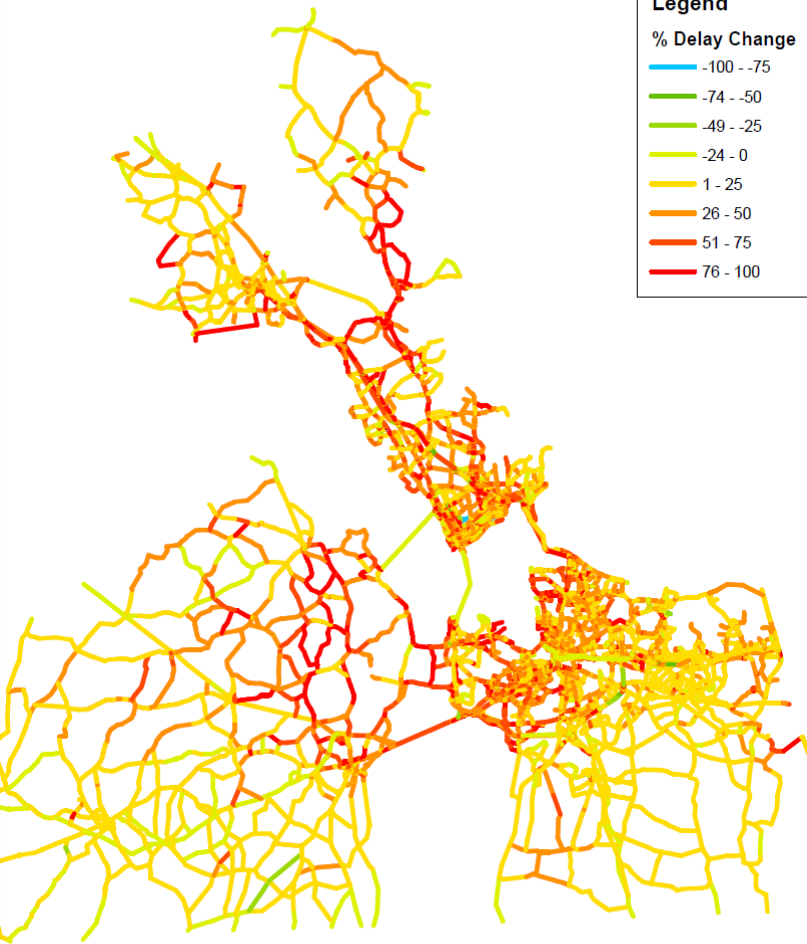
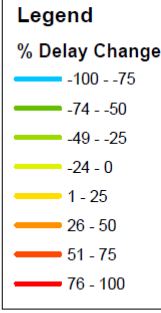


* compared with 2045 Baseline w/Tech

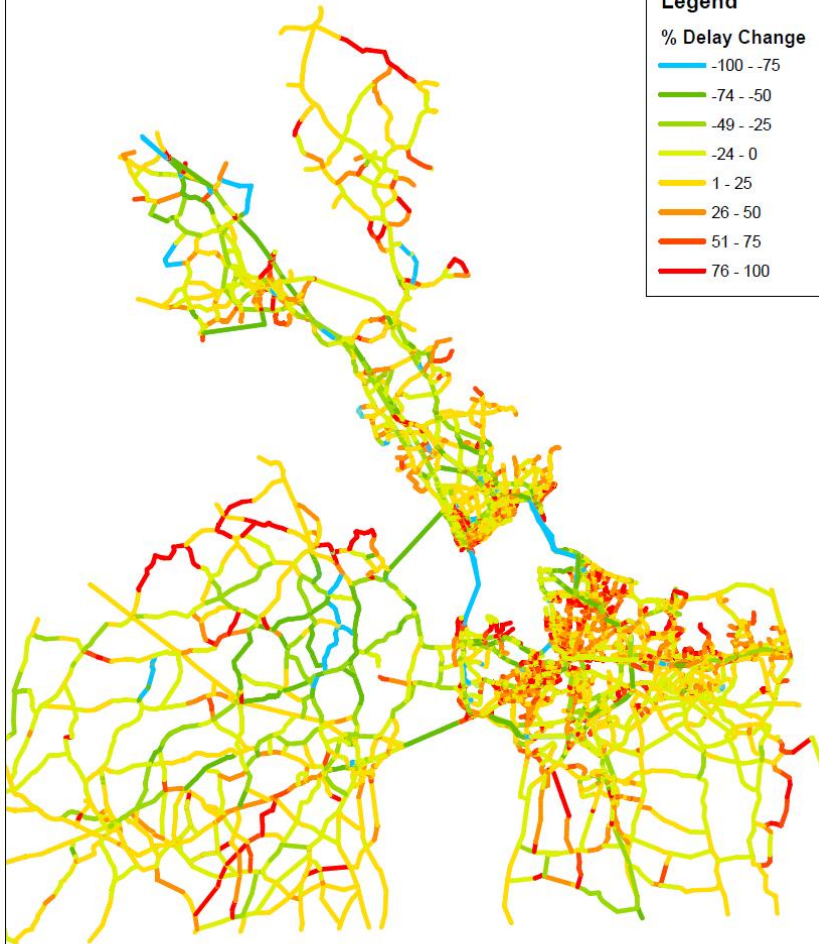
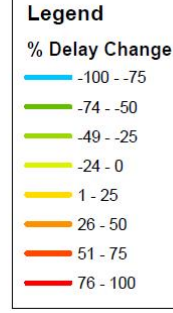
Re-Validation Update - Change in Daily Delay Due to Congestion

