January 23, 2019

Memorandum #2019-13

TO: Regional Connectors Study Joint Steering (Policy) Committee & Working Group

BY: Camelia Ravanbakht, RCS Project Coordinator

RE: Regional Connectors Study

Attached is the agenda for the **Regional Connectors Study Joint Steering (Policy) Committee and Working Group meeting** scheduled for **Tuesday, January 29, 2019 at 10:00 am** at the **Regional Building Board Room, 723 Woodlake Drive, Chesapeake, Virginia 23320**.

Please note that the attachments for Agenda Item 7 are still in process and will be made available subsequently.

MK/sc

Voting Members:
Steering Policy Group
Rick West (CH)
Donnie Tuck (HA)
McKinley Price (NN)
Martin Thomas (NO)
John Rowe (PO)
Linda Johnson (SU)
Robert Dyer (VB)

Working Group
Earl Sorey (CH)
Angela Rico (HA)
Bryan Stilley (NN)
Brian Fowler (NO)
Jason Souders (SU)
James Wright (PO)
Phil Pullen (VB)

Nonvoting Members:
Jason Flowers (Army Corps)
George Janek (Army Corps)
Col. Patrick Kinsman (Army Corps)
Robert Pruhs (Army Corps)
Gregory Steele (Army Corps)
Ivan Rucker (FHWA)
Kevin Page (HRTAC)
Craig Quigley (HRMFFA)
Capt. Richard Hayes (US NAVY)
Tim Dolan (US Coast Guard)
Gene Leonard (US Coast Guard)
Tony Gibson (VDOT)
Chris Hall (VDOT)
Scott Smizik (VDOT)
John Reinhart (VPA)
Barbara Nelson (VPA)
Kit Chope (VPA)

Staff:
Bob Crum (HRTPO)
Mike Kimbrel (HRTPO)
Rob Case (HRTPO)
Keith Nichols (HRTPO)
Dale Stith (HRTPO)

Project Coordinator:
Camelia Ravanbakht

Agenda

Joint Steering (Policy) Committee & Working Group Meeting

January 29, 2019

10:00 AM

The Regional Building, Board Room A, 723 Woodlake Drive, Chesapeake, Virginia

1) Call to Order

2) Welcome and Introductions

3) Public Comment Period (Limit 3 minutes per individual)

4) Minutes

Summary Notes from January 10, 2019, Working Group Meeting – Attachment 4a

Summary Notes from August 28, 2018, Steering (Policy) Committee Meeting – Attachment 4b

Recommended Action: For Approval

5) RCS and Relationship with 2045 Long- Range Transportation Plan (LRTP)- Dale Stith, HRTPO

a) Background
Regional Priority Projects (RPP) Round 1 and Round 2 – Attachment 5a1
HRTPO Resolution 2018-3, LRTP and Regional Priority Projects – Attachment 5a2

b) Highlights from May 2017 HRTAC-HRTPO-VDOT Memorandum of Understanding
May 2017 MOU – Attachment 5b

c) 2045 LRTP Schedule and Federal Requirements

d) Hampton Roads Travel Demand Model
i) Base Year 2015 Calibration with 2017 Validation
ii) Existing Data

e) RCS Options with Potential Issues and Implications

i) Option 1 – RCS Concurrent with 2045 LRTP Schedule
   - RCS project recommendations will be considered for inclusion in the 2045 LRTP (along with other Regional Priority Projects)
   - Consolidation of efforts (scenario planning, prioritization, public outreach, etc.)

ii) Option 2 – Separate Path from 2045 LRTP Schedule
   - Potential RCS projects will be not be part of the evaluation of non-committed Regional Priority Projects as study will still be underway
   - Upon completion of RCS, 2045 LRTP could be amended at a later date, but would need to have TPO Board vote to remove other project(s) due to fiscal-constraint requirements
   - Depending on the completion date of RCS, 2045 socioeconomic forecast may not be valid and additional analysis might be warranted

Recommended Action: For Selection and Approval of One of the Two Options

6) Update on RCS Phase 1 Study Tasks: Craig Eddy, MBI

Comments Received on Draft Documents – Attachment 6

Recommended Action: For Information and Discussion

7) RCS Draft Scope of Services for Next Phase: Craig Eddy, MBI

Draft Scope of services and Budget– Attachment 7a and Handout
Comments Received on Draft Scope of Services – Attachment 7b

Recommended Action: For Review and Discussion

8) Schedule and Next Meeting:

- Steering (Policy) Committee: February 13, 2019 – 10 AM

9) Adjournment

HRTPO RCS Working Group Meeting

Minutes

January 10, 2019

1. Camelia called meeting to order at 10:06 am
    a. Note that per the discussion at the last Working Group meeting on December 6, HRTPO staff is not in attendance so that the rest of the Working Group can meet with the Project Coordinator and Consultant Team without staff.
    b. Gratitude expressed to Portsmouth for hosting.
2. Introduction of attendees (see sign-in sheet); one attendee via phone.
3. Public Comment Period
    a. No public comments.
4. Minutes
    a. No changes, comments or revisions to minutes.
    b. Approval - Motion approved
5. Update on RCS Phase 1 Study Tasks: Craig Eddy, MBI
    a. Reminder of Phase 1 tasks completed.
    b. Travel demand model is complete.
    c. Scenario planning approach is complete.
        i. Costs under negotiation.
    d. Existing conditions information will be turned in 1/11.
    e. Joint meeting of Working Group and Steering (Policy) Committee is scheduled on 1/29 – this meeting will cover potential schedule changes.
    f. Consultant team is working at risk without contract to stay on LRPT schedule.
        i. Comments and concerns expressed regarding completing the entirety of the project all in one last phase to meet a schedule.
        ii. Comments and concerns expressed about schedule being rushed and the Working Group not having enough time to review and digest materials.
            1. Joint meeting with the Steering (Policy) Committee on 1/29 will include discussion on whether to stay in parallel with 2045 LRTP effort or decouple and work at own pace, the ramifications of which, will be presented.
6. RCS Scenario Planning Draft Scope of Work and Cost: Lorna Parkins, MBI
    a. Task 1 land use background and coordination
        i. Working Group members will connect Consultant Team to appropriate Planning and Economic Development staff within localities via email.
        ii. Localities will assist in filling in the gaps in the parcel data.
        iii. Concerns expressed about not just having zoning information but also having quantity numbers within parcels.
        iv. After gaps are approximated, Working Group agrees that National Data approximations can be used to supplement areas.
    b. Task 1e
        i. Concerns expressed about also needing to know areas that should not be developed.

        ii. Port of VA will provide any appropriate information needed for planning purposes.
    c. Task 1f
        i. Baker made the recommendation of streamlining using TREDIS – Working Group had no questions or concerns about that approach.
7. RCS Draft Scope of Services for Next Phase (2): Craig Eddy, MBI
    a. Working Group requested a list of stakeholders be added to the scope of work
8. Interactions between Working Group, Consultants, and HRTPO staff: Camelia Ravanbakht
    a. Goal is to be transparent as possible, open to the Working Group and to the public, transparent process.
    b. Comment period – the goal is to allow for both the Working Group and TPO staff to have ample time for comments and questions and then having the opportunity to see all of the other comments and questions for reviews.
        i. Request was made of the Working Group to send some sort of response, even if it states "no comments or questions." Just want to know it has been received and reviewed.
    c. Weekly conference calls are held every Thursday at 10am with Craig, Camelia, and Mike Kimbrel (HRTPO staff) – all Working Group members are welcome to email Camelia for conference line information to attend these status calls, if interested in participating.
    d. Question - website launch target date is Feb 7th.
    e. Question - comments on scope for phase 2 need to be in to Camelia asap.
9. Schedule and next meeting
    a. Joint meeting with Steering (Policy) Committee – Jan. 29 at 10am
    b. Working group meeting on Jan. 31 - cancelled.
10. Meeting Adjourned at 11:34am.

Attendees

Name	Email	Company
Vlad Gavrilovic	vlad@epr-pc.com	EPR
Jason Souders	jsouders@suffolksva.us	City of Suffolk
James Wright	wrightj@portsmouthva.gov	City of Portsmouth
Carl Jackson	jacksonc@portsmouthva.gov	City of Portsmouth
Bob Baldwin	baldwinb@portsmouthva.gov	City of Portsmouth
Lorna Parkins	lparkins@mbakerintl.com	Michael Baker
Christine Armstrong	Christine.armstrong@norfolk.gov	Norfolk
Brian Fowler	Brian.fowler@norfolk.gov	Norfolk
George Janek	George.a.janek@usace.army.mil	Corps of Engineers
Earl Sorey	easorey@cityofchesapeake.net	Chesapeake
Camelia Ravanbakht	Camelia.Ravanbakht@outlook.com	HRTPO Retired
Rick Dwyer	rdwyer@hrmffa.org	HRMFFA
Craig Eddy	Craig.eddy@mbakintl.com	Michael Baker
Kevin Page	kpage@hrtac.org	HRTAC
Bryan Stilley	Bstilley@nnva.gov	Newport News
Tara Reel	Tdreel@vbgov.com	City of VA Beach
Barbara Nelson	bnelson@portofnelson.com	Port of VA
Robin Grier	Robin.Grier@vdot.virginia.gov	VDOT
Angela Rico	On file	Hampton
Jessica Bedenbaugh	jbedenbaugh@prrbiz.com	PRR
(On phone) Naomi Stein		

Regional Connectors Study- Steering (Policy) Committee
Minutes of August 28, 2018 meeting at Regional Building

Attendance (alphabetically)

James Baker	Chesapeake
Rob Case	HRTPO
Bob Crum	HRTPO
Rick Dwyer	HRMFFA
Craig Eddy	Michael Baker
Amy Inman	Norfolk
Linda Johnson	Suffolk
Mike Kimbrel	HRTPO
Col Patrick Kinsman	USACE
Keith Lockwood	USACE
Bob Matthias	Va. Beach
Kendall Miller	HRTPO
Keith Nichols	HRTPO
Kevin Page	HRTAC
Lorna Parkins	MBI
Phil Pullen	Va. Beach
Craig Quigley	HRMFFA
Camelia Ravanbakht	Project Coordinator
Pete Reilly	VDOT
John Reinhart	Port of Virginia
John Rowe	Portsmouth
Bryan Stilley	Newport News
Dale Stith	HRTPO
Martin Thomas	Norfolk
Donnie Tuck	Hampton

Minutes [numbered according to agenda]

1. Call to Order- by Bob Crum (HRTPO) at 2pm

2. Welcome and Introductions- After Mr. Crum's welcome, all introduced themselves.

3. Public Comment Period- no requests

4. Minutes- The minutes of the October 5, 2017 meeting were approved.

5. Background and Scope of Work- Craig Eddy (MBI) presented the scope of work.

6. Phase 1 Study Progress

Mr. Eddy presented slides on the progress of each task:
Task 1- Develop and Initiate Engagement Program
Task 2- Evaluate Regional Travel Demand Model
Task 3- Determine Scenario Planning Effort
Task 4- Update Existing Conditions Information
Task 5- Present Findings at Working Group Meeting
Deliverable: Phase 2 draft scope

7. Schedule

Mr. Eddy reported that we are half-way through the proposed time for Phase 1 but behind schedule concerning task completion.

He said that the HRTPO needs recommendations from this study by April 2020 for its 2045 long-range transportation plan.

8. Next Steps

Mr. Eddy said that the next steps are to mail the survey to the public and then to meet with the stakeholders.

Mr. Rowe (Portsmouth) verified that the ERC has been included as a stakeholder.
Patrick Kinsman (USACE) verified that anyone can answer the survey on-line, not only those who receive the mailing.
Bob Matthias (Va. Beach) suggested that the proposed external and internal highway improvements be considered.

2045 Long-Range Transportation Plan: Regional Priority Projects – Round 2

Presented to the Hampton Roads Transportation Planning Organization
February 15, 2018

Dale M. Stith, AICP, GISP
Principal Transportation Planner

Attachment 5a1

the heartbeat of HAMPTON ROADS TPO
Transportation Planning Organization

BACKGROUND

2040 LRTP Round 1 Regional Priority Projects

- October 2013
- Included in 2040 LRTP (adopted July 2016)
- HRTAC 2040 Plan of Finance: programed through 2038

Virginia Beach Request – April 2017

Ongoing Regional Studies

Board Meeting – May 2017

- Guidance from Board regarding establishing a “pipeline” of Round 2 Regional Priority Projects

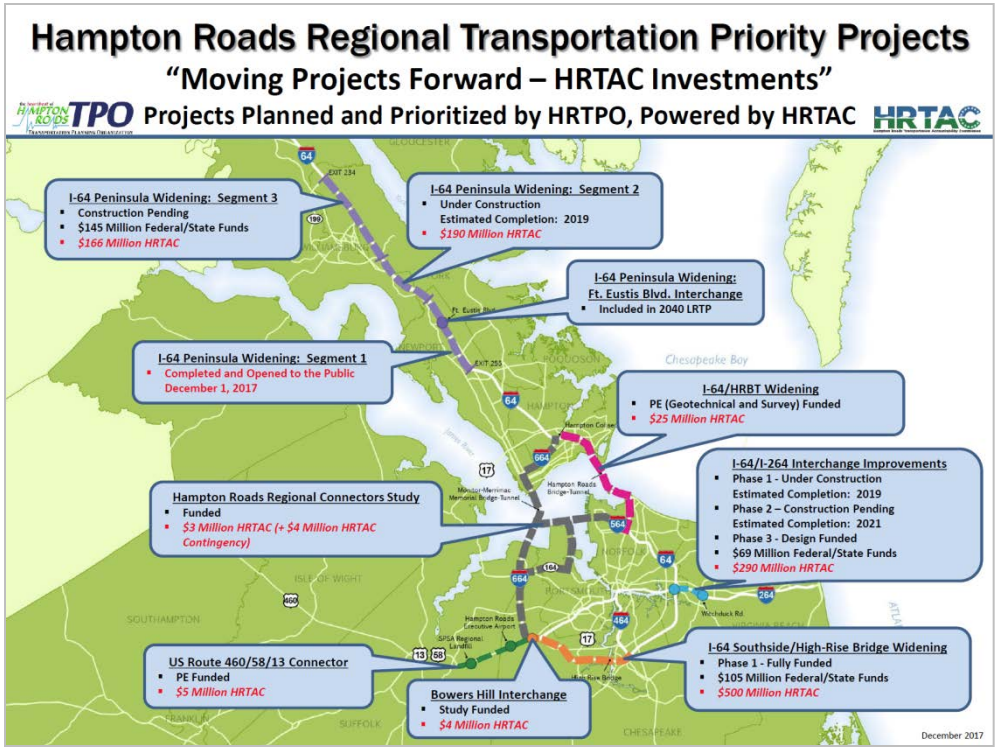
2045 LRTP Under Development – Adoption June 2021

- 5 year process initiated in 2016

Attachment 5a1

2040 LRTP Round 1 Projects

Group	Project	Estimated YOE* Cost	Estimated Opening Year
I	**I-64 Peninsula Widening**		
	Segment 1	$123 Million	2017
	Segment 2	$190 Million	2019
	Segment 3	$311 Million	2022
	I-64/I-264 (including Witchduck Rd Interchange)		
	Phase 1	$157 Million	2019
	Phase 2	$190 Million	2021
	Phase 3 Study	$10 Million	2018
II	**I-64 Southside Widening (including High Rise Bridge)**		
	Phase 1	$600 Million	2021
III	**Hampton Roads Crossing**		
	Regional Connectors Study	$3 Million (+ $4 Million Contingency)	2020
	I-64/Hampton Roads Bridge-Tunnel Widening	$3.8 Billion	2024
IV	**I-64 Southside Widening (including High-Rise Bridge)**		
	Phase 2	$1.7 Billion	2037
	Bowers Hill Interchange	$659 Million	2037
V	**I-64 Peninsula Widening**		
	I-64/Fort Eustis Blvd Interchange	$320 Million	2038
	US 460/58/13 Connector (including Regional Landfill and Hampton Roads Executive Airport Interchanges)		
	US 460/58/13 Connector	$396 Million	2038



Attachment 5a1

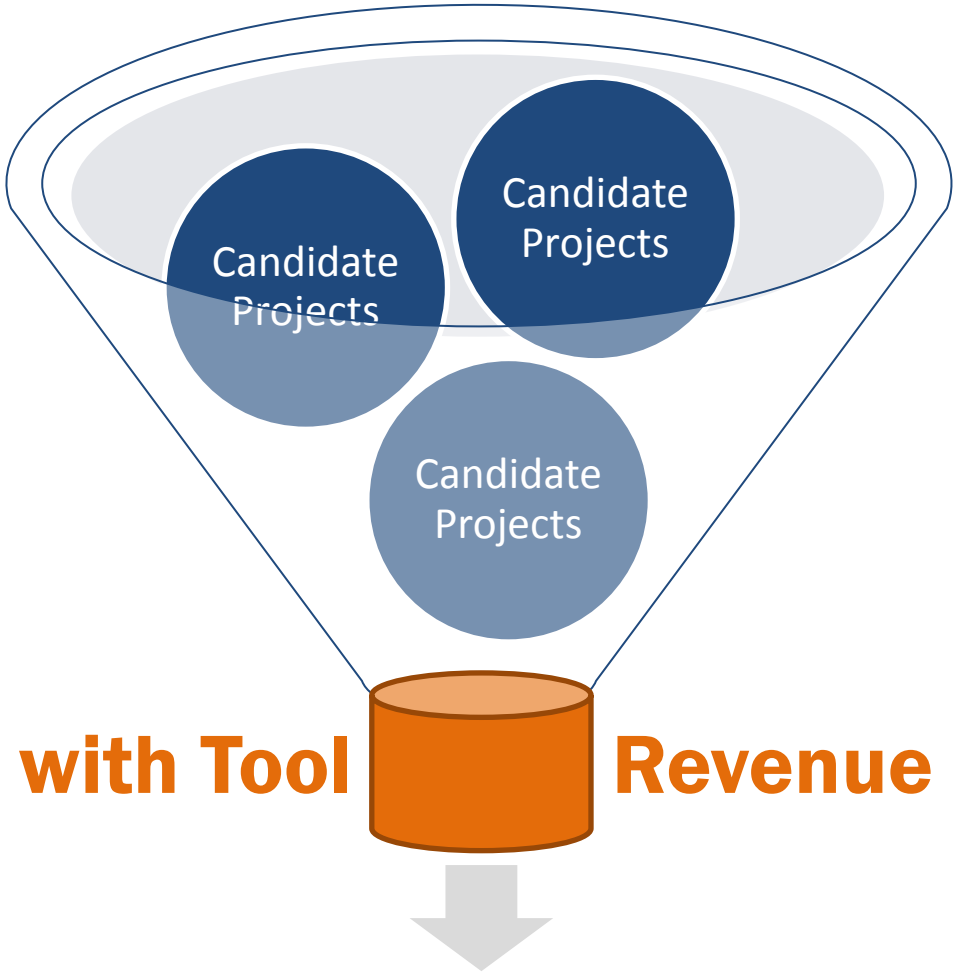
ROUND 2 GUIDING PRINCIPLES

Establish the next "pipeline" of Regional Priority Projects

- Projects must be consistent with HB2313 Legislation
- Meet Regional Project Cost Threshold of $100 Million
- Round 1 projects will not be impacted in terms of priority or funding by the work done in Round 2

Attachment 5a1

LRTP Project Evaluation Process

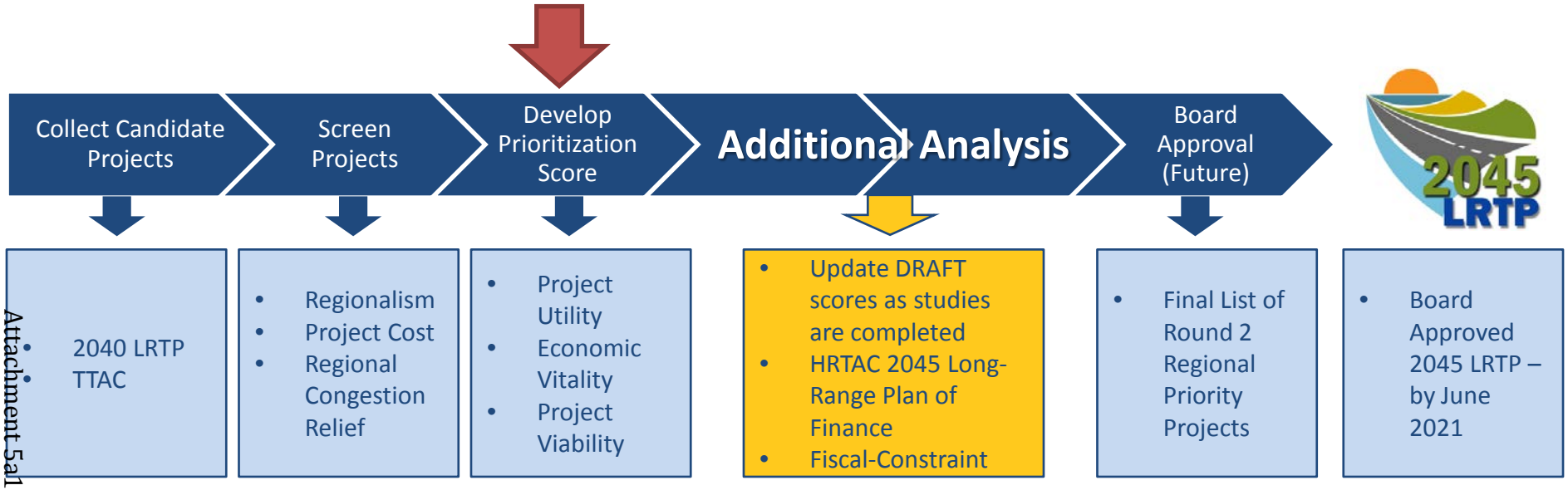


TOP PROJECTS INCLUDED IN LRTP

Attachment 5a1

ROUND 2 EVALUATION PROCESS

"HRTAC shall give priority to those projects that are expected to **provide the greatest impact on reducing congestion for the greatest number of citizens**" and "shall ensure that the moneys "shall be used for such construction projects."