(Compared with 2045 Baseline w/Tech)

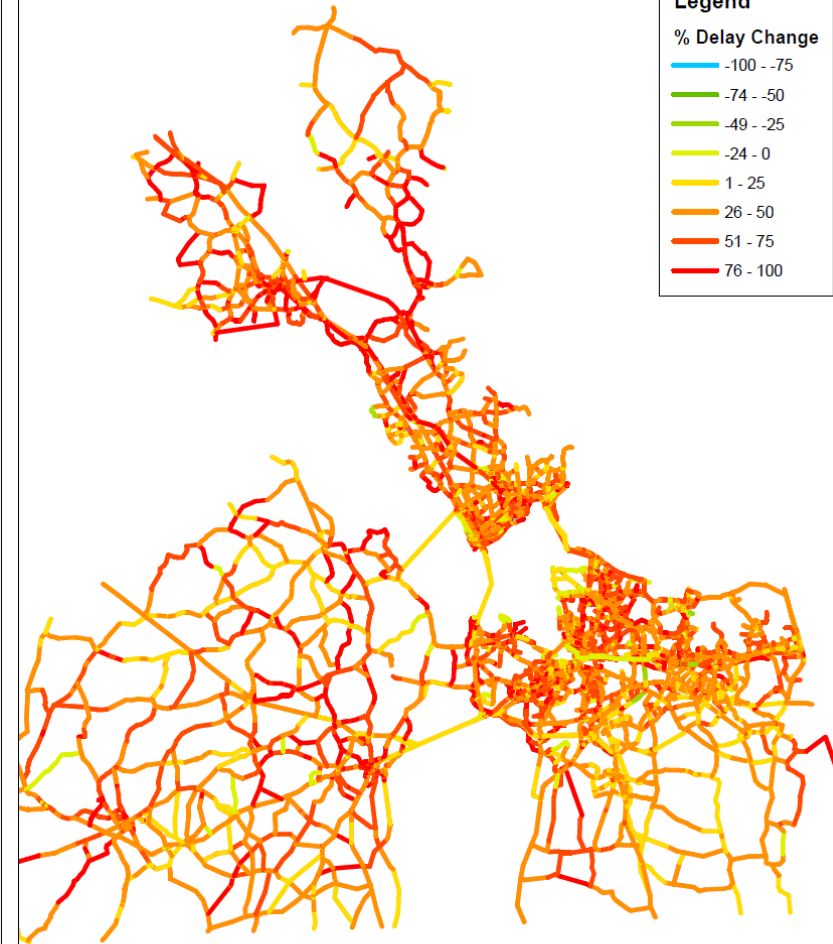
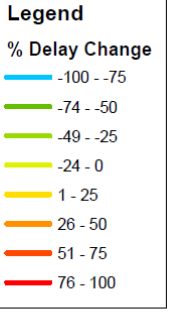
Greater Growth Scenario - Water