Attachment 5a1

ROUND 2 EVALUATION PROCESS

Assumptions for Project Evaluation

- Congestion Screen: Prioritization Tool
- Ongoing Regional Studies
  - I-64/I-264 Phase 3 Study
  - Regional Connectors Study
  - US 460/58/13 Connector Study
  - US Route 58 Study
- Update Project Prioritization Scores as needed

Attachment 5a1

ROUND 2 PROJECT SCREENING

Project Utility
(Project Effectiveness)

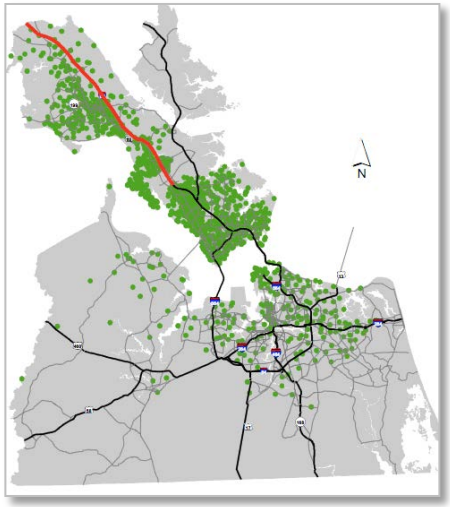
- Congestion
- System Continuity and Connectivity
- Safety and Security
- Cost Effectiveness
- Regional Significance

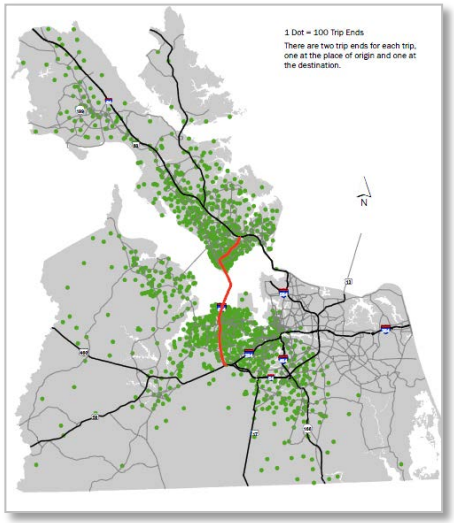
Economic Vitality
(Potential for Economic Gain)

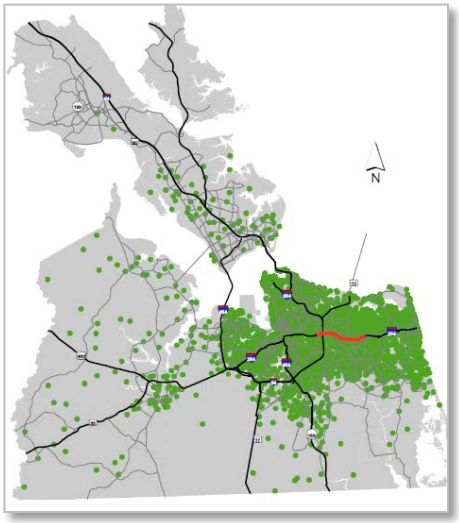
- Total Reduction in Travel Time
- Address the Needs of Basic Sector Industries
- Labor Market Access
- Increase Opportunity
- Impact on Truck Movement

Project Viability
(Project Readiness)

- % Funding Committed
- % Design Complete
- Prior Planning Commitment
- NEPA Documents/Decisions







Attachment 5a1

RESULTS OF ROUND 2 PROJECT SCREENING

38 Candidate Projects Collected and Analyzed

16 Candidate Projects being scored with HRTPO Project Prioritization Tool and recommended for further Board consideration

Attachment 5a1

ELIGIBLE ROUND 2 CANDIDATE PROJECTS DRAFT SCORES – NOT IN PRIORITY ORDER

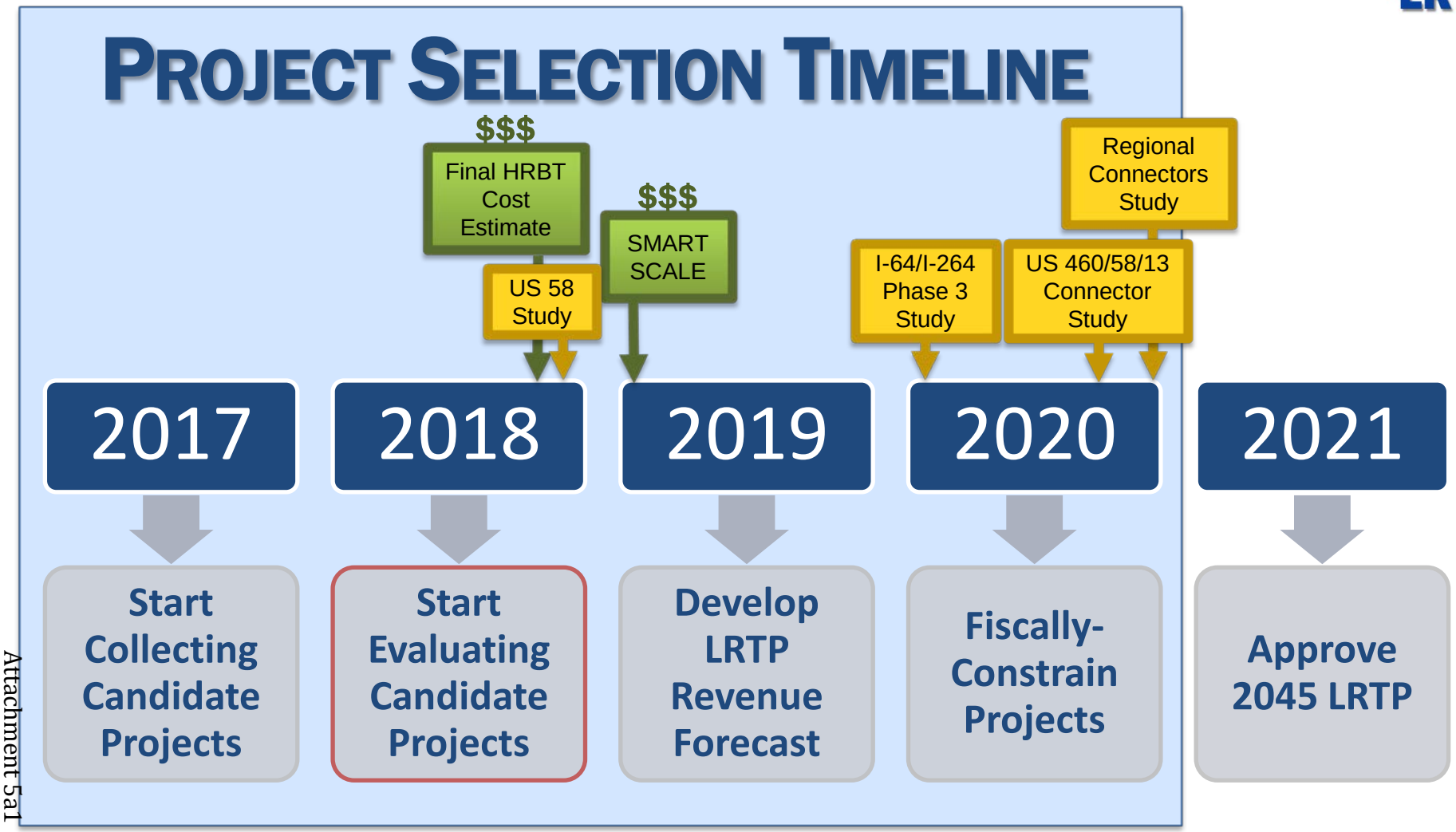
Candidate Round 2 Regional Priority Project	Estimated Planning Level Project Cost, Current Year $ (in Millions)	DRAFT Project Utility Score (100 pts)	DRAFT Economic Vitality Score (100 pts)	DRAFT Project Viability Score (100 pts)	DRAFT Round 2 RPP Score (Max 300 pts)
I-64/I-264 (Phase 3 Study - Round 1 Regional Priority Project) Construction Recommendations from Ongoing Round 1 Study of Remaining Movements	Unknown				**TBD**
I-64 Peninsula Widening					
I-64 Peninsula Widening to 6 Lanes - **Segment 4** (Rte 199 to James City/New Kent County line)	$300	82	85	25	**192**
I-64 Peninsula Widening to **8 Lanes** - Segment 1 (Jefferson Ave to Exit 247/Yorktown)	$500	80	85	25	**190**
I-664 Widening/MMMBT (Bowers Hill to Hampton Coliseum)	$4,000	79	95	15	**189**
I-264 Corridor Widening and Interchange Improvements					
I-264/Independence Blvd Interchange	$466	79	90	10	**179**
Entire I-264 Corridor from Military Hwy to Rosemont Rd (including adding capacity between Independence Blvd and Rosemont Rd and interchanges along corridor)	$2,400	76	85	3	**164**
I-264/Military Highway Interchange	$100	80	63	8	**151**
I-264/Rosemont Rd Interchange	$460	69	68	10	**147**
I-264 Widening from Independence Blvd to Rosemont Rd	$277	71	72	3	**146**
I-64/Denbigh Interchange	$350	76	95	5	**176**
I-564/I-664 Connector (Patriots Crossing)	$4,200	58	100	15	**173**
I-64/I-464 Interchange Improvements	$347	71	92	0	**163**
US 460/58/13 Connector 8-Lane Option (Bowers Hill to US 58 Bypass)	$590	62	35	13	**110**
Route 164 Widening (I-664 to Midtown Tunnel)	$195	67	29	8	**104**
US Route 58 Corridor	Unknown				**TBD**
Air Terminal Interchange (*project eligible as candidate Round 2 ONLY IF I-564/I-664 Connector is constructed)	Unknown*				**TBD***

Note: Evaluation of highlighted projects subject to change based on ongoing regional studies

Attachment 5a1

NEXT STEPS

PROJECT SELECTION TIMELINE



Attachment 5a1

Thank You!

Attachment 5a1

the *heartbeat* of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

2045 Long-Range Transportation Plan: Regional Priority Projects – Round 2

Presented to the Hampton Roads Transportation Planning Organization
March 15, 2018

Dale M. Stith, AICP, GISP
Principal Transportation Planner

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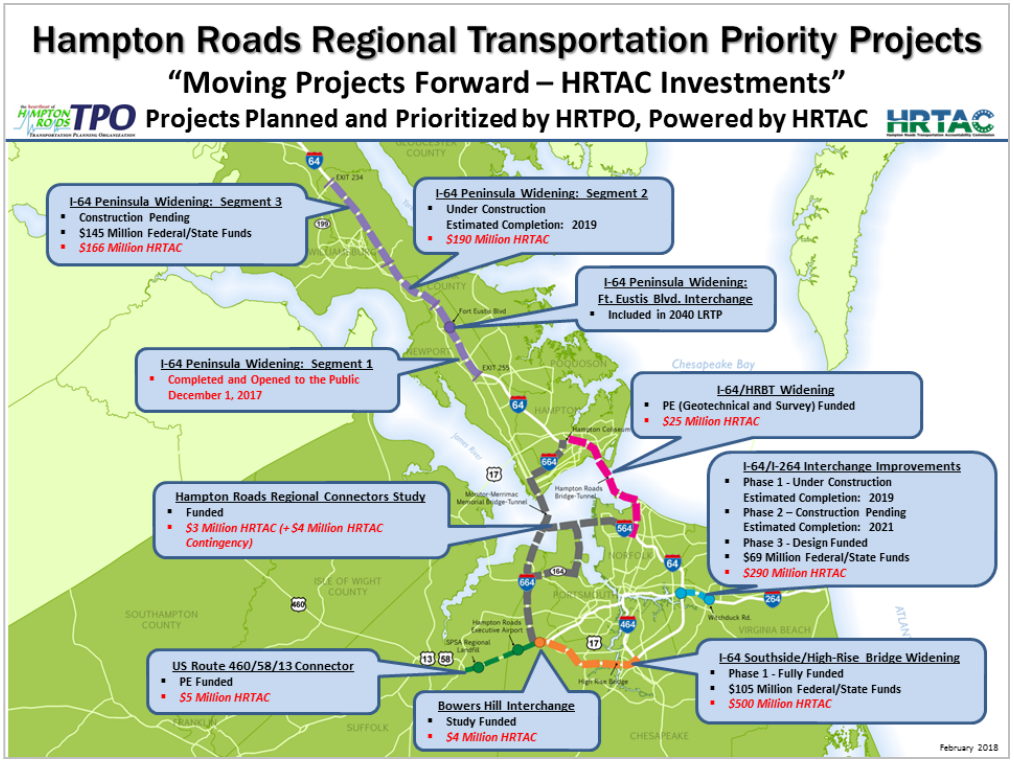

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Completed
Under Construction (or pending)
Under Study

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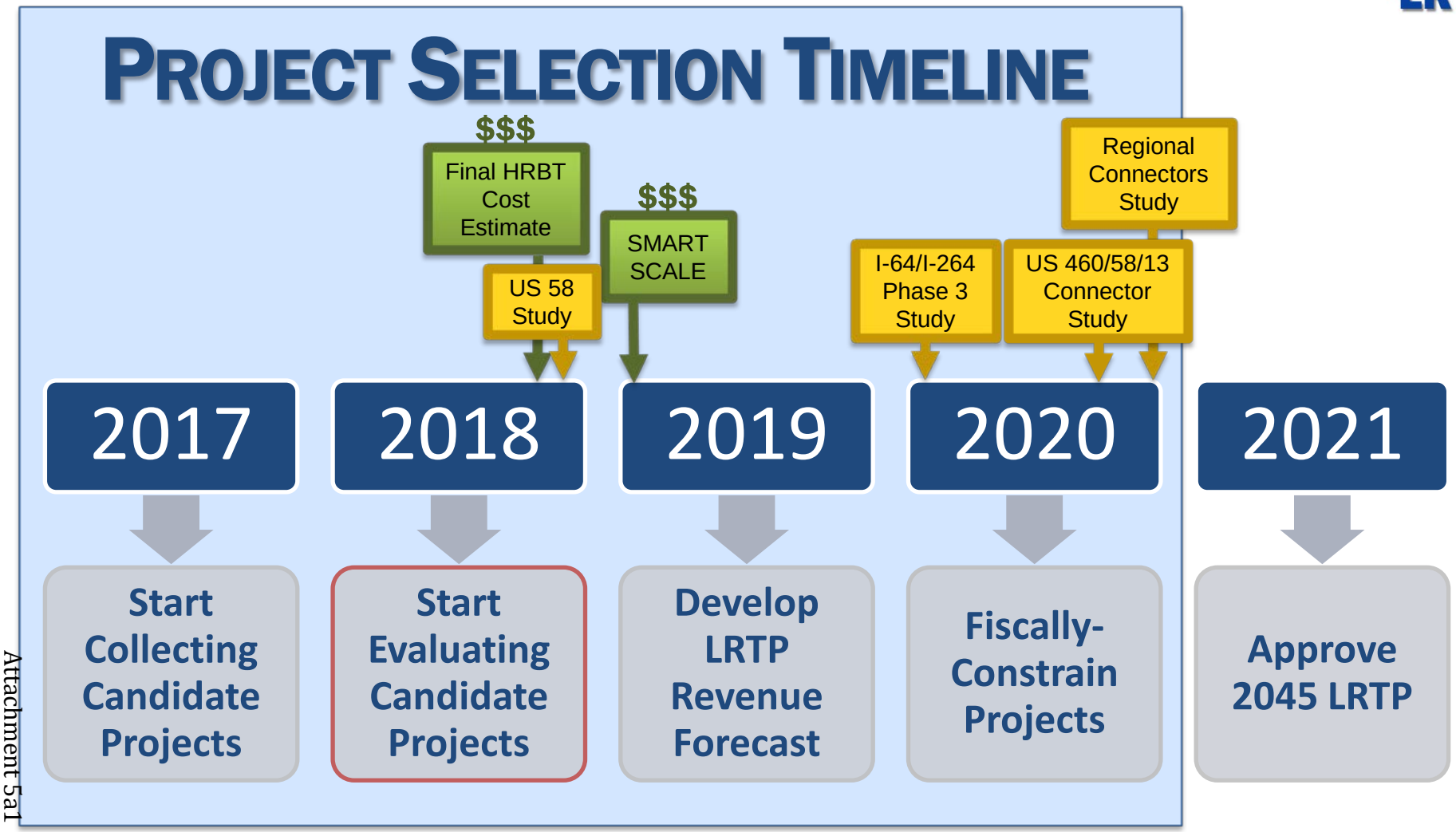

Attachment 5a1

PROPOSED RESOLUTION

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION
BOARD RESOLUTION 2018-03

A RESOLUTION OF THE HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION SUPPORTING THE HAMPTON ROADS 2040 LONG-RANGE TRANSPORTATION PLAN REGIONAL PRIORITY PROJECTS AND THE ANALYSES OF ADDITIONAL REGIONAL PRIORITY PROJECTS FOR THE HAMPTON ROADS 2045 LONG-RANGE TRANSPORTATION PLAN.

WHEREAS, on July 21, 2016, the Hampton Roads Transportation Planning Organization (HRTPO) Board approved and adopted the fiscally-constrained Hampton Roads 2040 Long-Range Transportation Plan (LRTP), which includes a Hampton Roads Transportation Accountability Commission (HRTAC) plan of finance to construct the Regional Priority Projects based on the sequencing established by the HRTPO Board on February 18, 2016;

WHEREAS, on October 20, 2016, based on analysis from the Hampton Roads Crossing Study – Supplemental Environmental Impact Statement (HRCS SEIS) and HRTPO staff, the HRTPO Board unanimously approved the I-64/Hampton Roads Bridge-Tunnel (HRBT) widening project as the Preferred Alternative of the HRCS SEIS, and to include the I-64/HRBT widening and the Bowers Hill Interchange projects as Regional Priority Projects, as well as a study to further evaluate the remaining segments of the HRCS SEIS; and on December 7, 2016, the Commonwealth Transportation Board approved Alternative A from the HRCS SEIS as the locally Preferred Alternative;

WHEREAS, on May 18, 2017, the HRTPO Board directed HRTPO staff to work with the Transportation Technical Advisory Committee to review and identify projects that could be considered for a second round of Regional Priority Projects (Round 2) and stated that the current list of Regional Priority Projects (Round 1) included in the 2040 LRTP should not be impacted in terms of priority or funding by the work related to Round 2; and

WHEREAS, the HRTPO, in partnership with HRTPO Board advisory committees and regional stakeholders – including local, state, regional, federal transit, military, freight, and the public – will develop the fiscally-constrained Hampton Roads 2045 LRTP based on a collaborative process to identify, prioritize, and seek transportation funding for needed investments in order to address the region's transportation and associated challenges and that the process will include analyzing a new baseline network that includes the construction of committed Regional Priority Projects;

NOW, THEREFORE, BE IT RESOLVED, that the Hampton Roads Transportation Planning Organization continues its support of the Regional Priority Projects fiscally-constrained in the region's 2040 Long-Range Transportation Plan, to be funded, in whole or in part, with Hampton Roads Transportation Fund (HRTF) revenues; and

BE IT FURTHER RESOLVED, as part of the development of the 2045 Long-Range Transportation Plan (LRTP), the HRTPO supports the analyses of additional regional projects that meet the criteria established for HRTF revenues, and that all candidate projects not already committed will be evaluated as part of the development of the 2045 LRTP.

APPROVED and ADOPTED by the Hampton Roads Transportation Planning Organization at its meeting on the 15th day of March, 2018.

Thomas G. Shepperd, Jr.
Chair
Hampton Roads Transportation Planning Organization

Robert A. Crum, Jr.
Executive Director
Hampton Roads Transportation Planning Organization

DRAFT

Attachment 5a1

- ***NOW, THEREFORE, BE IT RESOLVED,*** that the Hampton Roads Transportation Planning Organization continues its support of the Regional Priority Projects fiscally-constrained in the region's 2040 Long-Range Transportation Plan, to be funded, in whole or in part, with Hampton Roads Transportation Fund (HRTF) revenues; and
- ***BE IT FURTHER RESOLVED***, as part of the development of the 2045 Long-Range Transportation Plan (LRTP), the HRTPO supports the analyses of additional regional projects that meet the criteria established for HRTF revenues, and that all candidate projects not already committed will be evaluated as part of the development of the 2045 LRTP.

Thank You!

Attachment 5a1

the *heartbeat* of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

Study of Components not Included in the Selected Hampton Roads Crossing Study SEIS Alternative

Memorandum of Understanding
among
Hampton Roads Transportation Accountability Commission
and
Hampton Roads Transportation Planning Organization
and
Virginia Department of Transportation

This Memorandum of Understanding (MOU) for the study of components not included in the Selected Hampton Roads Crossing Study (HRCS) SEIS Alternative is made and executed in triplicate on this 1st day of May 2017, among the Hampton Roads Transportation Planning Organization (HRTPO), Hampton Roads Transportation Accountability Commission (HRTAC), and the Virginia Department of Transportation (VDOT).

RECITALS

WHEREAS, on July 25, 2016 the Federal Highway Administration and VDOT approved the Hampton Roads Crossing Study Draft Supplemental Environmental Impact Statement (HRCS SEIS)[1]; and,

WHEREAS, on October 20, 2016, the Hampton Roads Transportation Planning Organization (HRTPO) unanimously approved the Hampton Roads Crossing Study Alternative A, "modified" to include the Bowers Hill Interchange, as the Region's Preferred Alternative; and

WHEREAS, on October 20, 2016, HRTAC unanimously supported the HRTPO's selection of Alternative A-modified (to include the Bowers Hill Interchange), and allocated up to $7,000,000, to include the reallocation of the balance of the $5,000,000 that was allocated by the Commission toward the cost of the Hampton Roads Crossing SEIS to be applied toward the cost of further study of the Hampton Roads Crossing Study SEIS components not included in the selected SEIS Alternative – specifically the I-564/I-664 Connectors (Patriot's), I-664/MMMBT (Including Bowers Hill), and VA 164/164 Connector; and,

WHEREAS, the Commonwealth Transportation Board (CTB), in a resolution dated December 7, 2016, approved Alternative A as the location for this project and instructed VDOT to continue to work with HRTPO, HRTAC, USACE, Navy, the Port of Virginia, and other parties to advance separate studies to identify appropriate access options around Craney Island to include I-564/I-664 Connectors, I-664/MMMBT and VA 164/164 Connector. The resolution also directed VDOT to continue to work with HRTPO, HRTAC, USACE, and other parties to advance a separate study of the Bowers Hill Interchange at I-664 and I-264 in Chesapeake.

WHEREAS, on March 16, 2017, HRTAC amended its HRTAC 2016-2022 Funding Plan Approved March 17, 2016 to provide $7,000,000 for Study of HRCS SEIS Components not included in the

[1] Study documentation available on web site:
http://www.hamptonroadscrossingstudy.org/learn_more/hrcs_draft_seis.asp

Commonwealth Transportation Board's Selected Preferred HRCS SEIS Alternative in accordance with its October 20, 2016 Action; and,

WHEREAS, the parties desire to complete additional studies ("Additional Feasibility Studies") to evaluate the following corridors, which were considered but not advanced from the HRCS SEIS (collectively, the "Additional Corridors"). The funding and administration of the Additional Feasibility Studies will be covered under a separate standard project agreement between the HRTPO and HRTAC, not to exceed $3,000,000 of the $7,000,000 allocated:

(i) VA-164 (Illustrated as Segment 14 on Exhibit A),
(ii) I-564 Connector (Illustrated as Segment 10 on Exhibit A),
(iii) VA 164 Connector (Illustrated as Segment 13 on Exhibit A),
(iv) I-664 Connector(Illustrated as Segment 11 on Exhibit A),
(v) I-664 (Illustrated as Segments 2-7 on Exhibit A); and,

WHEREAS, the parties also desire to advance study under the NEPA process for the Bowers Hill Interchange (the "Bowers Hill Study") (Illustrated as Segment 1 on Exhibit A), which was also considered as a HRCS SEIS Segment but not advanced under the CTB-approved HRCS SEIS Alternative A. The Bowers Hill Study will be covered under a separate standard project agreement between VDOT and HRTAC. HRTAC is to provide all funding for the Bowers Hill Study, not to exceed $4,000,000 of the $7,000,000 allocated; and,

WHEREAS, the HRTPO Board has directed that the impacted jurisdictions will be engaged in the development of these study efforts: and,

WHEREAS, the parties have developed this MOU to establish a framework to advance these two study efforts.

NOW, THEREFORE, in connection with the foregoing, HRTPO, HRTAC, and VDOT commit to complete the appropriate studies, designs, funding analyses, and documentation necessary to determine feasibility, permitability, and transportation benefits necessary to advance the Additional Corridors, and the parties hereby agree to the following:

1. **AGREEMENT DOCUMENTS –** The Exhibit listed below is hereby incorporated into and made part of this MOU, and this MOU and the incorporated Exhibit shall be the "Agreement Documents." In the event of conflict among the Agreement Documents, the provisions of this MOU shall supersede the Exhibit. The studies on the Additional Corridors shall provide an assessment of probability for projects being permitted and also a traffic benefit analysis.

EXHIBIT A	Alignment Segments figure from Appendix A of the HRCS Draft SEIS

2. **TERM & TERMINATION –** The parties will initiate the Additional Feasibility Studies and Bowers Hill Study in whole or in part at a mutually-agreeable time that does not conflict with ongoing

federal actions associated with the HRCS SEIS. The terms of this MOU will survive until the efforts described herein are completed. The terms of this MOU will be referenced in the respective Standard Project Agreements as described; however, the terms of the Standard Project Agreement will prevail over any conflicts to this MOU.

3. **HRTPO'S DUTIES – Manage Additional Feasibility Studies.**

HRTPO shall for the Additional Feasibility Studies:

a. complete or cause to be completed all work relating to the Additional Feasibility Studies of the Additional Corridors, and ensure that all relevant work is completed in accordance with all applicable federal, state, and local laws and regulations, including the engagement of appropriate regional, state and federal agencies; and,
b. lead a working group comprised of HRTPO, VDOT, HRTAC and local impacted jurisdictions; and,
c. lead the formation of a steering committee comprised of the local jurisdictions, the U.S. Army Corps of Engineers (USACE), the U.S. Navy (Navy), the Port of Virginia, and other parties which will develop the scope of work and also determine the consultant selection approach; and,
d. use the information collected through the Additional Feasibility Studies of the Additional Corridors to develop a regional consensus.
e. Develop with HRTAC a separate funding agreement

4. **VDOT'S DUTIES – Manage the Bowers Hill Study and support the Additional Feasibility Studies**

- VDOT shall for the Bowers Hill Study:

a. manage study under the NEPA process for the Bowers Hill Interchange (the "Bowers Hill Study") (Illustrated as Segment 1 on Exhibit A), which was also considered as a HRCS SEIS Segment but not advanced under the CTB-approved HRCS SEIS Alternative A.
b. develop with HRTAC an agreement for the Bowers Hill Study as a separate standard project agreement between VDOT and HRTAC.

- **VDOT shall for the Additional Feasibility Studies:**

a. provide input and data for the Additional Feasibility Studies.

5. **HRTAC'S DUTIES –** HRTAC shall provide funding for the Bowers Hill Study and the Additional Feasibility Studies and more specifically shall:

a. Provide all funding for the Bowers Hill Study, not to exceed $4,000,000 of the $7,000,000 allocated; and,
b. provide all funding for the Additional Feasibility Studies, not to exceed $3,000,000 of the $7,000,000 allocated;
c. enter into funding agreements with VDOT and the HRTPO regarding the funding described in 5(a) and 5(b), respectively; and,

d. provide input and data in its possession related to the studies and designs.

6. **CONTROLLING LAW & VENUE** – The MOU is made and entered into, and shall be performed, in the Commonwealth of Virginia, and shall be governed by the applicable laws of the Commonwealth of Virginia without regard to conflicts of law principles. Notwithstanding any other provisions of the MOU, any dispute arising out of the Agreement, or its interpretations, or its performance shall be litigated only in Richmond General District Court or the Circuit Court of the City of Richmond.

7. **MERGER** – The Agreement Documents represent the entire agreement among the parties with respect to the subject matter hereof and supersede all prior communications and negotiations. This MOU may be modified only in writing, signed by all parties.

8. **SEVERABILITY** – If any provision of the Agreement Documents is held by a court of competent jurisdiction to be invalid or unenforceable, the remainder of the Agreement Documents shall not be affected thereby and each other provision of the Agreement Documents shall be valid and enforceable to the fullest extent permitted by law.

9. **SOVEREIGN IMMUNITY –** No party waives or abrogates its sovereign immunity, in part or in whole, in any manner, under any theory, hereunder.

10. **ASSIGNMENT –** This MOU shall not be assigned by any party unless express written consent is provided by all other parties.

11. **NOTICES –** All notices under this MOU shall be sent in writing to the following representatives:

    a. **HRTAC**

    Kevin B. Page, Executive Director
    The Regional Building
    723 Woodlake Drive
    Chesapeake, VA 23220

    b. **HRTPO**

    Robert A. Crum, Jr., Executive Director
    The Regional Building
    723 Woodlake Drive
    Chesapeake, VA 23220

c. **VDOT**

James S. Utterback, District Administrator
1700 N. Main Street
Suffolk, VA 23434

12. **DISPUTES –** In the event of a dispute under this MOU, the parties agree to meet and confer promptly to ascertain if the dispute can be resolved informally without the need of a third party or judicial intervention. If no satisfactory resolution can be reached via the meet and confer method, any party is free to pursue whatever remedies it may have at law or in equity, including all judicial remedies. The foregoing dispute resolution method shall not bar a party's right to seek equitable relief on an emergency basis.

13. **NO AGENCY OR THIRD PARTY RIGHTS –** VDOT represents that it is not acting as a partner or agent of HRTAC or HRTPO; and nothing in this MOU shall be construed as making any party a partner or agent with any other party. This MOU shall not be construed as creating any personal liability on the part of any officer, member, employee, or agent of the parties; nor shall it be construed as giving any rights or benefits to anyone other than the parties hereto.

This Area Intentionally Blank

IN WITNESS WHEREOF, each party hereto has caused this Memorandum of Understanding to be executed as of the day, month, and year first herein written by its duly authorized representative.

Hampton Roads Transportation Accountability Commission

By: _____

Name: William Sessoms

Title: Chair, HRTAC

Date: March 16, 2017

Hampton Roads Transportation Planning Organization

By: _____

Name: Linda T. Johnson

Title: Chair, HRTPO

Date: April 20, 2017

Virginia Department of Transportation

By: _____

Name: Charles A Kilpatrick, P.E.

Title: Commissioner of Highways

Date: May 1, 2017

I-1466251.3

Attachment 5b

Figure A-1: Alignment Segments

Hampton Roads Transportation Accountability Commission

HRTAC RESOLUTION 2017-02

MEMORANDUM OF UNDERSTANDING - STUDY OF COMPONENTS NOT INCLUDED IN THE SELECTED HRCS SEIS ALTERNATIVE

WHEREAS, the funding of the Hampton Roads Crossing Study (the "Project") is covered by the HRTAC 2016-2022 funding plan adopted by the Commission on March 17, 2016 (the "Funding Plan"); and

WHEREAS, on October 20, 2016, the Hampton Roads Transportation Planning Organization (HRTPO) unanimously approved the Hampton Roads Crossing Study Alternative A as the Preferred Alternative; and

WHEREAS, on October 20, 2016, HRTAC unanimously supported the HRTPO's selection of Alternative A and allocated up to $7,000,000, to include the reallocation of the balance of the $5,000,000 that was initially allocated by the Commission toward the cost of the Hampton Roads Crossing SEIS, to be applied toward the cost of further study of the Hampton Roads Crossing Study SEIS components not included in the selected SEIS Alternative – specifically the I-564/I-664 Connectors (Patriot's), I-664/MMMBT (Including Bowers Hill), and VA 164/164 Connector; and,

WHEREAS, the Project has evolved to include the further study of the HRCS SEIS components not included in the selected alternative; and

WHEREAS, on Thursday, March 16, 2017, the Commission amended the Funding Plan to allocate a total of $7,000,000* towards the cost of a study of the HRCS SEIS components not included in the selected SEIS Alternative A; and

WHEREAS, sufficient funding is available for the study phase of this Project that has been separated into two discrete parts: one relating to Bowers Hill ($4,000,000) following the NEPA process, and the other a planning evaluation of the feasibility of the remaining components not selected in the HRCS SEIS Alternative ($3,000,000); and,

WHEREAS, the Commission desires to amend its Approved HRTAC 2016-2022 Funding Plan to include a contingency of up to $4,000,000 to be available to complete the work under the Memorandum of Understanding; and,

WHEREAS, sufficient funding is available to establish a contingency of $4,000,000 to be available if additional funding is required for the work; and,

Hampton Roads Transportation Accountability Commission

WHEREAS, any future incremental allocations to advance the project will be allocated on a case by case basis; and

WHEREAS, the Virginia Department of Transportation ("VDOT"), Hampton Roads Transportation Planning Organization ("HRTPO"), and the Hampton Roads Transportation Accountability Commission have developed an MOU that establishes a framework to advance these two study efforts.

NOW, THEREFORE, BE IT RESOLVED, that the Commission approves the Memorandum of Understanding and authorizes the Chair to execute and deliver the document; and

BE IT FURTHER RESOLVED, the Commission's executive director will consult with VDOT and the HRTPO as they perform the work under the Memorandum of Understanding, and if he determines additional funding may be reasonably required, he will seek the Commission's authorization of that additional funding, it being the Commission's intent to support the completion of the work under the Memorandum of Understanding; and,

BE IT FURTHER RESOLVED, that the Commission authorizes a public hearing relating to an amendment to its Approved HRTAC 2016-2022 Funding Plan to include the $4,000,000 contingency, which amendment will considered at the Commission's June 15, 2017 meeting.

APPROVED and ADOPTED by the Hampton Roads Transportation Accountability Commission at its meeting on the 16th day of March, 2017.

William D. Sessoms, Jr.
Chair
Hampton Roads Transportation
Accountability Commission

Michael J. Hipple
Vice-Chair
Hampton Roads Transportation
Accountability Commission

I-1468284.2

COMMONWEALTH of VIRGINIA

Commonwealth Transportation Board

Aubrey L. Layne, Jr.
Chairman

1401 East Broad Street
Richmond, Virginia 23219

(804) 786-2701
Fax: (804) 225-2940

Agenda item # 8

RESOLUTION

OF THE

COMMONWEALTH TRANSPORTATION BOARD

April 19, 2017

MOTION

Made By: Mr. Malbon, Seconded By: Mr. Rosen

Action: Motion Carried, Unanimously

Title: Authorization for the Commissioner of Highways to Enter into a MOU with the Hampton Roads Transportation Accountability Commission (HRTAC) and the Hampton Roads Transportation Planning Organization Concerning the Study of Components not Included in the Selected Hampton Roads Crossing Study SEIS Alternative and to Execute a Standard Project Agreement with HRTAC Relating to the Bowers Hill Study

WHEREAS, on December 7, 2016, the Commonwealth Transportation Board ("CTB") approved as the location for the Hampton Roads Crossing Study/Project, Alternative A, as set forth in the Draft SEIS approved by FHWA on July 25, 2016 ("Preferred HRCS SEIS Alternative") and, among other things, directed the Virginia Department of Transportation ("VDOT") to continue to work with the Hampton Roads Transportation Planning Organization ("HRTPO"), Hampton Roads Transportation Accountability Commission ("HRTAC"), U.S. Army Corps of Engineers ("USACE"), U.S. Navy, the Port of Virginia and other parties to advance separate studies to identify appropriate access options around Craney Island to include I-564/I-664 Connectors, I-664/MMMBT and VA 164/164 Connector ("Additional Corridors Studies"), which were HRCS SEIS components not included in the Preferred HRCS SEIS Alternative; and

WHEREAS, on December 7, 2016, the CTB also directed VDOT to continue to work with the HRTPO, HRTAC, USACE and other parties to advance a separate study of the Bowers Hill Interchange at I-664 and I-264 in Chesapeake ("Bowers Hill Study") which also was an HRCS SEIS component not included in the Preferred HRCS SEIS Alternative; and

WHEREAS, HRTAC, on March 16, 2017, amended the HRTAC 2016-2022 Funding Plan to provide $7,000,000 for study of HRCS SEIS components not included in the Commonwealth Transportation Board's Preferred HRCS SEIS Alternative; and

WHEREAS, VDOT, HRTAC and HRTPO have identified a need to develop a Memorandum of Understanding between the parties to identify a framework and specify the various responsibilities of each of the parties in order to advance the additional studies noted herein ("HRCS Additional Studies MOU"); and

WHEREAS, the HRCS Additional Studies MOU contemplates that VDOT will bear responsibility for managing the Bowers Hill Study, HRTAC will provide $ 4 million in funding to VDOT from the Hampton Roads Transportation Fund (HRTF) for the study, and HRTAC will require execution of a Standard Project Agreement relating to said funding; and

WHEREAS, the Virginia General Assembly, pursuant to Chapter 26 of Title 33.2 of the Code of Virginia, established the Hampton Roads Transportation Accountability Commission (HRTAC), a political subdivision of the Commonwealth; and

WHEREAS, the Virginia General Assembly, pursuant to §33.2-2600 of the Code of Virginia, also established the HRTF to fund new construction projects on new or existing highways, bridges, and tunnels in the localities comprising Planning District 23; and

WHEREAS, pursuant to §33.2-2608 the HRTAC may enter into contracts or agreements necessary or convenient for the performance of its duties and the exercise of its powers under Chapter 26; and

WHEREAS, §33.2-214 (C) of the Code of Virginia empowers the CTB to enter into contracts with local districts, commissions, agencies, or other entities created for transportation purposes; and

WHEREAS, VDOT has requested that the CTB approve and authorize the Commissioner to enter into/execute the HRCS Additional Studies MOU and further, to authorize

the Commissioner to execute a Standard Project Agreement with HRTAC regarding the Bowers Hill Study and use of HRTF funds for the study, upon approval by HRTAC of the Standard Project Agreement.

NOW, THEREFORE BE IT RESOLVED, that the Commonwealth Transportation Board hereby approves and authorizes the Commissioner of Highways to execute the HRCS Additional Studies MOU between VDOT, HRTAC and the HRTPO concerning the Additional Corridors Studies and Bowers Hill Study, as set out in Attachment A, with such changes as the Commissioner deems necessary or appropriate.

BE IT FURTHER RESOLVED, that the Commonwealth Transportation Board hereby approves and authorizes the Commissioner of Highways to execute a Standard Project Agreement with HRTAC relating to the Bowers Hill Study and the HRTF funding therefor in substantially the same form as Attachment B with such changes as the Commissioner deems necessary, upon approval by HRTAC of said Agreement.

BE IT FURTHER RESOLVED, that the Commissioner is directed to report back to the CTB upon execution of the Standard Project Agreement relating to the Bowers Hill Study by HRTAC and the Commissioner.

###

ATTACHMENT 6

TRAVEL DEMAND MODEL TECH MEMO COMMENTS

Hi Brian,

Thanks for submitting your thoughts/comments on the RCS modeling evaluation. Below are our responses in red. Please let me know if you would like to further discuss any issues.

Regards,

Craig

Craig S. Eddy, PE, PTOE | Vice President | Michael Baker International
3200 Rockbridge Street, Suite 104| Richmond VA 23230 | [O] 804.282.1821 | [M] 804.814.1098
craig.eddy@mbakerintl.com | www.mbakerintl.com

From: Fowler, Brian <Brian.Fowler@norfolk.gov>
Sent: Friday, December 07, 2018 11:35 AM
To: Eddy, Craig <Craig.Eddy@mbakerintl.com>

Cc: camelia.ravanbakht@outlook.com
Subject: EXTERNAL: RCS Modeling Evaluation comments

Craig,

Following up on the comments I made at yesterday's Working Group meeting regarding the Regional Travel Demand Model evaluation – a quick summary of my comments:

- During my previous review of model features impacting the estimation of travel between the Peninsula and the Southside, there were two items that I think need to be addressed:
    - The first of these was related to capacities coded on the HRBT links. (Following my comment Dale indicated there was something I was missing and it was being handled properly with lower capacities. I'm pretty sure I still felt something wasn't right – therefore, I'll just ask that you investigate this very closely to be sure) My recollection was that due to the use of "typical" freeway capacities on these links rather than those realized on the HRBT (significantly lower), some aspect of the model was weakened. I felt that the delay calculations in producing travel time skims was impacted, there may have been something I saw in the production of MOEs for performance reporting.... It's been quite a while..., just please investigate this. It is noteworthy that model runs conducted in the SEIS demonstrate very well the impact that the reduction in travel time predicted in the model with expanded capacity has in increasing the amount of travel across the water. We will examine roadway capacities, with an emphasis on the Harbor Crossings, as a part of our review and examination of the updated HRTPO model.

    - The model uses a travel-time increase (4.2 minutes per mile is what I have in my notes) as a surrogate means to represent the "undefinable" apparent disutility associated with the bridge-tunnel use/Hampton Roads crossing in trip distribution, otherwise reducing the likelihood of travel between the Peninsula and Southside. In the application of the model this is considered a constant. This creates a huge problem with considering future conditions, as the variables that actually do influence this behavior could change and reduce this disincentive (real or perceived). This disincentive may in fact be (all or in part) related to reliability - a trait that some alternatives may significantly improve. It may be related to other feelings that may be mitigated with the advent of CAV, or other variables. We should not go through this study considering this to be a non-malleable impediment to travel across Hampton Roads. I can envision for example that a combination of congestion and multi-route accessibility measures could provide a reliability representation influencing O-D pairing predictions in trip distribution. As part of the model update, VDOT is using empirical data from Streetlight to gauge the volume and distribution of demand associated with the Harbor Crossings. This update should inherently consider methods of model adjustment that may better reflect travel conditions into the future.

- In dealing with these two items above the study should seek to gain a far better understanding of the variables influencing travel and/or housing/employment location choice that influences travel between the two areas, in order to better understand what's needed to improve realized accessibility. While certain updates to the HRTPO model currently underway by VDOT may provide more information, and/or improve modeling of this aspect of travel behavior in the region, it is outside of our scope in the HRTPO Connectors Study to fundamentally re-examine the formulation of trip distribution in the HRTPO regional model.

- The model's handling of external trips (both E-E and E-I) has a large influence on the resulting assigned traffic volumes to the HRBT and MMMBT. The model's influence should be well understood and, compared to actual trip patterns, adjustments made if necessary. Part of the VDOT's model update entails using Streetlight data to gain a better understanding of external travel associated with the study area and the Harbor Crossings.