Greater Growth Scenario - Urban



Greater Growth Scenario - Suburban



Re-Validation Update - 2045 Daily Delay* on Harbor Crossings

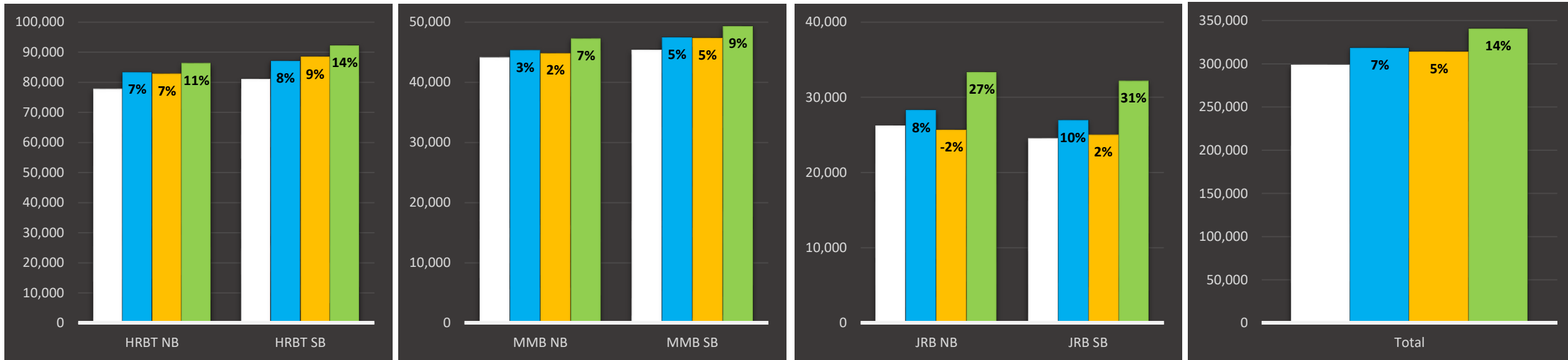


xx % – percent change in daily delay compared with 2045 Baseline w/Tech

* units in hours



Re-Validation Update - 2045 Daily Vehicle Volume on Harbor Crossings



xx % – percent change in daily volume compared with 2045 Baseline w/Tech



DISCUSSION

- Discuss congestion patterns
 - 2017 Crossings – 194,000 vpd
 - 2045 Crossings – 300,000-340,000 vpd
 - Additional crossing capacity needed

Performance Measures Activities

- Revision of performance measure values
- Economic modeling and impact analysis
- Populate scenario evaluation dashboard

ECONOMIC

(Change in) Lost productivity from delay

(Economic impact of change in) Labor market accessibility

Performance on the freight network - total delay + spatial results

(Change in) Percent of freight traffic on secondary streets - total + spatial

TRANSPORTATION NETWORK

(Change in) Delay on cross-harbor trips [time and dollar value]

(Change in) Circuity of cross-harbor trips

(Change in) Reliability for cross-harbor trips [time and dollar value]

(Change in) Cross-harbor accessibility

(Change in) Regional delay [total + spatial]

System reliability

(Change in) User cost

Cost of forecasted crashes

(Change in) Transportation network impact from flood-prone conditions [e.g., delay, trip length, and/or circuity]

ACCESSIBILITY & TRAVEL MODE

(Change in) Multimodal accessibility to jobs

(Change in) Accessibility index by mode

Performance of the transit-serving roadway network [i.e., average speed]

(Change in) Mode share index

(Change in) Accessibility to major tourist attractions

(Change in) Transit ridership

Percent of jobs/pop within (15 min) drive time to airport or Amtrak station

Low income household access to employment

TECHNOLOGY (Focus is on comparison of scenarios, not network)

Percent of trips by automated vehicles

(Change in) Percent of travel using facilities with adaptive technologies [e.g., V2I, ITS]