- My recollection is that the model applies some "adjustment factors" to a couple of areas in Norfolk, I recall downtown and the Navy Base? These are disconcerting and all attempts should be made to better understand the traits that are causing any such weaknesses and create improved processes to overcome those. Recommendations provided in Phase I of the HRTPO Connectors Study indicated a need to "assess need for special generator representation using available surveys and cell phone/GPS data" – this may improve model performance as cited. It is uncertain at this time if the VDOT model update will follow-up on these recommendations. Other potential remedies such as implementing an income-stratified trip distribution model are currently outside the scope of work associated with the VDOT model update and the HRTPO Connectors Study.

- I noted that there was nothing special in the model to address university traffic (e.g. – land-use category or special generator). ODU is a university that because of its location and size relative to others is particularly relevant for this study. Please see response to bullet point above.

I think that's everything I mentioned. If you have any questions please do not hesitate to call.

Brian

COMMENTS ON REGIONAL SURVEY DRAFT REPORT

Hi Craig,

I have a few comments to add to Camelia's:

1. On the cover, recommend the title say "Hampton Roads Regional Connectors Study: Regional Survey"
2. Slide 4: Purpose – I believe the first bullet describes the purpose of the survey, not the study.
3. Slide 5: Methods – That is a LOT of text. Can it be distilled down a bit into some bullets?
4. Slide 9 (Camelia's Slide 8): I think it matters and should say City or County.

Thanks

MK

Michael S. Kimbrel

Deputy Executive Director

Hampton Roads Transportation Planning Organization

The Regional Building 723 Woodlake Drive Chesapeake, Virginia 23320

mkimbrel@hrtpo.org| www.hrtpo.org | Phone: 757.420.8300 | Fax: 757.523.4881

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From: Camelia Ravanbakht [mailto:camelia.ravanbakht@outlook.com]
Sent: Wednesday, December 05, 2018 9:07 AM
To: Eddy, Craig; Mike Kimbrel
Subject: RE: Regional Survey Draft Report of Results

Hi Craig,

I have a few minor comments as listed below:

- Slide 3 – Remove the apostrophe after the word Connectors.
- Slide 5 – second Box – Should be Peninsula to Southside commute…?
- Slide 8 – Home Counties? There are cities and counties. Not sure if it matters but wanted to point it out.

Thanks.

Camelia Ravanbakht, PhD

RCS Project Coordinator

757.617.5685

COMMENTS ON EXISTING CONDITIONS DRAFT REPORT

Hi Craig,

I am forwarding you the attached document including the TPO staff comments on the draft graphics of existing conditions. In addition, I would like to offer a few general comments:

-The format and graphics look very nice and easy to read.

-I did not see the date for the data used throughout the document. As indicated by the TPO staff, please include the source and date of the data on each page.

-As I understood, there are four sections in the document. It would be helpful to have a short narrative at the beginning of each section describing the purpose, graphics, data used, and any other relevant text summarizing the data, if possible.

Please let me know if you have any questions regarding the comments.

Thanks,

-Camelia

Camelia Ravanbakht, PhD

RCS Project Coordinator

757.617.5685

HRTPO Staff Comments on 11/2/2018 Draft of Corridor Conditions Report, Regional Connectors Study

In order that this conditions report serve the purpose of the study—"to determine feasibility, permitability, and transportation benefits" of the subject improvements)—we recommend that you document the purpose, data source, and findings of each section of the conditions report:

-the Destinations section

-the Vehicle Splits section

-the Travel Times section

-the Segment section

Pages 1 – 12 (Destinations for vehicles...)

- Is there a reason why this was only done for "Destinations for Vehicles Originating..." and not also done for "Origins for Vehicles with a Destination of..."? I think we would want to know both origins and destinations for each activity center, not just the destinations.
- What is the geography of the colored areas?
- The maps should just say Suffolk, not Suffolk City.
- Route 13 at the Suffolk/NC State Line was omitted from each of the Heavy Vehicle Destinations maps.
- The source of this data (Michael Baker analysis of Streetlight data?) should be referenced on these maps.
- What does "FEW" and "MANY" represent on these maps? 0.1%? 1%? Describing what few and many means would be helpful.
- I would include a summary of the percentage of trips that cross the harbor for each of these activity centers.
- I would consider adding the Virginia Beach Oceanfront and Historic Triangle as activity centers. This would emphasize tourist O-Ds.
- In addition to Downtown Norfolk, I would consider adding Downtown Portsmouth, Hampton, and Newport News as activity centers.
- Page 2 – Should be referred to as Langley AFB/NASA
- Page 3 – Should be referred to as Norfolk International Terminals, not Terminal.
- Page 4 – The star for Naval Station Norfolk is (slightly) in the wrong place.
- Page 6 – Rather than just using Jefferson Labs, it would be more beneficial to expand this to the entire Oyster Point area.
- Page 7 – The proper name of Little Creek is "JEB Little Creek".
- Page 8 – The star for Virginia Beach Town Center is (slightly) in the wrong place.
- Page 9 – The star for Newport News Marine Terminal is (slightly) in the wrong place.

Pages 13-15

- Suggest labeling I-564 in Norfolk and I-64 in Chesapeake on larger maps (left side)
- Because study is not limited to corridors in Orange, suggest analyzing split at I-64/Mercury (trips going to JRB) and expanding inset #3 to include trips from US17 (same suggestion for Travel Times and Crash Rate maps)

Page 13 – Vehicle Splits

- The splits do not add up to 100% since certain movements are omitted from the graphics. Should these other movements be added so that the percentages add up to 100%?
- The source of this data should be referenced on these maps.
- The split areas should be more distinguishable from the locality boundary lines (not be black on black)

Page 14 – Regional Travel Times

- The source of the data should be referenced on these maps. Also what is the timeframe of this data? 2017?
- While travel times make sense on the following segment maps, it makes more sense to refer to this map as peak hour travel speeds rather than times.
- Adding a summary of travel times by corridor to this page would be helpful i.e. travel times on I-64 from I-664 to I-564, I-664 from I-64/I-264 to the Western Freeway, etc.
- 10% might be too low of threshold between low and moderate travel times, since most of the roadways are shown in yellow. Consider changing the low/moderate threshold to 15% or 20%.
- Another threshold showing "really high" travel times would be helpful. Possibly > 100% above free flow travel times.

Page 15 – Regional Crash Rate/Corridor Index Map

- Need to show the time period and data source for the crash rate map.
- There is an extra graphic showing up on the right side of the corridor segment index map.
- Suggest moving Corridor Segment Index Map to a separate page (with brief explanation of following individual segment maps)
- On Corridor Segment Index Map, study is not limited to the corridors shown in Orange. This needs to be clearly stated/explained.

Pages 16-46 – Segment Maps

- All maps – The source of this data (crashes, travel times, and volumes) should be referenced on the maps.
- All maps – I'm not sure why crash rates are shown for origins to destinations. It makes more sense to show crash rates for each segment rather than in an O-D manner.
- All maps – It would be beneficial to not only include the O-D volumes for the AM and PM Peak Hours but also the Daily O-D volumes as well.

- Page 16 – "Moderate crash density at merge of ramp…." also possibly due to weaving on I-664, as well as occasional queueing.
- Page 16 – Military Circle should say Military Highway.
- Page 16 – "those turning right onto I-264" should instead be "onto I-64".
- Page 17 – Instead of Military Highway, refer to this roadway as the Route 460/58/13 Connector instead.
- Page 17 – The Connector ADT seems too high. VDOT AADTs are in the 70,000 range.
- Page 18 – These crashes at I-664 and Dock Landing are due to?
- Page 19 – Portsmouth Blvd ADTs seem too high.
- Page 20 – Pughsville Rd ADTs seem too high.
- Page 21 – Western Freeway ADT is too high.
- Page 21 – "Injury crashes at exit ramp…" should refer to Bridge Road, not Route 164.
- Page 22 – Twin Pines Rd does not intersect with the Western Fwy. Both sides of this interchange are Towne Point Rd.
- Page 22 – The ADTs for both the Western Fwy and Towne Point Rd are too high.
- Page 22 – The crashes around the ramps are due to?
- Page 23 – The ADTs for both the Western Fwy and Cedar Lane are too high.
- Page 24 – The ADTs for both the Western Fwy and West Norfolk Rd are too high.
- Page 24 – The crashes around the ramps are due to?
- Page 25 – All of the ADTs are too high.
- Page 27 – Why are the two ADTs not the same?
- Page 28 – The reference to College Dr should instead be Terminal/Harbor.
- Page 29 – This map should probably refer to 25th – 28th Streets, but not Highway 60.
- Page 29 – Why is B not included as an origin in the traffic volume and travel time tables?
- Page 29 – "Turning Corner" should be changed to location.
- Page 30 – The ADTs for 35th, 36th, and Jefferson are too high.
- Page 30 – "Rashes" should be crashes.
- Page 31 – The ADTs for Roanoke and Chestnut are too high.
- Page 32 – Road should be capitalized on the crash description in the middle of the page.
- Page 32 – Aberdeen Road should probably be referenced as north/south.
- Page 33 – Powhatan Pkwy and Power Plant Pkwy ADTs are too high.
- Page 33 – "Vegetations" should say vegetation.
- Page 35 – The Mercury Blvd ADTs are way too high.
- Page 35 – Mercury Blvd should probably be referenced as east/west.
- Page 36 – The ADTs for LaSalle Ave are too high.
- Page 36 – The high crash rate is due to queues from the HRBT.
- Page 37 – The ADTs for Settlers Landing and Woodland are way too high.
- Page 37 – The crash description should say Settlers Landing Rd, not Settlers Land Rd.
- Page 38 – Franklin Blvd does not intersect with I-64. This map should only refer to Mallory St.
- Page 38 – The ADTs for Mallory St are too high.
- Page 41 – O'Conner Crescent does not intersect with I-64. The map should only refer to Fourth View St.
- Page 41 – Can remove "possibly" from the crash description.
- Page 42 – The Bay Avenue ADTs are too high.
- Page 42 – References to Ocean Ave to the west of I-64 should be removed.
- Page 43 – The ADT for Granby St is way too high.
- Page 44 – Crashes are also due to HRBT backups.
- Page 44 – The ADTs for Granby St and Little Creek Rd are way too high.

LETTER FROM CITY OF PORTSMOUTH AND HRTPO RESPONSE – see following pages.

CITY OF PORTSMOUTH
Office of the Mayor

John L. Rowe, Jr.
Mayor

December 17, 2018

Mr. Robert A. Crum, Jr.
Executive Director
Hampton Roads Transportation Planning Organization
The Regional Building, 723 Woodlake Drive
Chesapeake, Virginia 23330

RE: Regional Connectors Study
Draft Scope of work for the Scenario Planning Task Order
FINAL Technical Memorandum – Evaluate Regional Demand Model

Dear Mr. Crum,

As Mayor and member of the project steering committee, I am looking forward to the outcome of the Regional Connectors Study (RCS) as a valuable tool for assessing the next phase of improving connectivity across Hampton Roads.

I want to thank you for the opportunity to review the referenced materials submitted by the consultant team, Michael Baker International (MBI). The scenario planning process is an insightful way of providing potential transportation alternatives based on future demographic, economic and technological trends between now and the year 2045. At the RCS Working Group meeting on December 6th, the team indicated that MBI would be interviewing additional stakeholders for the project to include Dr. Jim Koch of Old Dominion University. As such, I recommend that the study also include the detailed economic and transportation analysis of the tolls impacts at the Downtown and Midtown Tunnels (both the original and updated) that he completed for the City of Portsmouth. Note that these analyses include information about changes in the travel patterns associated with tolls at these facilities. Acknowledging the ERC contract and the pending regional toll network when evaluating the regional demand model, this information could provide valuable information about the commuter decision making process when faced with tolls.

I strongly recommend that the study use the latest, and the most up-to-date traffic data, not merely the most convenient data from VDOT. This study intends to use 2015 as the baseline year. MBI has indicated that it will use the year 2017 for validation. Please remember that the year 2015 pre-dates completion of the MLK

Extension and HOT lanes among other transportation improvements. Travel patterns and vehicle distribution continues to change throughout the network as commuters adjust to new trucking patterns and managed lanes. If VDOT does not have current year traffic data, then the consultant should obtain separate traffic. Please remember that the localities, specifically Portsmouth, fought hard for the funding for this study. These funds should be used for the most up to data and detailed analysis so that all aspects of the study can be vetted in a thorough, accurate and sound manner.

Finally, I would also like to remind you that the RCS Steering Committee and RCS Working Group should continue to be the lead in directing the efforts of the consultant team. The RCS Working Group should be notified of all project meetings with the TPO staff, the Port and other agencies that are providing input into the study. Materials generated for and from these meetings should be provided to Working Group for their review and comment. This is a locality driven project using local funds and the process should be transparent at every level.

Please continue to coordinate your efforts with our RCS Working Group lead James Wright, Director of Engineering and Technical Services

Sincerely yours,

John L. Rowe, Jr.
Mayor

C: Camelia Ravanbakht, Ph.D., RCS Project Coordinator

From: Robert A. Crum, Jr. <rcrum@hrpdcva.gov>
Sent: Thursday, December 27, 2018 4:17:28 PM
To: Mayor (mayor@portsmouthva.gov)
Cc: Baldwin, Bob (baldwinb@portsmouthva.gov); Wright, James; Jackson Carl - (jacksonc@portsmouthva.gov); Camelia Ravanbakht (camelia.ravanbakht@outlook.com); Mike Kimbrel
Subject: Regional Connectors Study

Mayor Rowe:

Thank you for your December 17th correspondence regarding the Regional Connectors Study. You raise some excellent points in your letter and I appreciate you bringing this information to our attention. I agree that the work completed by Dr. Koch will be valuable information to be considered in this study. I also want to thank you for asking for the ERC contract with the State to be included on an upcoming HRTPO Board agenda for discussion – we are working to place the ERC contract related to tolls at the Downtown and Midtown Tunnels on the January 17 HRTPO meeting agenda for regional discussion by our Board members.

Our staff is also in the process of scheduling a joint meeting of the Regional Connectors Study Steering Committee and Working Group in January, and I look forward to reviewing the items raised in your correspondence as we chart the next steps for this important study.

We appreciate the efforts of your City staff on the Regional Connectors Study and will continue to work with them closely through this effort. I want to acknowledge that we view this as an important study for the participating localities and that we view the localities as the lead for this effort. I have shared your comments with the HRTPO staff team working on this effort.

I hope you and your team have a safe and happy holiday season. We look forward to supporting your City as we head into the new year and look forward to a productive and exciting 2019.

Bob

Robert A. Crum Jr.

Executive Director

Hampton Roads Planning District Commission

Hampton Roads Transportation Planning Organization

723 Woodlake Drive

Chesapeake, Virginia 23320

Phone: 757.420.8300 | Fax 757.523.4881

Email: rcrum@hrpdcva.gov | rcrum@hrtpo.org

Web: www.hrpdcva.gov | www.hrtpo.org

SCENARIO PLANNING COMMENTS

To: camelia.ravanbakht@outlook.com
Cc: 'Shirley Core' <score@hrtpo.org>; Steele, Gregory C CIV USARMY CENAO (US) <Gregory.C.Steele@usace.army.mil>; Hamor, Michelle L CIV USARMY CENAO (USA) <Michelle.L.Hamor@usace.army.mil>; Lockwood, Keith B CIV USARMY CENAO (US) <Keith.B.Lockwood@usace.army.mil>; Walker, William T Jr CIV USARMY CENAO (US) <William.T.Walker@usace.army.mil>; Pruhs, Robert S CIV USARMY CENAO (US) <Robert.S.Pruhs@usace.army.mil>; Flowers, Jason R CIV USARMY CENAO (US)

<Jason.R.Flowers@usace.army.mil>; Anderson, Michael L CIV USARMY (US) <Michael.L.Anderson@usace.army.mil>; Prisco-Baggett, Kimberly A CIV USARMY USACE (US) <Kimberly.A.Baggett@usace.army.mil>
Subject: Corps comments regarding Draft Scope of Work, Regional Scenario Planning, Regional Connector Study

Camelia,

Although we don't have specific comments on this draft Scope of Work, we would like to make the following comments regarding the study:

In order for an alternative or scenario to be permitted by the Corps, it must have a valid project purpose and need. Under the Corps' existing regulations, we can only permit the least environmentally damaging practicable alternative (LEDPA). We know that this is early in the Regional Connector Study, and we will continue to comment on the various alternatives and scenarios that are considered, including recommending ways to avoid and minimize impacts to waters of the U.S., including wetlands.

Furthermore, we have attached the USACE-Norfolk District Commander's letter dated June 29, 2016 to Ms. Angel Deem, Virginia Department of Transportation, that provides our comments on how the District might evaluate your proposals pursuant to a Section 408 permission. This letter provides the framework for how the District might evaluate alternatives as they relate to the potential impacts to federal civil works projects including federal navigational channels and federal facilities. Please refer to the attached letter.

Thank you for the opportunity to comment on this study and the draft SOW.

George Janek
Norfolk District Corps of Engineers
Regulatory Branch
757-201-7135

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1096

Executive Office

JUN 29 2016

Ms. Angel Deem
Environmental Division Director
Virginia Department of Transportation
1401 East Broad Street
Richmond, Virginia 23219-2000

Dear Ms. Deem:

I am replying to your letter, dated April 29, 2016, regarding the Hampton Roads Crossing (HRC) Study Supplemental Environmental Impact Statement (SEIS), which the Virginia Department of Transportation (VDOT) is preparing in conjunction with the Federal Highway Administration (FHWA) and other agency and stakeholder partners. In your letter, you request comments from the U.S. Army Corps of Engineers (USACE), Norfolk District, in accordance with our role as a National Environmental Policy Act (NEPA) "cooperating agency" for the SEIS. Specifically, you have requested comments on how the USACE might evaluate, pursuant to Section 14 of the Rivers and Harbors Act of 1899, 33 USC 408 (Section 408), the impacts of the proposed HRC project alternatives on USACE federally authorized civil works projects.

As interpreted by agency policy, Section 408 prohibits the alteration of federally authorized USACE civil works projects unless the acting party obtains USACE permission prior to making the alteration. The USACE may grant such permission where it determines that the proposed alteration will neither impair the usefulness of the civil works project nor be injurious to the public interest. The USACE has published Section 408 guidance in Engineer Circular (EC) 1165-2-216, "Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408," which provides the policy and procedural guidance for Section 408 requests.

The four proposed HCR project alternatives, identified in the Alternatives Technical Report (ATR) as "A," "B," "C," and "D," would have varying impacts on the federally authorized Norfolk Harbor and Channels Federal Navigation Project (the Norfolk Harbor Project). The Norfolk Harbor Project includes the channel elements of Channel to Newport News, Sewells Point Anchorage, Newport News Anchorage, and the Craney Island Dredged Material Management Area (CIDMMA).

While the enclosed document provides our preliminary Section 408-related comments and concerns in accordance with our role as a NEPA cooperating agency, we stress that the ATR for the HRC Project does not provide sufficient detail and information to make a Section 408 determination. Section 408 review can be

accomplished for this project once the plans have been developed to a sufficient level for our assessment of potential effects to our operation of Craney Island. EC 1165-2-216 indicates that plans should be developed to at least 60% completion in order to provide the level of detail necessary for Section 408 review of a proposal.

A copy of this letter, with enclosure, has been provided to Mr. Jim Utterback and Mr. Scott Smizik, with VDOT and Mr. Ed Sundra, with FHWA.

My staff will be happy to continue coordination on this project to assist in addressing these concerns for potential impacts to federally authorized civil works projects. If you require further information, please do not hesitate to contact Mr. Gregory C. Steele, P.E., Chief, Water Resources Division, at (757) 201-7764.

Sincerely,

Jason E. Kelly, PMP
Colonel, U.S. Army
Commanding

Enclosure

Norfolk District Corps of Engineers
Comments on the Hampton Roads Crossing Study (HRCS)
Alternatives Technical Report

1. Alternatives C and D for the HRCS surround and traverse Craney Island Dredged Material Management Area (CIDMMA) and alter the facility in the following manner:

a. The alternatives obstruct and restrict navigation to the CIDMMA. Obstructed or restricted navigable access will impair the ability of the Corps to maintain and operate CIDMMA and federal navigation channels and anchorages. Proposed alterations to the project will impact facility operation and maintenance, facility construction, contract performance periods, and result in increased costs to the Federal government and users of CIDMMA through increased tolls to deposit dredged material.

b. The proposed vertical clearance will restrict navigable access to the facility. The HRCS Supplemental Environmental Impact Statement (SEIS) Alternatives Technical Report provided to the Corps, indicates a vertical clearance for all bridge crossings of 18-feet relative to North American Vertical Datum of 1988 (NAVD 88). Restricted vertical clearance will prohibit delivery of construction materials and equipment and limit the type of vessels calling on the facility including Corps vessels and contractor vessels (i.e., tugs, derricks, barges, and cranes). The Corps will require continued unconstrained navigable access to the CIDMMA.

2. Alternatives B, C, and D traverse the east side of the CIDMMA. Proposed vertical clearance of bridge crossings on the facility will restrict access for vessels using the Craney Island Rehandling Basin (CIRB) bulkhead facility and construction lay-down area. As currently proposed cranes and similar equipment would be required to break-down and re-erect to clear the Virginia Port Authority rail and the proposed Hampton Roads Crossing (HRC) bridge structures. Proposed alterations to the project will impact facility operation and maintenance, facility construction, contract performance periods, and result in increased costs to the Federal government and users of CIDMMA through increased tolls to deposit dredged material.

3. Alternatives B, C, and D traverse the east side of the CIDMMA and propose to take land in the existing south containment cell. Relocation and reconstruction of the containment dike to the west will impair and reduce the long-term capacity of the CIDMMA. It is anticipated that the reduction of acreage within the containment cell will result in significant loss of capacity and associated lifespan of the south cell containment area. Any proposed excavation and re-deposit of south cell dredged material into containment cells from site work in the area will further reduce long-term capacity. Redeposit of excavated dredged material located in the south containment cell will require an evaluation to determine if the material may be redeposited at the CIDMMA. Additionally, any excavated material proposed for redeposit into CIDMMA may require evaluation and testing to insure the material meets Clean Water Act (CWA) and facility requirements. Additionally, relocation and reconstruction of the containment dike to the west may render the cell unable to accept dredged material for many years.

4. Alternatives B, C, and D will restrict dredge pipeline alignments for dredged material placement operations during maintenance of Federal navigation channels. Access for pipelines and tender vessels will be required at multiple locations under bridge structures. Perpetual easements for dredge pipelines will be required for alignments along proposed bridge structures. Constraining dredge pipeline alignments for dredged material placement operations at CIDMMA will result in increased costs to the Federal government and users of CIDMMA. Construction methods for the HRC project will need to be performed in a manner that minimizes impacts to Corps contractor's ability to install and maintain submerged and floating pipelines and ancillary equipment supporting maintenance dredging of Federal navigation channels and anchorages.

5. Alternatives B, C, and D will eliminate contractor lay-down area located at the CIRB bulkhead. Loss of the contractor lay-down area will require an alternate location for contractor access and lay-down area. It should be noted that lay-down areas provided to the north of the CIRB will require significant maintenance due to elevated land subsidence of the areas northward. This will result in increased costs to the Federal government through additional maintenance and to contractors who will not have access or lay-down areas proximate to operations at the bulkhead facility.

6. Alternatives B, C, and D will have impacts to United States Government property. Real estate coordination and real estate instruments will be required to construct the project on government property. Perpetual easements will need to be provided to support maintenance dredging, dredged material placement operations, and facility maintenance and construction.

7. Alternatives A, B, C, and D will each have tunnel elements that impact multiple Federal navigation channels and anchorages. Tunnel clearances in the Federal navigation channels will need to meet or exceed the clearance of the existing Hampton Roads Bridge Tunnel (HRBT). Tunnels will need to be protected to withstand all potentially foreseen impacts from navigational emergencies and dredging operations. Tunnel armament and depth must consider spud and anchor embedment depths and potential vessel strikes.

8. Alternatives A, B, C, and D will have impacts to designated Federal project anchorages. Construction methods and scheduling for project construction including any proposed use of Federal navigation anchorages during construction will need to be performed in a manner that minimizes impacts to navigation to a level acceptable to the navigation community. Loss of anchorage areas will reduce anchorage capacity, availability, and reduce vessel scheduling, access, and maneuverability.

9. Alternatives B, C, and D will have impacts to navigation and operations during construction of the project. Construction methods and scheduling for the project, especially features crossing navigation channels and facilities, will need to be performed in a manner that minimizes impacts to navigation to a level acceptable to the navigation community.

10. Alternatives B, C, and D will have impacts to maintenance and construction on the CIDMMA facility. Construction methods and scheduling for the HRC project will need to be performed in a manner to minimize impacts to dredging, dredged material placement operations, facility maintenance, and construction to a level that accommodates timely dredged material placement by the Corps and other stakeholders using the facility. HRC construction on CIDMMA will need to be performed to not interfere with containment dike raising, dredged material borrow operations, and construction and maintenance of other facility infrastructure.

11. Alternatives B, C, and D propose to construct a roadway adjacent to an existing utility corridor on CIDMMA. The project design and construction will need to be performed to ensure the stability and differential loading and movement that may result on the utilities (i.e., Virginia Natural Gas pipeline, U.S. Navy JP-5 line).

12. Impacts to navigation for the selected alternative (A, B, C, or D) must be vetted and approved by the U.S. Coast Guard (USCG) Sector Hampton Roads.

From: Barbara Nelson <bnelson@PortofVirginia.com>
Sent: Friday, November 16, 2018 4:54:49 PM
To: Camelia.ravanbakht@outlook.com
Subject: RCS Input and Scenario Scope Comments

Good afternoon, Camelia,

The Port of Virginia appreciates the opportunity to have provided input during the Regional Connectors Study (RCS) stakeholder interview on September 26. As Phase I is focusing on establishing the goals and objectives for subsequent study phases and to balance the study with the region's expectations and priorities, we wanted to provide a brief summary of key port/freight-related issues from the interview, the additional follow-up discussion from October 23, and comment on the draft scenario scope.

Summary of Port/Freight-related Comments from Stakeholder Interview

- The HRTPO Freight Technical Advisory Committee (FTAC) is in the process of being reconstituted and the next meeting will be held on December 12, 2018. As the HRTPO has defined the FTAC as the committee that will assist the TPO in explaining and raising awareness of the importance of freight related transportation in the region and to collect/provide public input on these matters, it is important to reserve an opportunity for FTAC comment and input as an integral partner in the RCS. It was agreed that the FTAC involvement was important and FTAC would be identified as a study stakeholder for this phase of the study and subsequent phases of the RCS.
- The port and freight community share many of the same interests as other users of the transportation system: a need for improving system performance through the reduction of recurring congestion, optimization of all modes of transportation and deploying technology to benefit the entire system.
- While truck transport is essential in the first and last mile of goods movement, as well as long-haul moves, the RCS should also identify rail system investments that will provide the opportunity to shift cargoes from the roadways to the rail system. The Route 164 Rail Connector to the future Craney Island Marine Terminal is an important connection that should be included in this study.
- The alliances between shipping lines is a significant shift and an emerging issue. The result of the larger ships calling the terminals in Hampton Roads will have create an increase in the surge or pressure in gate moves. This increase in import and export cargoes can create economic opportunities across the region as well as pressures on the regional transportation network and locally in proximity to the terminals.

Additional Stakeholder Interview Follow-up Comment

While the purpose of the study is to evaluate the feasibility, permitability and transportation benefits of the alternatives that were presented and not advanced as the preferred alternative in the Hampton

Roads Crossing Study and Supplemental Environmental Impact Statement, it is also important to evaluate the economic impacts of the proposed transportation investments. While all projects compete for funding, those projects that can demonstrate a system performance benefits and demonstrate how the transportation investment induces economic activity will have a higher likelihood of successfully competing for constrained regional, state or federal funds.

Comment on the Scenario Planning Scope

- During the presentation on November 8 on the tasks associated with the Scenario Planning Task, an example of place-types was provided for illustration purposes. As the port and the related economic activity is a major driver the region's economic vitality, it is important that all exploratory scenarios include a port/industrial as a key component of the plausible future. In addition to warehouse and distribution impacts associated with these futures, the scenario should also plan for and describe manufacturing opportunities as these types of jobs will have a different impact on job types, educational requirements, and the potential for increased income. All of these factors will impact the value proposition for choosing one set of solutions over alternatives as the RCS moves into picking and prioritizing projects.
- As noted above, there has been a significant change in frequency and size of ultra large container(ULC) vessels that will are and will be calling on this region. By mid-2019 the total number of ULC vessels that can be worked at the same time will have increased from two to six ULC vessels. This capacity will create economic opportunities and transportation system impacts that have not been anticipated in past long-range transportation plans. Additionally, the port has participated in a modeling exercise that evaluates handling 22,000 TEU ships at berth – whereas today, we are handling 14,000 TEU ships.
- The scenario analysis should also take into consideration the port's interest and need in receiving and pushing out more cargo by rail to maximize the efficiency of the transportation system.

Again, we appreciate the opportunity to be a partner in this study and the related efforts with the 2045 long-range plan update and the revisions to the prioritization tool. Please let me know if you have any questions about our comments.

Best wishes,

Barbara

Barbara Nelson

Vice President, Government Affairs and Transportation Policy

Virginia Port Authority

600 World Trade Center

Norfolk, VA 23510

Office: (757) 683-2131

Cell: (804) 874-0140

www.portofvirginia.com

From: Dale Stith <dstith@hrtpo.org>
Sent: Friday, November 16, 2018 3:58:33 PM
To: camelia.ravanbakht@outlook.com
Cc: Mike Kimbrel
Subject: RCS Scenario Planning draft scope of work - HRTPO comments

Hi Camelia,

HRTPO staff has reviewed the updated draft RCS scenario planning scope of work and below are our comments of the version dated 10.31.18:

- When describing/listing public outreach tasks, deliverables, meetings, etc., please reference the RCS Engagement/Outreach Plan for more details.
- Under Task 1k (page 6): I'm still not convinced about the need to evaluate the 2015 model similar to the evaluation of the 2009 model. In speaking with Bill Thomas (a couple weeks ago), he explained that there may be some things that they will need to adjust/tweak in the delivered 2015 model to ensure it can perform to the RCS objectives. Perhaps they can reword this section to indicate that they don't necessarily need to evaluate the 2015 model similar to their evaluation of our current 2009 but instead they will evaluate to determine if additional adjustments need to be made to the 2015 model to ensure it can perform to meet objectives of the RCS (or something like that).
- Under Task 5b (page 14): Add 'economic models' to Deliverables

- I also made some minor corrections throughout the attached word document (using the official name of the HRTPO Project Prioritization Tool, adding references to permitability screening (to drive that home), and consistently using "candidate" projects).

As we discussed before, I am impressed and appreciate how well this draft scope is written (making this complex process easier to digest and understand).

Keith Cannady informed me that he has comments to submit as well. I will forward those once I receive them from him (probably Monday).

Thanks and have a great weekend!

Dale M. Stith, AICP, GISP

Principal Transportation Planner

Hampton Roads Transportation Planning Organization

The Regional Building | 723 Woodlake Drive | Chesapeake, VA 23320

dstith@hrtpo.org | www.hrtpo.org | Phone: 757.420.8300 | Fax: 757.523.4881

From: Keith Cannady
Sent: Friday, November 16, 2018 4:51 PM
To: Dale Stith
Cc: Mike Kimbrel; Rob Case; Keith Nichols; Kendall Miller
Subject: RE: RCS Scenario Planning Draft Scope of Work

Dale,

Sorry for not responding sooner with my comments on the draft scope for scenario planning. As mentioned, I am very impressed with the consultant's work and looking forward to the process and outcomes.

My comments:

1. Under Task 1i on page 5, the consultant will "conduct a scan of available research on the relationship between public sector infrastructure costs and development typologies, as a potential variable of interest". I believe this will have a very high level of interest and value for our local governments and would also suggest that the consultant research the relationship between public sector revenue generation (real estate tax revenues, etc.) and development typologies. This could provide some valuable information on the overall net fiscal impact of different development typologies.

2. General comment/question: will this planning effort incorporate projected sea level rise in the region (for example, recent PDC adopted planning and policy approach)?

Keith

the *heartbeat* of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION
BOARD RESOLUTION 2018-03

A RESOLUTION OF THE HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION SUPPORTING THE HAMPTON ROADS 2040 LONG-RANGE TRANSPORTATION PLAN REGIONAL PRIORITY PROJECTS AND THE ANALYSES OF ADDITIONAL REGIONAL PRIORITY PROJECTS FOR THE HAMPTON ROADS 2045 LONG-RANGE TRANSPORTATION PLAN.

WHEREAS, on July 21, 2016, the Hampton Roads Transportation Planning Organization (HRTPO) Board approved and adopted the fiscally-constrained Hampton Roads 2040 Long-Range Transportation Plan (LRTP), which includes a Hampton Roads Transportation Accountability Commission (HRTAC) plan of finance to construct the Regional Priority Projects based on the sequencing established by the HRTPO Board on February 18, 2016;

WHEREAS, on October 20, 2016, based on analysis from the Hampton Roads Crossing Study – Supplemental Environmental Impact Statement (HRCS SEIS) and HRTPO staff, the HRTPO Board unanimously approved the I-64/Hampton Roads Bridge-Tunnel (HRBT) widening project as the Preferred Alternative of the HRCS SEIS, and to include the I-64/HRBT widening and the Bowers Hill Interchange projects as Regional Priority Projects, as well as a study to further evaluate the remaining segments of the HRCS SEIS; and on December 7, 2016, the Commonwealth Transportation Board approved Alternative A from the HRCS SEIS as the locally Preferred Alternative;

WHEREAS, on May 18, 2017, the HRTPO Board directed HRTPO staff to work with the Transportation Technical Advisory Committee to review and identify projects that could be considered for a second round of Regional Priority Projects (Round 2) and stated that the current list of Regional Priority Projects (Round 1) included in the 2040 LRTP should not be impacted in terms of priority or funding by the work related to Round 2; and

WHEREAS, the HRTPO, in partnership with HRTPO Board advisory committees and regional stakeholders – including local, state, regional, federal transit, military, freight, and the public – will develop the fiscally-constrained Hampton Roads 2045 LRTP based on a collaborative process to identify, prioritize, and seek transportation funding for needed investments in order to address the region's transportation and associated challenges and that the process will include analyzing a new baseline network that includes the construction of committed Regional Priority Projects;

NOW, THEREFORE, BE IT RESOLVED, that the Hampton Roads Transportation Planning Organization continues its support of the Regional Priority Projects fiscally-constrained in the region's 2040 Long-Range Transportation Plan, to be funded, in whole or in part, with Hampton Roads Transportation Fund (HRTF) revenues; and

BE IT FURTHER RESOLVED, as part of the development of the 2045 Long-Range Transportation Plan (LRTP), the HRTPO supports the analyses of additional regional projects that meet the criteria established for HRTF revenues, and that all candidate projects not already committed will be evaluated as part of the development of the 2045 LRTP.

APPROVED and ADOPTED by the Hampton Roads Transportation Planning Organization at its meeting on the 15th day of March, 2018.

Thomas G. Shepperd, Jr.
Chair
Hampton Roads Transportation
Planning Organization

Robert A. Crum, Jr.
Executive Director
Hampton Roads Transportation
Planning Organization

Attachment 5a2

REGIONAL CONNECTORS STUDY

PHASE 2 – TECHNICAL ANALYSIS

SCOPE OF WORK

Introduction

Phase 2 of the study will entail the technical analysis required to identify, assess, and prioritize potential transportation improvements to enhance connectivity between the Peninsula and the Southside of Hampton Roads. Phase 2 tasks are described in the following paragraphs.

TASK 1 – Execute Engagement Plan

This task outlines the process for the implementation of a Public Engagement Plan developed in Phase 1 of the Hampton Roads Regional Connectors Study (RCS). The subtasks associated with implementation of the Public Engagement Plan seek to inform, educate and engage stakeholders, residents, businesses, and travelers in the Hampton Roads Region. Phase 2 covers the period from January 2019 through January 2020, a 13-month period. As such, the Public Engagement Plan will be reviewed on a quarterly basis to ensure alignment with the goals and objectives of the study and to address any additional information obtained through the engagement process. The Consultant Team will adhere to all applicable policies and procedures as directed by HRTPO and applicable federal guidelines covering MPOs and recipients of federal funds for planning purposes.

Task 1.1: Task Management

The engagement task lead will provide a task-based progress report, participate in monthly team meetings and bi-weekly calls as appropriate with HRTPO staff and the project management team. Progress reports will summarize and report the percentage complete of each task and provide the basis for the monthly invoice. Progress reports will be provided to the project management team in acceptable format. The engagement task leader will attend Consultant Team meetings as needed, including but not limited to bi-weekly engagement team meetings, internal team meetings, and meetings with HRPTO staff as required. The engagement task leader will provide schedule updates to inform the master project schedule.

Task 1.2: Engagement Plan Review

The study engagement team will perform a quarterly review of the RCS Engagement Plan. This review will include evaluation of the demographic profile, tools and tactics, metrics, stakeholder groups and key messages. Any revisions will be provided to HRTPO staff in track changes for review and acceptance. An electronic copy of each plan revision will be submitted.

Task 1.3 Implementation of Engagement Program

The engagement team will conduct stakeholder outreach tasks to engage regional stakeholders as directed and approved by HRTPO and the Working Group. This will consist of outreach to the targeted stakeholders representing or living in the jurisdictions covered by HRTPO agreements. Activities to be implemented by the engagement team include:

Task 1.3a Study Mailing list and Comment Database

The engagement team will create, organize, and maintain a project database and mailing list to house contact details for agency representatives, elected officials, civic groups, businesses, and other important stakeholders. The engagement team will work closely with HRTPO to develop the agency and locality mailing list. The list will be used to disseminate project status information such as a study brochure and to notify people of upcoming in-person and online engagement opportunities.

Throughout the course of the study, the engagement team will expand and update the list by encouraging interested parties to refer others to the list or through mailing list signups via the study website. The engagement team will utilize database software such as MailChimp to maintain the database.

This database can also be used to house public meeting comments for extraction and future response development. The engagement team will accept all public comments submitted during public outreach efforts and at public meetings. This effort will include: developing a public comment section of the database; collecting and cataloging all correspondence sent to the study team; categorizing all comments for inclusion in comment analysis or reports and creating the public outreach comment table summary for inclusion in the Engagement Summary Report.

Task 1.3b Community Briefings and Presentations

The engagement team will schedule and attend up to 10 community nonprofit and organizations meetings to provide an overview of the project. Presentations task elements will include the development of handouts, PowerPoint presentations, maps, and the recording of meeting minutes as appropriate. A maximum of 10 presentations will be conducted in Phase 2.

Task 1.3c Brochures, Factsheets and Handouts

The engagement team will prepare 1 draft meeting brochure to report on key project elements, milestones, and recommended meeting dates. The brochure will be distributed at public meetings in Phase 3 and made available on the project website. The content will include background information, schedule, study area maps, and other pertinent project information to support full participation by the public at the meetings. In addition, the engagement team will prepare one postcard or rack card to be featured at community facilities. These smaller, more portable formats could highlight topics or special interests and could be distributed at outreach events, community facilities, and as notification tools in advance of public meetings. The study team will print a maximum of 3,500 copies of the postcard or rack card for distribution.

The engagement team will develop posters, flyers and meeting presentation templates for the study. The team will generate up to 6 comment cards, fact sheets and/or flyers that highlight topics, promote events, or announce key milestones in the process. They may target specific audiences or interests or be oriented more generally. The fact sheets and flyers will support and supplement key messages throughout the process to keep the public and stakeholders informed.

Task 1.3d Community Events and Outreach

The engagement team will plan up to 2 informal in-person pop-up events to introduce the project and to obtain stakeholder perspectives on regional mobility, transportation planning, and connectivity. The team will select event locations, schedule, develop event activity plans, determine required staffing, and review collateral material.

In addition, the engagement team will investigate the use of ad space on ziosks in the region and a project informational video to be priced for HRTPO and Working Group consideration and approval.

Task 1.4 Website Upgrades and Maintenance

The team will develop content for use and subsequent uploading to the study website by the study team. This effort includes initial content development to be reviewed and approved by the Working Group and HRPTO along with the development of content updates by the study team at project milestones and other pertinent events.

Task 1.4 Prepare Website Content

The study team will develop a creative brief for Phase 2 to orient readers to the Regional Connectors Study and its phases.

As a part of Phase 2, the study website will be populated with fresh information as it becomes available, including analysis results, meeting dates, reports, and meeting/briefing dates. Updates and reporting documents such as one-pagers will be shared as they become available. Templates for these updates will be designed and developed as a part of this task. New content, including microsimulation of alternatives' traffic operating conditions, will be integrated into the site, and new components will be added to the site as needed to accommodate this content. Original copywriting will be delivered as a part of these updates, and publication will be managed by the study team. Regular hosting and maintenance of the study website will also be covered under this scope.

A key feature of Phase 2 will be the development of an Interactive Map, which will require coordination to establish visual goals, data sources, and other content needs. Once designed, this map will be integrated into the existing study website.

Phase 2 will also feature a new Scenario Planning Page Template which will appear at the top-level navigation on the site. New copy will be developed, and technical analysis elements performed by team members will be uploaded. This page will be designed to feature animations and other graphical elements.

As the Study gathers momentum, a plan will be created to report events on a regular schedule, and a post template for these events posts will be created.

Finally, survey results will be shared in the form of a final report. Survey-generated publications will be added, and categories for these publication types will be created and added to the website backend.

Timing:

- 13 months

Meetings:

- 2 pop up meetings
- 10 community briefings
- Meetings with HRTPO staff: 4
- Working Group Meetings: 2
- Steering Committee Meetings: 2

Deliverables:

- Study mailing list (electronic format)
- Comment database (electronic format)
- Meeting notes for stakeholder meetings
- Brochures, fact sheets, and handouts and comment sheets for public facing activities and meetings
- Public Engagement Summary
- Website deliverables

TASK 2 – Development of Preliminary Alternatives

The intent of this task is to develop preliminary alternatives to a sufficient level of detail to enable construction, right-of-way, and utility relocation planning-level costs to be developed, as well as to be able to determine each alternative's potential to be permitted and constructed. Permitability and constructability are two criteria that will be used to help screen the preliminary alternatives down to candidate alternatives. More information on that screening is provided in Task 3.2.

It is assumed that a maximum of ten (10) preliminary alternatives will be developed. They will include the five (5) corridors not programmed for funding in the HRCS SEIS which are:

- I-664
- I-664 Connector

- I-564 Connector
- VA 164
- VA 164 Connector

In addition to these five preliminary alternatives, an additional five (5) alternatives will be developed as a result of suggestions made at stakeholder interviews and comments received during other project engagement activities.

To the greatest extent possible, the Consultant team will use existing information available for the conceptual design of the alternatives, which includes: typical cross sections, alignments for roadways on new location, and geometric configurations of connection points to existing roadways.

The Consultant team will develop alternatives at a conceptual level in MicroStation format utilizing aerial photography and available GIS data. Elements of the conceptual development of the alternatives will include the following subtasks.