Reliability enhancement from technology

Induced trip demand from technology

RECOMMENDED ACTION

- Agenda Item 5 – Recommending approval of RCS Phase 2 to Steering Committee

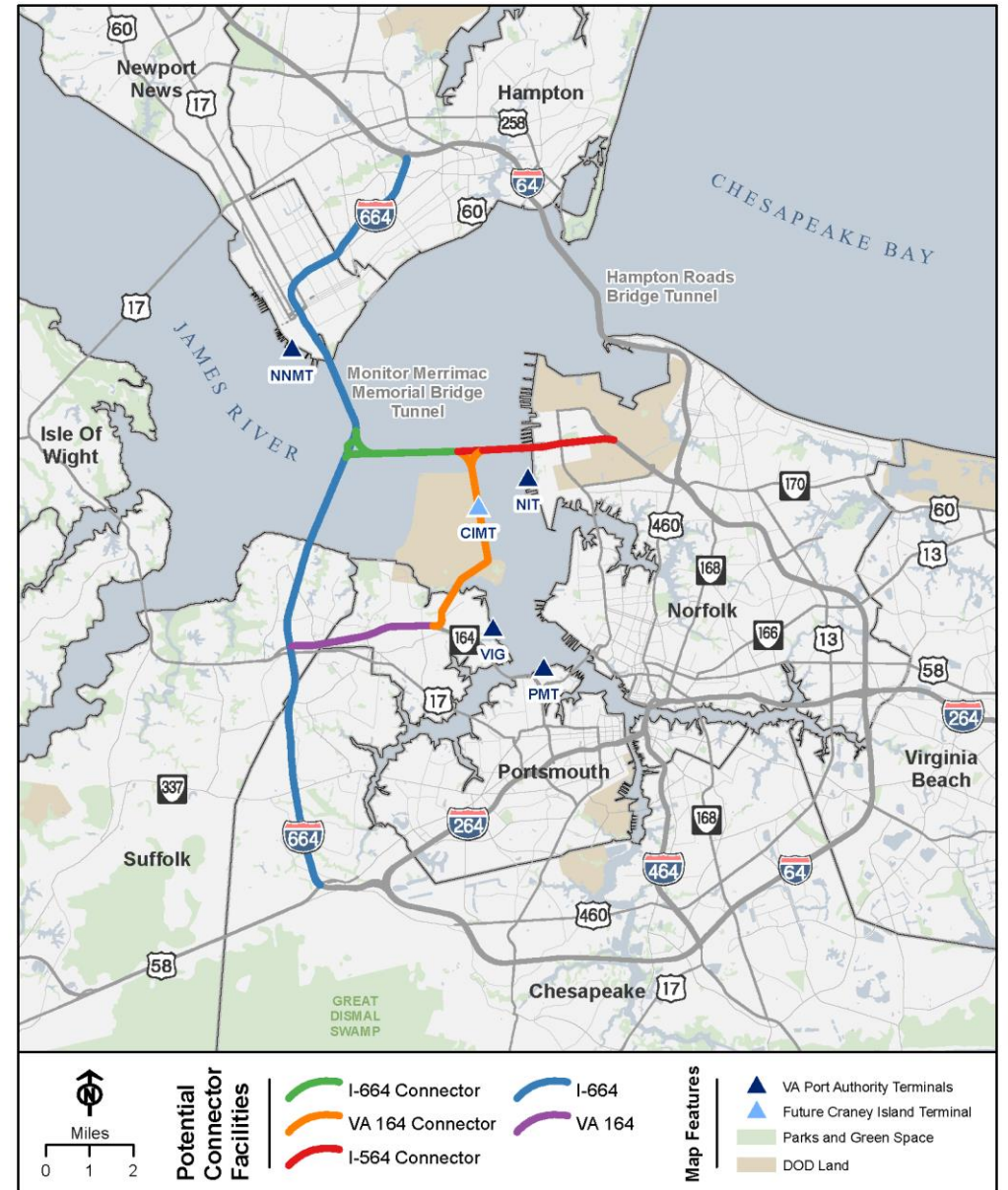
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MANDATED AND OTHER POTENTIAL SEGMENTS

MANDATED SEGMENTS

Previous Discussion

- VA 164 Connector segment was requested to be dropped from consideration pending Steering Committee approval
- Subsequently, that request has been rescinded
- All 5 mandated segments are still to be considered pending impacts on constraints



CONSTRAINTS

Following field visits to Craney Island and the Navy Fuel Depot the following constraints were identified:

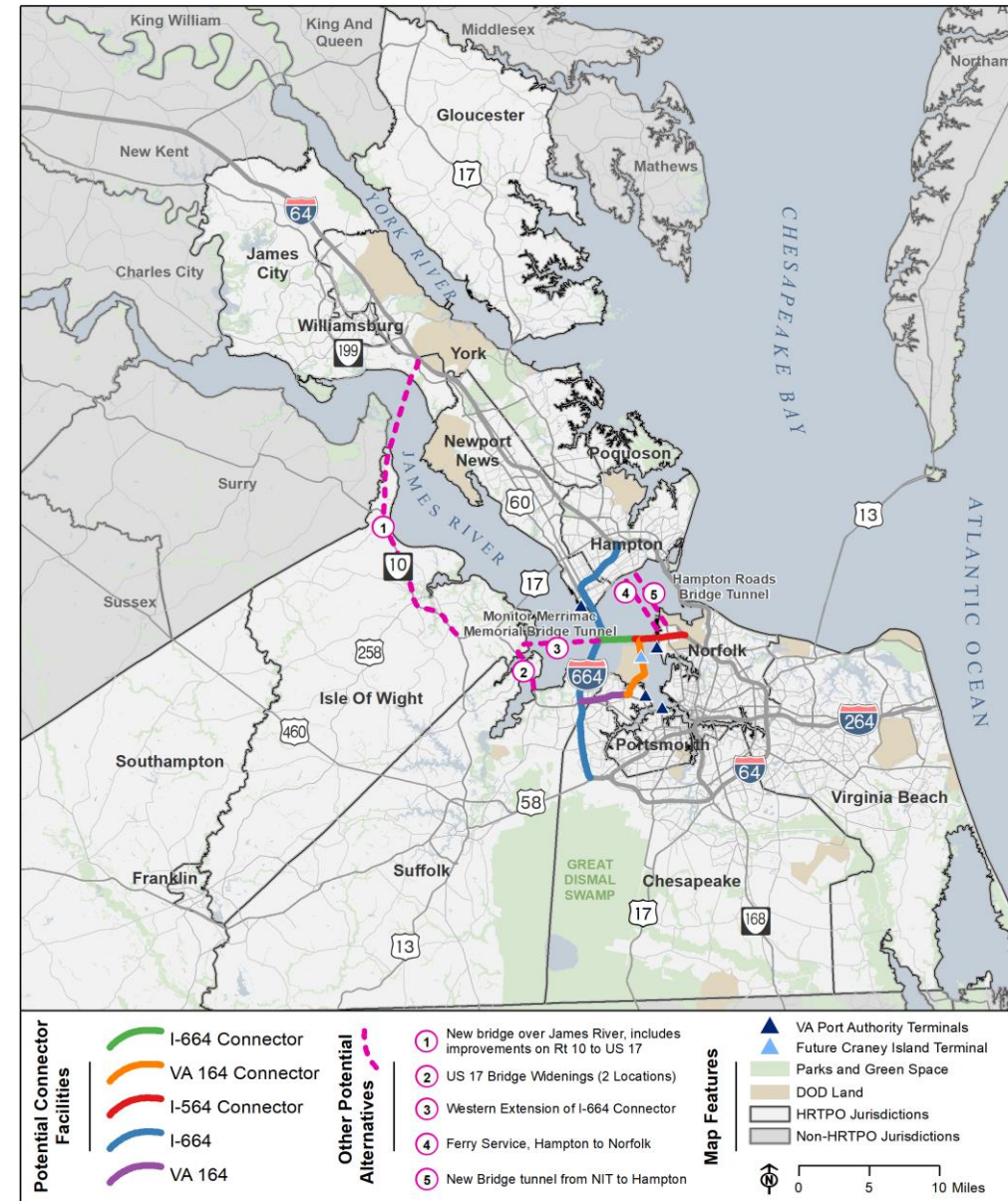
- Craney Island operations and shy distance requirements
- Navy Fuel Depot operations requirements and planned expansion
- City of Portsmouth land fill location and future expansion plans



POTENTIAL SEGMENTS

Working Group has previously decided that the following potential segments be eliminated from consideration:

- Segment 1 – New bridge over James River, includes improvements to Rte 10 and US 17
- Segment 4 – Ferry service, Hampton to Norfolk
- Segment 5 – New bridge tunnel from NIT to Hampton



RECOMMENDED ACTION

- Agenda Item 6 – For discussion and recommendation of mandated and potential segments to the Steering Committee

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STATUS OF DELIVERABLES AND SCHEDULE