Based on Corps of Engineers input, the Corps will offer comments during the development of the alternatives, but the alternatives development should follow a step-wise process. Milestones in the development process may include the following steps:

- Defining a project purpose and need
- Developing a scoping and methodology for alternatives analysis
- Documenting the alternatives analysis, including the practicability of the different alternatives
- Developing the preferred alternative

Task 2.1: Develop Geometry of Preliminary Alternatives

Task 2.1a Design Criteria
Engineering design criteria for the Preliminary Alternatives will be established based on VDOT and AASHTO standards for the design speed and type of facility. Alignments will be developed to minimize known environmental impacts, minimize the need for right-of-way, minimize costs, and accommodate forecast traffic volumes. Horizontal alignments and vertical profiles will follow existing geometry where existing roadways are being widened. The beginning and ending stations of the alignments will be tabulated as well as proposed curve data.

The design of the alternatives will also include traffic analyses of connection points to existing facilities. These analyses will be undertaken to ensure that the design can adequately accommodate projected traffic volumes. The traffic analyses will be limited to Highway Capacity Manual (HCM) methodologies for merge, diverge, and weave sections on freeways and capacity analyses for arterial intersections. They will not include micro-simulation analyses (these will only be performed on the Candidate Alternatives).

Task 2.1b Typical sections and cross-sections
Typical sections for each alternative will be developed to meet VDOT and AASHTO requirements. Materials will match existing facilities (concrete or asphalt pavement). A description of the proposed pavement design will be developed, including proposed pavement depths for construction cost

development. New facilities will be assumed to be asphalt pavement, unless otherwise directed. Cross-sections will be developed at 500' intervals for the purposes of developing earthwork quantities. Additional cross-sections will be developed at critical locations to assist in determining tie-in points and environmental and right-of-way impacts.

Task 2.2: Hydraulics and Hydrology

Conceptual analysis will be performed for major drainage structures (Q_{100} > 500 cfs), to determine feasibility and cost impacts. A description of floodplain impacts will be included where there is proposed encroachment on a floodplain. Roadway drainage will generally be assumed to be an open system (ditches). Where bridge structures, roadway barriers, sound walls, or retaining walls are required, closed drainage systems (inlets and pipes) will be assumed. These areas and approximate limits will be determined as part of the alternative development. Stormwater management will be estimated based on pollutant loading calculations for new impervious area. Approximate sizing of Stormwater management facilities to mitigate increases in Stormwater runoff will be performed based on "rule of thumb" estimates, but no design will be performed.

Task 2.3: Structures

Any new, widened, or reconstructed structures will be described. The approximate size and location of proposed bridge work will be developed at a conceptual level. The location, limits, and height of retaining walls and sound walls will also be developed at a conceptual level.

Task 2.4: Utilities and Railroad Crossings

Any major overhead utilities (such as electrical transmission lines, and transformer stations) will be identified, and the impact of any conflicts will be discussed. Any railroad crossings within the proposed roadway improvements will be identified and impacts described.

The conceptual plans will be turned into graphics for inclusion into the study report.

Task 2.5: Planning Cost Estimates

A planning level cost estimate (present year costs) will be developed for each preliminary alternative based on the conceptual designs and potential mitigation estimates. Quantities for major items such as roadway pavement, earthwork, drainage structures, bridges and walls will be based on the conceptual plans. The quantities will be multiplied by the average unit costs for the Hampton Roads District to arrive at the construction cost for these items. The cost of the remaining disciplines will be based on allowances or lump sum costs as follows:

- Mobilization
    - Mobilization will be presented as a lump sum cost based on a percentage of construction cost.
- Traffic Control & Maintenance of Traffic (MOT)
    - Ground Mounted signs will be estimated on a "per mile" basis

    - A planning level estimate will be prepared for ITS systems on all limited-access roadways. The ITS system will be presented as a lump sum amount.
    - Traffic MOT will be based on a percentage of the total construction cost of the project, typically 4-5% of construction cost.
    - Lighting will be based on a "per mile" basis where applicable.
- Stormwater Management, E&S and Wetlands
    - It will be assumed that Nutrient Credits will be purchased for approximately 25% of the increased pollutant load
    - Plantings for constructed wetlands or bioretention facilities will be based on a lump sum cost based on VDOT District averages.
    - The presence of wetlands and streams will be based on publicly available wetland inventories (NWI) and topographic maps and coordinated with the work described in Task 3.2. The impacts will be based on limits or disturbance. Wetland mitigation costs will be based on a per acre cost; stream impacts will be based on a linear foot cost.
    - Erosion & Sediment Control (E&SC) costs will be presented as a lump sum cost.
- Preliminary Engineering (Design) costs will be based on a percentage of the total construction cost of the project.
- Right-of-Way estimated costs will be determined by categorizing the property (residential vs. commercial), quantifying the right-of-way taking and applying per acreage costs for partial takes. Total takes will include relocation costs where applicable. Unit costs for right-of-way and relocation costs will be based on VDOT unit costs for the Hampton Roads District.
- Utility Protection and Relocation costs will be based on observations of above ground features, and record research. Utilities will be aggregated by type (water, sewer, power, gas, communication) and assigned to a range of sizes. An allowance will be made for smaller utilities/distribution lines. Larger utilities/transmission lines will be based on a linear footage basis.
- Railroad crossings – A cost for railway flaggers and watchperson service will be estimated for proposed railroad crossings. The cost will be presented as a lump sum cost.

For any ferry service alternative, a planning level estimate will be prepared for the capital costs and operating costs of ferry service. This estimate will be based on a life cycle cost analysis. The length of the period used for life cycle analysis will be determined in conjunction with the HRTPO, prior to development. The design ferry vehicle will be the Pocahontas which is the largest ferry vehicle on VDOT's Jamestown-Scotland ferry route and can carry tractor trailers up to 56,000 pounds. Capital costs will be developed for major items, with allowances for smaller, aggregated items. Major capital costs will include the cost of ferries and ferry infrastructure, including the cost of docks and bulkheads, approach roadways/parking lots, right-of-way and support buildings with communications and other utilities. Operating costs will include ferry and support staff, and O&M costs for the ferries and supporting infrastructure.

Timing:

- 10 months

Meetings:

- Meetings with HRTPO staff: 0

- Working Group Meetings: 1
- Steering Committee Meetings: 1
- Other/Stakeholder Meetings: 0

Deliverables:

- Roadway typical sections
- Roadway alignment plans
- Cost estimates

TASK 3 – Determination of Candidate Alternatives (Screen 1)

Evaluation criteria will be determined for use in screening the Preliminary Alternatives down to Candidate Alternatives. The criteria will include, but not be limited to:

- Congestion relief
- Permitability
- Constructability

The intent of this initial screening is twofold. First, it will eliminate from consideration any alternative whose permitability is questionable. Second, it will eliminate any alternative that does not compare favorably to the other alternatives in these criteria. An alternative matrix will be prepared to illustrate the characteristics of each Preliminary Alternative and to facilitate comparison between them.

Task 3.1 Conduct Congestion Relief Assessments

Congestion relief performance measures are to be determined through interaction with the Working Group and HRTPO staff, but could include:

- Percent reduction of Average Annual Daily Traffic (AADT) and delay on existing Hampton Roads crossings (Hampton Road Bridge Tunnel, Monitor Merrimac Memorial Bridge Tunnel, and the James River Bridge)
- Percent reduction in Average Daily Vehicle Miles Traveled (VMT)

The comparison of these measures is part of the screening of the Preliminary Alternatives. In this task, the Consultant Team will run each alternative using the travel demand model for the 2045 Baseline future and organize the outputs based on the approved performance measures characterizing congestion relief.

Task 3.2: Conduct Permitability Assessments

Overview

The purpose of this task is to evaluate the regulatory permitability of preliminary alternatives. All regulatory permitability evaluations will be conducted by reviewing Federal, State, and Local regulatory requirements in conjunction with existing environmental conditions. The study team will determine potential regulatory fatal flaws as well as develop a prioritization tool for the analyzed alternatives.

The Consultant Team understands that the Corps will not permit an alternative that would obstruct or restrict navigation to the Craney Island Dredged Material Management Area (CIDMMA), or that would otherwise impair the Corps' ability to maintain and operate the CIDMMA. Likewise, the Corps will have to assess the impact of the different alternatives on the federally authorized Norfolk Harbor and Channel Federal Navigation Project and coordinate with maritime stakeholders on the impacts of those alternatives.

Task 3.2a. Data Collection Review

The focus of this task will be to review and analyze environmental (natural and cultural resources) data created to develop the regional mapping, with the goal of establishing a unified dataset for GIS based environmental alternatives review. The regional mapping and environmental overlays will define where sensitive natural and cultural resources are located to determine if preliminary alternatives can avoid and /or minimize impacts as part of the risk analysis. In addition, should resources not be able to be avoided and/or minimized, mitigation concepts will be evaluated as part of the analysis. This information will form the basis for regulatory permitability evaluations as part of the alternatives analysis. The data will be evaluated to provide regional leaders and analysts with accurate information from which to make strong, technically-supported decisions regarding regulatory viability.

Task 3.2b: Develop permitability requirements and evaluation parameters

In this task, a set of evaluation parameters will be developed to evaluate environmental and regulatory viability of the alternatives. Each evaluation parameter will relate to the targeted environmental resources and potential impacts in conjunction with Federal, State, and Local laws and regulations to create a framework for risk analysis, fatal flaw analysis, and alternative prioritization.

In addition, this task will establish a series of regulatory permitability factors that will be used to measure how each alternative contributes to the direct and indirect environmental impacts to ensure there is not a negative environmental impact to the resources of the region. The factors will serve as the measures of effectiveness against which to test each alternative. A matrix will be developed that aligns each metric according to an established objective for the region.

A key aspect of the evaluation parameters that will be explored in this task will be integration with HRTPO's Project Prioritization Tool to ensure compatibility between measures that are used in this project with measures used by the HRTPO in their transportation planning and programming efforts.

The final performance measures will be vetted with the Working Group and HRTPO staff, and as needed, will be reviewed with the Steering Committee. The result will be a consensus on the methods and metrics that will be used to gauge success in the regulatory evaluation of each of the alternatives.

Task 3.2c: Evaluate Preliminary Alternatives

The next step in the regulatory permitability analysis is to evaluate environmental factors in conjunction with the design and construction factors. The goal of this task is to assemble and evaluate the

performance measures for each Scenario based on land use/environmental metrics, design alternatives, and reasonable constructability. This is a key step in understanding the comprehensive environmental impacts of each alternative.

All regulatory permitability parameters and evaluations will be conducted by reviewing Federal, State, and Local regulatory requirements in conjunction with existing environmental conditions. This information will be used to determine potential regulatory fatal flaws as well as develop a prioritization tool for the analyzed alternatives.

Task 3.2d: GIS based environmental alternatives review to identify risk factors for permitability and fatal flaw analysis

At this point in the process, all the environmental conditions and regulatory drivers will have been assembled to allow the alternative evaluation process to begin. The purpose of this evaluation will be:

1. Establish the interaction between design and constructability requirements with existing environmental conditions
2. Evaluate potential high level direct and indirect environmental impacts for each alternative
3. Evaluate potential regulatory fatal flaws
4. Create a framework for comparison to establish a prioritization of alternatives

Task 3.3: Conduct Constructability Assessments

Constructability assessments will consist of a cost/benefit (C/B) analysis using the planning level cost estimates prepared in Task 2.5 and costs associated with mitigation measures identified in the permitability assessment. The benefit criteria will be determined as part of the Scenario Planning Task 4.3 – Defining Measures of Success. A threshold for an acceptable C/B ratio will be determined through interaction with the Working Group and HRTPO staff and subsequently used as a determinant in the screening of the Preliminary Alternatives.

Timing:

- 9 months

Meetings:

- Meetings with HRTPO staff: 1
- Working Group Meetings: 1
- Steering Committee Meetings: 1
- Other/Stakeholder Meetings: 0

Deliverables:

- Alternative Matrix
- Memo Summarizing Environmental Drivers and Parameters for Evaluation
- Memo Summarizing Environmental Data and Regulatory Permit Review
- Presentation materials, posters and slide decks of Deliverables for public outreach process

TASK 4 – Conduct Alternatives Analysis via Scenario Planning

The Regional Connectors Study (RCS) Regional Scenario Planning process will provide insight to decisionmakers regarding the need for and the benefits of alternative transportation investments considering potential alternative future trends. The Scenario Planning process will consider a baseline 2045 scenario and three alternative 2045 scenarios that present plausible futures with respect to economic, demographic and technology drivers. The scenario analysis will link alternative future economic and demographic trends with land use, and the resulting socioeconomic forecasts will be tested with the regional travel demand model to understand the impacts to transportation and other performance measures. The scenario outcomes will provide a series of benchmarks against which to test the resilience of different transportation investments. The purpose of the scenario planning process is to identify those transportation investments and projects that fare best in the analysis - that provide the most cumulative benefit to the region regardless of which alternative future scenario is tested. This will be done by testing each of the Preliminary Alternatives against each scenario to gauge how robust each investment is with respect to the range of possible futures.

Throughout the RCS Regional Scenario Planning process, the RCS Working Group will work closely with HRTPO staff and the Consultant team to provide guidance, affirm scenarios, select drivers and performance measures, and evaluate interim and final results. The RCS Steering Committee that is overseeing the overall RCS process will also be updated on the progress on the Regional Scenario Planning effort and will receive the results of the scenario testing of Candidate Alternatives for evaluation and consideration in the overall RCS process. The results will also be shared with the public to provide input as part of the final assessment of investment and policy insights in the study.

The economic modeling tasks require model access and data license charges that are detailed in Appendix A.

Task 4.1: Building the Base Data, Models, and Scenarios

Overview

The purpose of this task is to build a series of datasets and maps that will be used as the basis for the Scenario Planning effort. It will require close coordination with technical staff from the HRTPO and effective communication with the Working Group to ensure that each step is documented and vetted, particularly because the data gathered in this task will be the foundation for all the scenario and modeling work in the following months.

The conversion of substantial amounts of data into useful information is a significant challenge that requires clear and concise data analysis and synthesis. The Consultant Team's planning process will be built upon developing an accurate, living library through assembling the compiled data into an organized structure and accessible formats, and by analyzing the data in a coordinated, comprehensive manner. The data collected and used in this study will be updated to provide regional leaders and analysts with accurate information from which to make strong, technically-supported decisions.

Task 4.1a. Kick Off and Data Collection

The focus of this task will be to review and analyze available data (much of it collected in Phase 1), with the goal of establishing a unified dataset for analysis of future scenarios, as well as to enable a

foundational “benchmarking” of the core indicators of success in the Region. In addition, in this task we will hold a kick off meeting with the Working Group to guide the start of the technical and analytic process.

Task 4.1b: Build GIS Base for Scenario Planning

In this task, the Consultant Team will build a layered base, using GIS data, of the entire region to be used as the platform for spatial allocations in the Scenario Planning model. The initial data we anticipate assembling (some of which has been collected in Phase 1) includes information on demographics, housing, transportation, environment, infrastructure, governance, employment, education, finance and a host of other measures. In addition, we will organize this data in spatial terms, as layers on the regional GIS base map for future analysis.

A key step in building this base will be the determination of the scale of the “grid” to be used as the surface for the analysis of the region. There are several options for this grid, based on how the region is broken down into modules for different analytic purposes. These include:

- The TAZs used in the Regional Model
- Census Block Groups
- Existing parcel data
- An overlay grid of equal squares sometimes used for analysis purposes – usually ranging from 30x30 meter squares to 40-acre squares.

The type of grid used for the land use allocations will be determined once all the data is assembled to see which scale of grid is most conducive to data collection and analysis. In all cases, however, regardless of the primary grid chosen for analysis purposes, all data will of necessity be translated to the TAZ geography ultimately for use in the Travel Demand Model.

Task 4.1c: Build Place Types

The land use allocation aspect of the Scenario Planning process will be conducted through a “Place type” approach. This involves converting the existing and future land use data categories in the region into a series of typical community or “place” types, with names such as residential suburban community, agricultural community or high-density mixed-use community with a commercial or residential focus. These Place types will be used both to profile the existing land use pattern in the region and to construct each of the future land use scenarios.

The process of building a set of Place types will involve several steps, including:

- Profiling existing and future land use types in the region to develop a unified set of Place types that describe regional development patterns
- Developing quantitative summaries of each Place type that summarize land uses, developed areas, and environmental data for each
- Developing summary 3-D visualizations of each Place type, to clearly explain them to stakeholders and the public

Available HRTPO datasets of existing and future land uses will be used as the basis for the Place types, and they will be checked against air photos and parcel data from sample locations in the Region to calibrate the Place types to existing conditions.

Task 4.1d: Build "Virtual Present" Map of the Region

The Virtual Present map is a picture of where development is currently located in the Region. Building the Virtual Present involves allocating the Place types onto the GIS base map of the region to match the existing pattern of development and land uses on the ground today. The existing parcel-based land use data from HRTPO will be used for this, but where there are any potential gaps in the parcel dataset, we can use National Land Cover data to fill in the missing areas. The output will be a GIS map of the Region that converts the existing land uses to Place types, with resulting data derived from the Place types about land use, environmental features, accessibility and transportation characteristics.

Task 4.1e: Land Suitability Analysis

The Land Suitability Analysis is a necessary step to build future scenarios and land use allocations. To be able to allocate new development based on growth scenarios, it is necessary to understand which lands are suitable for development from a regulatory, environmental and existing conditions standpoint. In this task, a series of new data layers will be added to the Regional GIS base that describe the suitability of the land for development or redevelopment based on:

- Federal, state or local government-owned lands
- Environmental constraints
- Utilities, infrastructure and easements
- Zoning and other regulatory constraints
- Flood and inundation zones
- Value of land and improvements (if parcel level data is available in GIS)
- Other constraints or factors influencing development potential

Together, the Virtual Present map and the Land Suitability Analysis overlays will define where new growth is both feasible and (to some extent) likely to occur. This information will form the basis for allocating future growth for the land use portion of the scenario development process.

Task 4.1f: Calibrate "Virtual Present" to TAZ control totals

An important aspect of this process will be to calibrate the allocations of land use to the control totals for socioeconomic data in the Travel Demand Model for each TAZ. This task will involve modifying the Place type allocation in the Virtual Present so that the population and industry employment totals match the controls in each TAZ according to the Travel Demand Model. This will ensure that the Virtual Present map exactly matches the spatial distribution of population and employment data that is used in the Travel Demand Model so that the Scenario Planning model and the Travel Demand Model are in synch. This will also highlight any significant differences between the 2015 land use data and the socioeconomic data in the Travel Demand Model.

Task 4.1g: Review Data on Economic Conditions and Trends

To support later development of economic "drivers" for use in scenario planning, the Consultant Team must first develop a baseline understanding of current economic conditions as well as key trends and drivers of future economic conditions. To this end, the Consultant Team will review HRTPO's 2015 profile of socioeconomic data and its 2045 regional socioeconomic forecasts, developed with the use of the Regional Economic Models Inc. (REMI). HRTPO will provide the Consultant Team with methodological documentation.

The Consultant Team will review and document trends and forecasts of several critical socio-economic and demographic variables, including employment by sector, population, population by age, households, household size, labor force participation, and migration by county. The Consultant Team will discuss the forecast process and results with the Chief Economist of HRPDC, as needed. To support interpretation of these forecasts, they will be benchmarked against other sources of information, such as Federal and State data, as well as proprietary sources such as Moody's Economy.com. The Consultant Team will further outline and discuss the transportation implications of the socio-economic and demographic changes identified, as well as the key underlying assumptions within the REMI model or other parts of the forecasting process that drive outcomes. The Consultant Team will review embedded assumptions related to the types of economic drivers that will subsequently define alternative scenarios, to ensure divergent futures can be correctly "pivoted" from the baseline forecast, and to identify any key sources of uncertainty.

In addition to the broad regional review, the Consultant Team will conduct a specific review of expected trends at Port of Virginia facilities. This will include a review of port demand forecasts contained in the travel model and documented in PoV's 2065 master plan and a meeting with PoV staff. This review will ensure alignment between the travel model and the port's expectation and will support the option for integrating shifts in port activity (including mode shifts) as potential scenario drivers later in the process.

Task 4.1h: Identification of Economic Opportunities

In this task, the Consultant Team will review available information on identified economic development opportunities within the region that may affect spatial and industry patterns of long-term regional growth. This is expected to include a review of information collected by HRTPO regarding potential large parcel economic development sites, as well as discussions with staff concerning the way in which these sites are treated in the TPO's future forecasting process. In addition, the Consultant Team will review the Hampton Roads Economic Development Alliance report that identified competitive industries that could drive additional regional growth including advanced manufacturing & logistics, shared services (e.g. ADP), and IT. The Consultant Team will also review HRPDC's most recent Regional Economic Development Strategy (REDS) and Regional Benchmarking Study and will hold 1-2 stakeholder meetings with regional economic development experts. This information will provide a basis for defining potential scenario economic drivers that are specific to the Hampton Roads Region, with attention given to different potential economic diversification futures.

Task 4.1i: Economic and Financial Implications of Alternative Development/Industry Mix

The Consultant Team will conduct an initial review of data and tools available to connect alternative development (by Place type or industry) and transportation scenarios to likely economic and financial outcomes. This preliminary research will help parameterize the range of economic performance measure options available, to be further refined in Task 3. At a minimum, this will involve coordinating

with TPO staff regarding options to use the TREDIS economic modeling system with or without REMI. TREDIS's modular framework enables economic impact evaluation either with the built-in Regional Dynamics economic model, or through integration with REMI. As part of this TREDIS review, the Consultant Team will coordinate with TPO staff regarding freight data options that enable the connection of commodity movements to economic activity and impacts. The vFreight county-to-county trade flow database will be the default option. However, should the TPO have access to new Transearch data via VDOT, this option can be considered as well.

The Consultant Team will also review data on average square feet per employee and development value per square foot by different development types. This can support definition of scenarios in both development and employment terms. In addition, the economic Consultant Team will conduct a scan of available research on the relationship between public sector infrastructure costs and development typologies, as a potential variable of interest.

Task 4.1j: Review Data Describing Regional Travel Behavior

The Consultant Team will assess the data underlying the updated (2015/2045) HRTPO travel model for its adequacy in sustaining the performance of the model and for use in developing the identified potential model enhancements and extensions. The Consultant Team's data assessment will [a] identify shortcomings, if any, of existing data, [b] prioritize needed data collection, and [c] describe alternative data collection methods for cost-efficiently updating the underlying model data. The Consultant Team will prepare a preliminary cost estimate and schedule for acquiring any needed data. The assessment will include a review of any available information including previous studies, surveys, and reports characterizing personal and commercial travel behavior in the region.

Because of the model evaluation completed in Phase I of this Study, there were several recommended actions based on acquiring GPS origin-destination data:

- Evaluate travel patterns associated with major facilities and harbor crossings. With respect to this study, it will be particularly important to understand and have the model represent well the travel markets that use the Harbor crossings.
- Evaluate and update external travel (XX, XI, IX) with respect to the region.
- Assess need for special generator representation. Determine travel patterns associated with the ports and any other major freight traffic generators in the region.

This review will include any data collection and analysis documented because of the ongoing HRTPO model modifications by VDOT to not duplicate efforts.

Task 4.1k: Evaluate Updated Regional Travel Demand Model

HRTPO model modifications are currently underway by VDOT and its consultants, including a base year update to Year 2015 - accommodating HRTPO's long range planning process. The Consultant Team is actively coordinating with VDOT and their consultants to incorporate recommendations deemed critical to this study for this model update. Once the model update is complete, the Consultant Team will conduct an evaluation of the updated model targeted to the application of the model for use in the RCS.

The Consultant Team will review available documentation describing the updated HRTPO model and associated performance. The review will include an examination of currently available base and future

year model sets reflecting the updates, and the Consultant Team will execute the model set(s), mechanically verifying results and the implementation of updates as described in the documentation, as well as model performance, as needed to conduct a study-focused validation to ensure the model well represents the travel markets that use the Harbor crossings.

The Consultant Team will review and summarize the current model structure, modeling procedures, software, hardware, run scripts, and data flows. The Consultant Team will also review various model parameters, including vehicle and truck trip generation rates. Based on its review, the Consultant Team will describe the types of analysis that the model process is currently capable of supporting. If necessary, in concert with feedback from HRTPO staff, the Consultant Team will identify potential enhancements and extensions to the modeling process that will broaden and/or integrate the model's analysis capabilities to address study needs. The list of potential model enhancements will be prioritized by the Consultant Team. The Consultant Team will outline the steps and actions needed to implement each enhancement.

This review may recommend further modification and testing of the model sets and will produce a list of recommended enhancements for implementation. The Consultant Team will summarize review findings and recommendations in a technical memorandum. After allowing HRTPO sufficient time to review the draft recommendations, two Consultant Team members will meet with HRTPO staff at the HRTPO office to discuss and finalize any necessary model modifications.

Timing:

- 3+ months (note that the 2045 regional travel demand model will need to be available for some parts of Task 4.1)

Meetings:

- Meetings with HRTPO staff: 3
- Working Group Meetings: 3
- Steering Committee Meetings: 0
- Other/Stakeholder Meetings: 3-4

Deliverables:

- Scenario Planning Methodology White Paper
- Memo Summarizing Economic Trends and Opportunities
- Memo Summarizing Travel Behavior Data Review
- Memo Summarizing Travel Demand Model Evaluation
- GIS Base for Scenario Planning Model
- Place type Dataset
- 3-D Visualizations of Place types
- Virtual Present GIS Mapping
- Land Suitability GIS Mapping
- TAZ Calibration of Place types
- Presentation materials, posters and slide decks of Deliverables for public outreach process

Task 4.2. Defining Alternative Future Scenarios

Overview

This task is a crucial one in the overall process as it defines the set of alternative future scenarios that will be the basis for all the subsequent analysis and modeling in the project. There are two broad aspects to defining alternative scenarios. One is the engagement aspect and the other is the technical aspect. Each one is outlined below separately but, these two aspects will need to work together, with each major technical milestone having full input and vetting from the HRTPO staff, the Working Group and the Steering Committee.

It is assumed that there will be up to three Alternative Future Scenarios, in addition to the 2045 Baseline Scenario described in Task 5 below. As discussed in Phase 1 of this project, the 2045 Baseline Scenario is assumed to be HRTPO's 2045 forecast that is being finalized for the Travel Demand Model. The Alternative Future Scenarios will assume a level of growth that is in addition to the 2045 baseline growth in the model.

Task 4.2a: Identify Framework Scenarios

In this task, the Consultant Team will collaborate with the Working Group to define and affirm up to three draft "framework" scenarios. The Framework Scenarios will be simplified narrative descriptions of each scenario in plain language that describe the storyline for each alternative future. Through a series of work sessions with HRTPO staff and the Working Group, a set of draft frameworks will be developed, each of which profiles a different economic and growth future for the region. Some work has been done on this already in the region and the Consultant Team will be mindful not to reinvent the wheel but start with whatever has already been vetted with stakeholders to date.

Task 4.2b: Affirm Framework Scenarios

In this task, the Consultant Team will involve the Working Group and Steering Committee in a process of vetting and affirming the Framework Scenarios. Various techniques may be used to build consensus and affirmation in this task, including:

- Website questionnaires and interactive surveys (if broader exposure/input is desired)
- Focus group sessions with stakeholder groups
- Work sessions with the Working Group and Steering Committee

The result will be consensus on the part of the Working Group and Steering Committee on the three Alternative Future Scenarios that will go forward in this project, described in basic framework terms, without any quantitative analysis at this stage in the process.

Task 4.2c: Define Draft Drivers

Once the Framework Scenarios have been defined and vetted, the Consultant Team will use its research and technical expertise to propose a set of draft Drivers that will be used to develop the future scenarios. These drivers will be major change parameters in basic categories such as:

1. Demographics and location choice
2. Economy
3. Technology

Each category will have a set of quantitative drivers associated with it that will be used to construct the alternative future scenarios. Examples of the quantitative aspects of the drivers include things like:

- Population change by age cohort
- Place type location preference by age cohort
- Employment change by industry
- Adoption rate of transportation technology by Place type and/or age cohort

Drivers can sometimes be paired or interrelated to identify a potential outcome of interest. As an example, an increase in the number of workers with a college degree could be a driver of growth in knowledge-intensive industry sectors. Similarly, trends towards e-commerce can yield changes in the composition of truck trips and mileage on the transportation system.

The result of this task will be a set of Draft Drivers that can each be quantified and serve as model inputs for constructing the quantitative aspect of each of the future scenarios.

Task 4.2d: Define Scenario Socioeconomic Control Totals and Aggregate Spatial Assumptions

The Consultant Team will use the Drivers and the Framework Scenarios to create a set of socioeconomic control totals and aggregate spatial assumptions for each future scenario. The control totals will set the future levels of population and employment by industry for each scenario. Aggregate spatial assumptions will describe the decision-rules for spatial allocation of employment and population and will be developed by relating economic drivers to some combination of (a) Place types, (b) Specific major development sites, and (c) Existing clustering dynamics of industries within the region.

Once we identify drivers for each scenario, we will scan the academic literature and regional information collected in Task 1 to understand how each is related to changes in employment, population, and the spatial distribution of activity. This means that if the selected driver is, for example, level of educational attainment, we will use existing research to estimate the expected increase in regional employment associated with a certain change in the number of workers with a college degree. Similarly, a driver of reduced military spending would result in targeted decreases in the defense sector at military sites in the region. A successful diversification scenario might then also add employment to identified competitive industries, with spatial assumptions derived from the literature or based on existing clustering dynamics. Adjustments like these are what will differentiate the baseline scenario from a set of alternative scenarios.

This task will involve close coordination with technical staff to ensure that each scenario's control totals are realistic, plausible and fit within the storyline of each Framework Scenario defined in task 2a above. We will also fine-tune the scenario drivers if we find that the anticipated effects of different drivers within the same scenario may have opposite effects, thereby diluting the overall impact of the scenario.

For the purpose of having apples-to-apples comparisons among scenarios, our starting assumption is that all three Alternative Future Scenarios will have the same overall regional control total for population and employment, although the spatial distribution and type of employment will vary for each scenario. However, this will need to be affirmed with staff and we are flexible if the staff's desire is to use different control totals for the scenarios, as long as the implications of this for the scenario analysis are clear for all.

Task 4.2e: Define Scenario Changes in Travel Behavior/System Performance

Changes in travel behavior are dictated by the nature and spatial allocation of activity, changes in perceived and actual costs of travel, availability of personal transportation modes, freight modal preferences associated with industry mix, and the efficiency of the transportation infrastructure in accommodating demand. Once we identify drivers for each scenario, we will scan the academic literature and regional information collected in Task 1 to understand how each is related to changes in all independent variables affecting travel behavior. The Regional Travel Demand Model, in conjunction with appropriate input data and parameter adjustments, will account for these behavior changes. With respect to drivers such as demographics and the economy, socio-economic data inputs to the travel model will reflect changes to travel behavior. Advances in technology such as ITS and connected/autonomous vehicles (C-AVs) will also impact the spatial allocation of land use. Technology will induce travel behavior changes that will depend on scenario assumptions regarding:

- market penetration of these technologies
- level of auto ownership (affects number of privately owned vs. shared C-AVs, zero occupant vehicle (ZOV) trips and other factors/behaviors related to mode share)
- parking location
- traveler values-of-time (and their effect on average trip lengths)
- trip rates (reflecting induced demand and mobility by seniors, children, and disabled)
- effective capacity of roadway infrastructure (due to platooning, higher density traffic flows)

Some of these variables will vary by Place type or other driver such as age cohort, facilitating assessment of the relationships between land use allocation and transportation performance. This task will involve close coordination with technical staff to ensure that each scenario's assumptions are realistic, plausible and fit within the storyline of each Framework Scenario defined in Task 2a. above.

Task 4.2f: Affirm Drivers and Scenario Parameters

In this task, the Consultant Team will use a similar process as in Task 4.2b, above, to reconnect with the advisory groups to affirm each Scenario again in a quantified format with control totals, aggregate spatial assumptions, and changes in travel behavior for each. The result will be a consensus on the total amount and types of growth that each scenario will analyze in the subsequent tasks, as well as high-level parameters governing spatial distribution across the region and changes in travel behavior that will subsequently be reflected in the travel model.

Timing:

- 2-3 months

Meetings:

- Meetings with HRTPO staff: 2
- Working Group Meetings: 2
- Steering Committee Meetings: 1-2
- Other/Stakeholder Meetings: 2

Deliverables:

- Tech Memo on Framework Scenarios
- Infographics and Visualizations of Framework Scenarios
- Tech Memo on Drivers

- Tech Memo on Control Totals, Aggregate Spatial Assumptions, and Travel Parameters

Task 4.3: Defining Measures of Success

Overview

This task will establish a series of economic, land use and transportation factors that will be used to measure how each scenario contributes to a successful future for the Hampton Roads region. The factors will serve as the measures of effectiveness against which to test the overall regional impact of each scenario. It is anticipated that there will be numerous measures, but they will be grouped according to broad goals and objectives derived from the LRTP and RCS planning processes. Alignment with the HRTPO Project Prioritization Tool measures is also a priority. A matrix will be developed that aligns each metric according to an established objective for the region. The example below is purely for illustration and the objectives and metrics will be developed in coordination with staff and Working Group and relate to the overall vision for the region:

OBJECTIVE	MEASURE	METRIC	DATA SOURCE
Improve Regional Accessibility	Labor market access	Population within a 40-minute travel time of employment centers	Travel demand model (population and travel time skims)
	Job accessibility of low-income residents	Jobs accessible within a 40-minute travel time	Travel demand model (population and travel time skims) and/or network-based accessibility measure
Preserve the environment and enhance resiliency	Resilient development patterns	Square feet of development in non-flood-prone areas	Land use allocation model and GIS data on flood-resilient areas
	Impact on unprotected natural areas or green infrastructure	Location of sensitive but unprotected natural areas; developed, or development near (1/4 mile).	A composite of natural features, development footprints
Enhance economic vitality	Cost of congestion	Monetized reliability costs borne by travelers	TREDIS and travel demand model to analyze VMT/ VHT subject to congestion
	Economic impacts of congestion	Forfeited jobs, wages, income, or GRP	TREDIS and travel demand model
	Good jobs	Average wages per worker	REMI and Adjusted Scenario Industry Composition

Task 4.3a: Develop Draft Performance Measures

In this task, a set of performance measures will be developed in four categories – land use, environmental, transportation, and economic. They will each relate to the specific modeling methodology used – the land use model and related GIS data, the Travel Demand Model, and the economic models (including TREDIS, REMI, and spreadsheet "models"). Many of these measures will be of aggregate regional performance. However, the Consultant Team also expects some subset of targeted measures related to cross-harbor connections, in support of understanding the need for improved regional connectors.

Task 4.3b: Correlation with HRTPO Project Prioritization Methodology

A key aspect of the performance measures that will be explored in this task will be integration with HRTPO's Project Prioritization Tool. Coordination between the Scenario Planning process and the HRTPO's project prioritization process will be a priority, and the Consultant Team will work with the staff to ensure compatibility between measures that are used in this project with measures used by the HRTPO in their transportation planning and programming efforts.

Task 4.3c: Affirm Final Performance Measures and Develop Performance Dashboard

The final performance measures will be vetted with the Working Group and HRTPO staff and, as needed, will be reviewed with the Steering Committee. The result will be a consensus on the methods and metrics that will be used to gauge success in the evaluation of each of the scenarios in subsequent tasks.

Once the final performance measures have been affirmed, the Consultant Team will develop a user-friendly interface to display the performance measures in a graphic dashboard format for use in public presentations and on the project website. The performance dashboard will allow a consistent way of comparing the scenarios and will show quantitatively how well each scenario helps the Region achieve its overall vision and goals for the future. It will be delivered in a format that allows HRTPO staff to use and update it later.

Timing:

- 2 months (measures)
- 1 month (dashboard)

Meetings:

- Meetings with HRTPO staff: 3
- Working Group Meetings: 1
- Steering Committee Meetings: 1 (optional)
- Other/Stakeholder Meetings: 0

Deliverables:

- Tech Memo on Performance Measures
- Performance Dashboard
- Infographics for Performance Measures

Task 4.4: Evaluate 2015 Regional Conditions

Overview

At this point in the process, all the elements will have been assembled to allow the scenario modeling process to begin. The first step in this process is to model and evaluate current (2015) conditions as a benchmark for future comparisons. The purpose of this initial model run is threefold:

1. To verify the modeling approach and outputs of the three modeling efforts – land use, economic and travel demand models – and make sure they are working in concert
2. To establish a picture of the region today using the approved Performance Measures to profile current conditions in the region for comparison against future scenarios
3. To calibrate the scenario model inputs and perform a "reality check" so that the model outputs plausibly profile current conditions from the standpoint of stakeholders

Task 4.4a: Evaluate 2015 land use, economics and travel conditions

Under this task, the Consultant Team will evaluate current regional conditions using information from the land use, economic and travel demand models and organize the outputs based on the approved performance measures and the Performance Dashboard as described above. In the case of the land use model, this involves calibrating and running the model to reproduce current conditions. The Travel Demand Model will be calibrated in Task 4.1k. above, so this task will just organize the outputs into the Performance Dashboard. Economic evaluation/modeling will involve a hybrid approach of spreadsheet-based evaluations and TREDIS-based modeling of the economic implications of avoidable transportation costs experienced by transportation system users and non-users because of system performance. The latter analysis will be supported by standard transportation data available from the regional travel demand model (e.g. network skims, O-D matrices, and V/C ratios).

While the exact nature of this analysis will be determined collaboratively within Task 4.3, this analysis can potentially quantify the forfeiture of travel time and operating costs driven by congestion, lack of reliability, and other network constraints, as well as additional societal costs associated with degradation of environmental or safety conditions. It may also visualize and quantify forfeited labor and freight markets, as well as identify which facilities within the regional network contribute the most to the loss of regional accessibility and associated business productivity.

Task 4.4b: Validate Model Outputs and Data for 2015 Performance

Once an initial set of 2015 performance outputs have been generated from the models, this task will involve a validation of the data to ensure that it is a plausible portrayal of conditions in the Region for 2015. The Consultant Team will compare the 2015 land use model outputs against available data on regional economic and demographic conditions as well as other documented areas of performance to ensure that they generally match. This task may involve some adjustment of the model inputs and additional model runs to ensure that the 2015 model accurately outputs known measurable conditions in the Region.

Timing:

- 5 weeks

Meetings:

- Meetings with HRTPO staff: 2
- Working Group Meetings: 1
- Steering Committee Meetings: 0
- Other/Stakeholder Meetings: 0

Deliverables:

- Land Use, Economic and Travel Demand model runs/evaluations for 2015 Current Conditions
- Dashboard Outputs for Model Runs
- 2015 Land Use Allocation and Transportation Model sets for HRTPO use

Task 4.5: Modeling the 2045 Baseline Alternative

Overview

At this point in the process, based on work from the previous tasks, we will have a working set of models that portray an accurate picture of conditions in the Hampton Roads region for 2015. The next series of tasks will create the "baseline" alternative for 2045 that matches HRTPO's Travel Demand Model assumptions and outputs. This first scenario will be called the 2045 Baseline Scenario because it will be the standard of comparison for all the other future scenarios. It establishes a baseline pattern and level of growth in the Region that has already been vetted with the Region's public and stakeholders through the HRTPO's transportation planning process. All the other future scenarios will use this Baseline as a starting point in adding further growth based on enhanced future conditions in the "storyline" of each scenario. To correlate to HRTPO's long range transportation planning process, we will ensure the following assumptions for the 2045 Baseline Alternative:

- Use the 2045 future socioeconomic forecasts by TAZ from the Travel Demand Model
- Use the 2045 Existing + Committed network from the Travel Demand Model

Task 4.5a: Developing the 2045 "Virtual Future" map of the Region

In the same process as creating the Virtual Present, above, this task will assign the Place types according to the 2045 land uses from the Travel Demand Model. We will use the 2045 control totals from the Travel Demand Model to ensure correlation of the socioeconomic data with the Travel Demand Model. This task will involve iterations and cross checking so that the Place types assigned within each of the Region's 1,500 TAZs each contains the same total population and employment numbers as the Travel Demand Model.

Task 4.5b: Conduct 2045 Baseline model runs for land use, economics and travel demand models

Under this task, the Consultant Team will conduct model runs of the land use, economic and travel demand models for the 2045 Baseline future and organize the outputs based on the approved performance measures outputted into the Performance Dashboard as described above.

Once the model outputs have been organized into the Performance Dashboard, a clear picture of the 2045 state of the Region based on current trends and policies should emerge.

In addition, this task will involve running the outputs from the Travel Demand Model through the TREDIS model (as in all subsequent scenario tests from this point on). This task will also involve affirming the assumptions and outputs to-date with the Working Group as an important check in before proceeding to the next steps of testing alternative future scenarios. Note that the performance output of this model run, should it take place before similar model runs for the overall RCS study, will provide useful information regarding future deficiencies.

Timing:

- 6 weeks

Meetings:

- Meetings with HRTPO staff: 2
- Working Group Meetings: 1
- Steering Committee Meetings: 0
- Other/Stakeholder Meetings: 0

Deliverables:

- Land Use Allocation for 2045 Baseline Conditions
- Land Use, Economic and Travel Demand model runs/evaluations for 2045 Baseline Conditions
- Dashboard Outputs for Model Runs
- Presentation materials, posters and slide decks of Deliverables for public outreach process
- 2045 Land Use Allocation and Transportation Model sets for HRTPO use
- Economic Model sets for HRTPO use

Task 4.6: Building the Alternative Scenarios

Overview

Up to this point, the workflow has concentrated on developing quantifiable models and profiles of conditions in the Region for 2015 and for the adopted 2045 vision from the Travel Demand Model. The next series of tasks will focus on developing and testing alternative future Scenarios for the year 2045 based on the scenario "storylines" developed in earlier tasks of this process. These next tasks will involve operationalizing the Scenarios with the assumptions (i.e., future economic and land use forecasts, future land use allocation for each scenario, technology assumptions in the Travel Demand Model, etc.) that have been developed to define each Scenario.

It is important to note that each of the alternative Future Scenarios will allocate growth that is in addition to the growth inherent in the 2045 Baseline model from the Travel Demand Model. This means that each Scenario is dealing with an additional increment of growth above and beyond the assumed growth for 2045 in the Travel Demand Model. In addition, it is important to note that each Scenario will use the same Existing + Committed transportation network as in the 2045 Baseline Scenario. These two considerations should help in maintaining consistency and provide an 'apples-to-apples' comparison among scenarios.

Task 4.6a: Develop Land Use Allocations for 3 Alternative Future Scenarios

The first step in building each of the alternative future Scenarios from a land use standpoint is to "paint" the appropriate scenario-based pattern of land uses (using Place types) onto the regional Base Map. This pattern will be based on the future assumptions about land uses and growth, including demographic drivers, described in each Scenario. Each Scenario will have assumptions about how and where future growth will happen in relation to the economic future that each Scenario envisions. These assumptions are likely to incorporate both specific assumptions about growth opportunities derived from identification of industry clusters or large development sites, as well associations between economic growth patterns and Place types. Based on that economic future, we will allocate to Place types by TAZ to match the overall control totals under each Scenario.

The product of this task will be a series of land use allocations, one for each future Scenario, that are derived from the growth and economic profiles of each Scenario. These land use allocations will then be used as the basis for the model runs in Task 7 to determine the impacts of each scenario.