Phase 2 Status Report

■ Deliverables

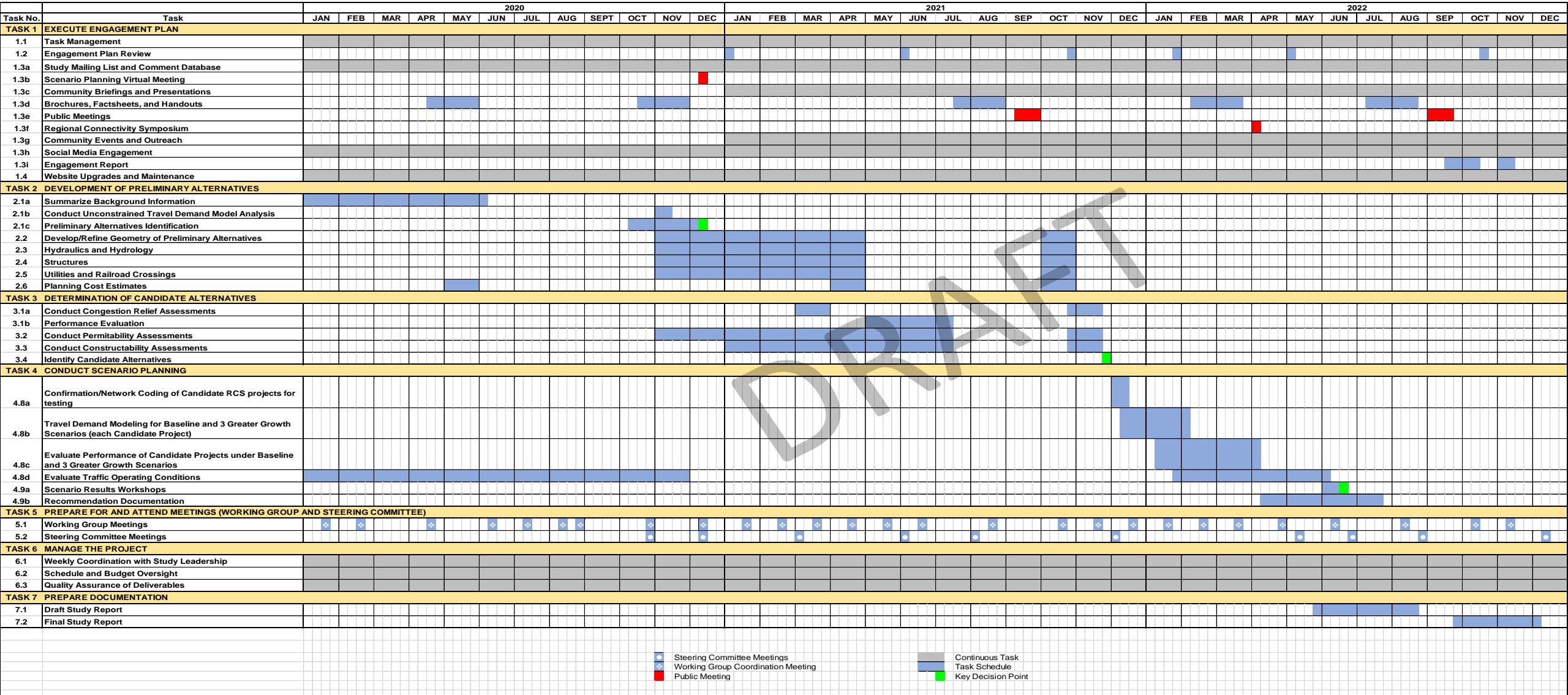
- Scenario Planning Methodology White Paper – **Complete**
- Memo Summarizing Economic Trends and Opportunities – **Complete**
- Memo Summarizing Travel Behavior Data Review – **Mid-November**
- Memo Summarizing Travel Demand Model Evaluation – **Mid-November**
- Tech Memo on Drivers, Spatial Assumptions,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


Phase 3 Status Report



■ Major Deliverables

- Summary of Mandated Preliminary Segments - **Complete**
- Updated Cost Estimates for Mandated Preliminary Alternatives - **Complete**
- Summary of Candidate Alternatives – **February 2022**
- Tech Memo on Microsimulation Analysis – **June 2022**
- Scenario Planning Report – **July 2022**
- Engagement Summary Report – **November 2022**
- Study Report – **December 2022**

Phase 3 Draft Schedule



 Steering Committee Meetings
 Working Group Coordination Meeting
 Public Meeting

 Continuous Task Task Schedule
 Key Decision Point

Next Steps

- October 27, 9:30 AM - Joint Working Group/Steering (Policy) Committee Meeting – review complete dashboard with congestion-related items and economic impacts
- Alternative identification, development, and assessment