Task 4.6b: Convert Land Use Allocations to TAZ Spatial Datasets for 3 Scenarios

Once the land use allocations for each Scenario have been completed, it will be necessary to translate them to the socioeconomic data required by the Travel Demand Model. For each Scenario, this involves converting the grid-based Place type map into the TAZ map with associated socioeconomic data used for the Travel Demand Model. The population and employment data built into each Place type will be converted to a TAZ geography for the Travel Demand Model.

This is an important step as it will allow both the Travel Demand Model and the TREDIS economic model to use the same assumptions for growth and land use for each Scenario.

Task 4.6c: Confirmation/Coding of Candidate RCS projects for testing

Transportation improvements defined by the Candidate Alternatives will be "coded" into the Existing + Committed network using planning data available from HRTPO. Coding will include information such as facility description, alignment, and capacity information associated with improvements. Network coding will also specify locations of toll assessment and toll values, if applicable. The Consultant Team will review and confirm project coding assumptions with HRTPO. There will be one project network for each Candidate Alternative. Note, the schedule assumes the component Candidate Alternatives will have already been coded into the travel demand model network by Michael Baker some time prior to the end of this phase of work, but the modeling will be completed in the phase that follows.

Timing:

- 2-3 months

Meetings:

- Meetings with HRTPO staff: 2
- Working Group Meetings: 1
- Steering Committee Meetings: 0
- Other/Stakeholder Meetings: 0

Deliverables:

- Land Use Allocations for 3 Future Scenarios
- TAZ Calibration for 3 Future Scenarios

TASK 5– Prepare for and Attend Meetings (Working Group and Steering Committee)

Task 5.1: Working Group Meetings

The Consultant team will be represented by the Project Manager at all meetings (barring unforeseen conflicts) and supplemental team members depending upon the type of expertise being presented/discussed at each meeting. Discipline experts have estimated the number of Working Group meetings they will attend in each of the task/subtask summaries in this scope of services.

Task 5.2 Steering Committee Meetings

The Consultant team will be represented by the Project Manager at all meetings (barring unforeseen conflicts) and supplemental team members depending upon the type of expertise being presented/discussed at each meeting. Discipline experts have estimated the number of Working Group meetings they will attend in each of the task/subtask summaries in this scope of services.

Timing:

- 28 months

Meetings:

- Meetings with HRTPO staff: 0
- Working Group Meetings: 15
- Steering Committee Meetings: 10
- Other/Stakeholder Meetings: 0

Deliverables:

- Power Point slides and meeting handouts

TASK 6 – Manage the Project

Task 6.1: Weekly Coordination Conference Calls

Consultant Project Manager will participate in weekly coordination calls with RCS Project Coordinator, other interested parties, and HRTPO staff (assume 56 conference calls).

Task 6.2: Schedule and Budget Oversight

Consultant Project Manager will monitor schedule and budget on monthly basis and make changes to schedule, as needed. Budget monitoring will occur monthly during preparation of monthly progress reports so that any budget issues can be included in those reports.

Task 6.3: Quality Assurance of Deliverables

Consultant PM will review all documentation and deliverables before they are forwarded to the RCS Project Coordinator for distribution to the Working Group and HRTPO staff.

Timing:

- 13 months

Meetings:

- Meetings with HRTPO staff: 2
- Working Group Meetings: 0
- Steering Committee Meetings: 0
- Other/Stakeholder Meetings: 0

Deliverables:

- Coordination meeting minutes

Schedule:

The attached schedule shows the anticipated timeline in blue with key milestones of committee meetings and deliverables shown. This schedule is anticipated to meet HRTPO's requirements for coordination with the LRTP process. Note that the schedule depends on receiving the 2015 regional travel demand model in January/February, the 2045 regional travel demand model in April, and completing the Phase 2 RCS Study permitability/constructability screening by January 2020.

APPENDIX A: ECONOMIC MODELS & DATA

Cost Assumptions

12-month TREDIS subscription for HRTPO region (13-counties)

= $19,800 for 12-months up to 8 counties + $500 x 5 additional counties = $22,300

Either vFreight add-on OR Transearch connection (if Transearch data available through VDOT)

= $10,000

Task 1i includes a decision point to select among these:

As part of this TREDIS review, the Consultant Team will coordinate with TPO staff regarding freight data options that enable the connection of commodity movements to economic activity and impacts. The vFreight county-to-county trade flow database will be the default option. However, should the TPO have access to new Transearch data via VDOT, this option can be considered as well.

Given duration of project effort, assume 2-year subscriptions:

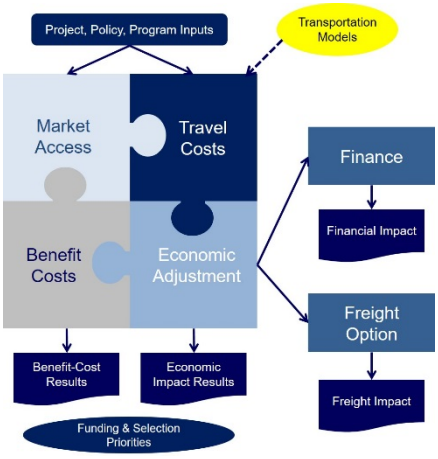
= 2 x ($22,300 + $10,000) = $64,600

Note: If HRTPO would prefer, the subscription can be billed in 1-year increments. These costs are currently included in Task 4.1.

TREDIS PACKAGE	Term	Study Areas	Users	Training & Support	Subscription Cost $US
US Regional MPO Subscription	12 months	Up to 8 counties	Up to 3	10 hours	$19,800
Optional Add-ons					
vFreight county level freight data	12 months	1 state	--	--	$10,000
Transearch connection	12 months	1 state	--	--	$10,000
Additional county	12 months	1 county	--	--	$500

HRTPO Independent Use: Note that the TREDIS subscription comes with 3 independent log-ins. HRTPO could independently use TREDIS as well as take advantage of the designated training and project/program support via phone, email, and web meeting. All subscriptions include unlimited technical support.

Model Background



TREDIS Model:

TREDIS® is the ***transportation economics suite*** – a unique decision support system for transportation planners that spans economic impact analysis, benefit-cost analysis, and financial analysis, as well as freight and trade impact analysis. It is the only system applicable for all modes – covering passenger and freight transport via aviation, marine and rail modes, as well as truck, car, bus, bicycle, and pedestrian travel. It is widely recognized for its high level of documentation, which is backed by published research, and its transparency, allowing users to trace the calculation of results. TREDIS is the most widely used system for economic impact analysis of transportation projects in the US and Canada.

Fact sheet on using TREDIS for economic impact analysis: http://tredis.com/images/pdf-docs/datasheets/TREDIS-Economic%20Impact%20Analysis%202014.pdf

TREDIS Freight:

The TREDIS FREIGHT module provides State DOTs, MPOs and transportation organizations with unsurpassed analysis capabilities that support freight planning, strategy development, project prioritization, economic impact assessment, and benefit-cost evaluation as well as meeting several other Federal requirements. These capabilities are enabled by a clearly laid-out framework that (a) brings together available transportation, economic and trade data, and (b) integrates industry, commodity and modal perspectives.

TREDIS Freight can be set up with one of two data options:

TREDIS vFreight provides data on county-to-county freight flows by 2 or 3-digit SCTG commodity level and both domestic and international mode. This data is integrated within the TREDIS economic impact module to enable more accurate and detailed industry impact evaluations based on the specific composition of commodity flows at the county level. It can also be used to identify existing freight dependence within a region.

TREDIS Fueled by Transearch® integrates IHS Global Insight Transearch data (purchased separately) into the TREDIS model. This enables corridor-level analysis of freight flows and economic reliance on/impacts of freight.

DRAFT

Regional Connectors Study - Phase 2
Schedule

Task No.	Task	2019 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	2020 JAN
TASK 1	EXECUTE ENGAGEMENT PLAN													
1.1	Task Management													
1.2	Engagement Plan Review													
1.3	Implementation of Engagement Plan													
1.3a	Study Mailing List and Comment Database													
1.3b	Stakeholder Briefings and Presentations													
1.3c	Brochures, Factsheets, and Handouts													
1.3d	Community Events and Outreach													
1.4	Website Upgrades and Maintenance													
TASK 2	DEVELOPMENT OF PRELIMINARY ALTERNATIVES													
2.1	Develop Geometry of Preliminary Alternatives													
2.2	Hydraulics and Hydrology													
2.3	Structures													
2.4	Utilities and Railroad Crossings													
2.5	Planning Cost Estimates													
TASK 3	DETERMINATION OF CANDIDATE ALTERNATIVES (SCREEN 1)													
3.1	Conduct Congestion Relief Assessments													
3.2	Conduct Permitability Assessments													
3.3	Conduct Constructability Assessments													
TASK 4	CONDUCT SCENARIO PLANNING													
4.1	Building the Base Data, Models, and Scenarios													
4.2	Defining Alternative Future Scenarios													
4.3	Defining Measures of Success													
4.4	Evaluate 2015 Current Regional Conditions													
4.5	Modeling the 2045 Baseline Alternative													
4.6	Building the Alternative Scenarios													
TASK 5	PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE)													
5.1	Working Group Meetings													
5.2	Steering Committee Meetings													
TASK 6	MANAGE THE PROJECT													
6.1	Weekly Coordination with Study Leadership													
6.2	Schedule and Budget Oversight													
6.3	Quality Assurance of Deliverables													

Draft Deliverables
Final Deliverables
Steering Committee Meetings and Presentations
Working Group Coordination Meeting

Continuous Task
Draft Task Schedule

HRTPO to approve updated Prioritization Tool
2015 Regional Travel Demand Model available
2045 Regional Travel Demand Model available

Attachment 7a

Michael Baker International, Inc.

Cost Proposal

HRTPO REGIONAL CONNECTORS STUDY PHASE 2

January 25, 2019

Attachment 7a

TASK SUMMARY

Task No.	Task	Hours	Labor Costs	ODC's	TOTAL COST
1	**EXECUTE ENGAGEMENT PLAN**				
1.1	Task Management	232	$31,093	$0	$31,093
1.2	Engagement Plan Review	38	$5,341	$0	$5,341
1.3	Implementation of Engagement Plan	92	$13,479	$500	$13,979
1.3a	Study Mailing List and Comment Database	44	$5,231	$0	$5,231
1.3b	Stakeholder Briefings and Presentations	0	$0	$0	$0
1.3c	Brochures, Factsheets, Handouts	186	$24,725	$3,540	$28,265
1.3d	Community Events and Outreach	84	$11,482	$1,280	$12,762
1.4	Website Upgrades and Maintenance	914	$156,003	$2,500	$158,503
	Total Task 1	**1590**	**$247,352**	**$7,820**	**$255,172**
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**				
2.1	Develop Geometry of Preliminary Alternatives	1,220	$157,032	$150	$157,182
2.2	Hydraulics and Hydrology	88	$13,048	$0	$13,048
2.3	Structures	360	$55,600	$0	$55,600
2.4	Utilities and Railroad Crossings	72	$9,272	$0	$9,272
2.5	Planning Cost Estimates	208	$32,240	$0	$32,240
	Total Task 2	**1,948**	**$267,192**	**$150**	**$267,342**
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**				
3.1	Conduct Congestion Relief Assessments	544	$71,078	$150	$71,228
3.2	Conduct Permitability Assessments	760	$95,023	$4,800	$99,823
3.3	Conduct Constructability Assessments	340	$40,516	$150	$40,666
	Total Task 3	**1644**	**$206,616**	**$5,100**	**$211,716**
4	**CONDUCT SCENARIO PLANNING**				
4.1	Building the Base Data, Models, and Scenarios	1293	$193,082	$42,302	$235,384
4.2	Defining Alternative Future Scenarios	803	$126,686	$5,729	$132,415
4.3	Defining Measures of Success	609	$92,870	$3,557	$96,427
4.4	Evaluate 2015 Current Regional Conditions	431	$63,287	$2,327	$65,614
4.5	Modeling the 2045 Baseline Alternative	545	$76,273	$3,723	$79,996
4.6	Building the Alternative Scenarios	902	$123,977	$3,821	$127,798
4.7	Evaluating the Scenarios	0	$0	$0	$0
	Total Task 4	**4583**	**$676,175**	**$61,459**	**$737,634**
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**				
5.1	Working Group Meetings	430	$78,999	$3,954	$82,953
5.2	Steering Committee Meetings	199	$37,660	$685	$38,345
	Total Task 5	**629**	**$116,659**	**$4,639**	**$121,298**
6	**MANAGE THE PROJECT**				
6.1	Weekly Coordination with Study Leadership	460	$101,142	$156,923	$258,065
6.2	Schedule and Budget Oversight	274	$55,615	$0	$55,615
6.3	Quality Assurance of Deliverables	318	$83,094	$1,000	$84,094
	Total Task 6	**1,052**	**$239,851**	**$157,923**	**$397,774**
	TOTALS	**11,446**	**$1,753,846**	**$237,091**	**$1,990,937**

Attachment 7a

TEAM SUMMARY

HOURS

Task No.	Task	Baker	PRR	EPR	EDR Group	McPherson	Solstice	TOTAL
1	**EXECUTE ENGAGEMENT PLAN**							
1.1	Task Management	0	124	0	0	108	0	232
1.2	Engagement Plan Review	0	38	0	0	0	0	38
1.3	Implementation of Engagement Plan	0	92	0	0	0	0	92
1.3a	Study Mailing List and Comment Database	0	44	0	0	0	0	44
1.3b	Stakeholder Briefings and Presentations	0	0	0	0	0	0	0
1.3c	Brochures, Factsheets, Handouts	0	174	0	0	0	12	186
1.3d	Community Events and Outreach	20	64	0	0	0	0	84
1.4	Website Upgrades and Maintenance	0	914	0	0	0	0	914
	Total Task 1	20	1450	0	0	108	12	1590
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**							
2.1	Develop Geometry of Preliminary Alternatives	920	0	0	0	300	0	1220
2.2	Hydraulics and Hydrology	88	0	0	0	0	0	88
2.3	Structures	360	0	0	0	0	0	360
2.4	Utilities and Railroad Crossings	72	0	0	0	0	0	72
2.5	Planning Cost Estimates	208	0	0	0	0	0	208
	Total Task 2	1,648	0	0	0	300	0	1948
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**							
3.1	Conduct Congestion Relief Assessments	544	0	0	0	0	0	544
3.2	Conduct Permitability Assessments	0	0	0	0	0	760	760
3.3	Conduct Constructability Assessments	340	0	0	0	0	0	340
	Total Task 3	884	0	0	0	0	760	1644
4	**CONDUCT SCENARIO PLANNING**							
4.1	Building the Base Data, Models, and Scenarios	545	0	456	292	0	0	1293
4.2	Defining Alternative Future Scenarios	239	0	312	252	0	0	803
4.3	Defining Measures of Success	139	0	236	134	100	0	609
4.4	Evaluate 2015 Current Regional Conditions	99	0	204	128	0	0	431
4.5	Modeling the 2045 Baseline Alternative	105	0	312	128	0	0	545
4.6	Building the Alternative Scenarios	274	0	572	56	0	0	902
4.7	Evaluating the Scenarios	0	0	0	0	0	0	0
	Total Task 4	1,401	0	2,092	990	100	0	4583
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**							
5.1	Working Group Meetings	270	64	0	50	16	30	430
5.2	Steering Committee Meetings	150	20	0	9	0	20	199
	Total Task 5	420	84	0	59	16	50	629
6	**MANAGE THE PROJECT**							
6.1	Weekly Coordination with Study Leadership	212	152	0	72	0	24	460
6.2	Schedule and Budget Oversight	186	62	0	26	0	0	274
6.3	Quality Assurance of Deliverables	279	39	0	0	0	0	318
	Total Task 6	677	253	0	98	0	24	1052
	TOTALS	5,050	1,787	2,092	1,147	524	846	11,446

LABOR COSTS

Task No.	Task	Baker	PRR	EPR	EDR Group	McPherson	Solstice	TOTAL
1	**EXECUTE ENGAGEMENT PLAN**							
1.1	Task Management	$0	$18,553	$0	$0	$12,540	$0	$31,093
1.2	Engagement Plan Review	$0	$5,341	$0	$0	$0	$0	$5,341
1.3	Implementation of Engagement Plan	$0	$13,479	$0	$0	$0	$0	$13,479
1.3a	Study Mailing List and Comment Database	$0	$5,231	$0	$0	$0	$0	$5,231
1.3b	Stakeholder Briefings and Presentations	$0	$0	$0	$0	$0	$0	$0
1.3c	Brochures, Factsheets, Handouts	$0	$23,224	$0	$0	$0	$1,500	$24,725
1.3d	Community Events and Outreach	$5,470	$6,012	$0	$0	$0	$0	$11,482
1.4	Website Upgrades and Maintenance	$0	$156,003	$0	$0	$0	$0	$156,003
	Total Task 1	$5,470	$227,842	$0	$0	$12,540	$1,500	$247,352
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**							
2.1	Develop Geometry of Preliminary Alternatives	$122,532	$0	$0	$0	$34,500	$0	$157,032
2.2	Hydraulics and Hydrology	$13,048	$0	$0	$0	$0	$0	$13,048
2.3	Structures	$55,600	$0	$0	$0	$0	$0	$55,600
2.4	Utilities and Railroad Crossings	$9,272	$0	$0	$0	$0	$0	$9,272
2.5	Planning Cost Estimates	$32,240	$0	$0	$0	$0	$0	$32,240
	Total Task 2	$232,692	$0	$0	$0	$34,500	$0	$267,192
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**							
3.1	Conduct Congestion Relief Assessments	$71,078	$0	$0	$0	$0	$0	$71,078
3.2	Conduct Permitability Assessments	$0	$0	$0	$0	$0	$95,023	$95,023
3.3	Conduct Constructability Assessments	$40,516	$0	$0	$0	$0	$0	$40,516
	Total Task 3	$111,594	$0	$0	$0	$0	$95,023	$206,616
4	**CONDUCT SCENARIO PLANNING**							
4.1	Building the Base Data, Models, and Scenarios	$91,165	$0	$52,452	$49,466	$0	$0	$193,082
4.2	Defining Alternative Future Scenarios	$44,579	$0	$40,248	$41,858	$0	$0	$126,686
4.3	Defining Measures of Success	$26,716	$0	$31,176	$23,278	$11,700	$0	$92,870
4.4	Evaluate 2015 Current Regional Conditions	$18,648	$0	$24,336	$20,303	$0	$0	$63,287
4.5	Modeling the 2045 Baseline Alternative	$20,114	$0	$35,856	$20,303	$0	$0	$76,273
4.6	Building the Alternative Scenarios	$48,811	$0	$65,448	$9,718	$0	$0	$123,977
4.7	Evaluating the Scenarios	$0	$0	$0	$0	$0	$0	$0
	Total Task 4	$250,033	$0	$249,516	$164,927	$11,700	$0	$676,175
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**							
5.1	Working Group Meetings	$52,428	$11,285	$0	$8,895	$2,640	$3,751	$78,999
5.2	Steering Committee Meetings	$29,888	$3,816	$0	$1,455	$0	$2,501	$37,660
	Total Task 5	$82,316	$15,101	$0	$10,351	$2,640	$6,252	$116,659
6	**MANAGE THE PROJECT**							
6.1	Weekly Coordination with Study Leadership	$57,201	$26,778	$0	$14,162	$0	$3,001	$101,142
6.2	Schedule and Budget Oversight	$42,535	$8,876	$0	$4,204	$0	$0	$55,615
6.3	Quality Assurance of Deliverables	$72,559	$10,534	$0	$0	$0	$0	$83,094
	Total Task 6	$172,295	$46,189	$0	$18,367	$0	$3,001	$239,851
	TOTALS	854,399	289,131	249,516	193,644	61,380	105,775	1,753,846
	ODC	$167,558	$8,500	$18,753	$37,240	$0	$5,040	$237,091
	TOTALS	$1,021,957	$297,631	$268,269	$230,884	$61,380	$110,815	$1,990,937
	Work Split	51%	15%	13%	12%	3%	6%	100%

Attachment 7a

TEAM SUMMARY

Task No.	Task	Other Direct Costs									
		Reproduction	Travel	Lodging	Per Diem	Communication/Postage	Survey - layout, printing, mailing, s		Phase I Budget Shortage	Phase 3 Contingency	TOTAL
1	**EXECUTE ENGAGEMENT PLAN**										
1.1	Task Management	$0	$0	$0	$0	$0					$0
1.2	Engagement Plan Review	$0	$0	$0	$0	$0					$0
1.3	Implementation of Engagement Plan	$0	$0	$0	$0	$500					$500
1.3a	Study Mailing List and Comment Database	$0	$0	$0	$0	$0					$0
1.3b	Stakeholder Briefings and Presentations	$0	$0	$0	$0	$0					$0
1.3c	Brochures, Factsheets, Handouts	$3,540	$0	$0	$0	$0					$3,540
1.3d	Community Events and Outreach	$250	$480	$200	$150	$200					$1,280
1.4	Website Upgrades and Maintenance	$0	$0	$0	$0	$2,500					$2,500
	Total Task 1 Costs	$3,790	$480	$200	$150	$3,200	$0	$0	$0	$0	$7,820
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**										
2.1	Develop Geometry of Preliminary Alternatives	$150	$0	$0	$0	$0					$150
2.2	Hydraulics and Hydrology	$0	$0	$0	$0	$0					$0
2.3	Structures	$0	$0	$0	$0	$0					$0
2.4	Utilities and Railroad Crossings	$0	$0	$0	$0	$0					$0
2.5	Planning Cost Estimates	$0	$0	$0	$0	$0					$0
	Total Task 2 Costs	$150	$0	$0	$0	$0	$0	$0	$0	$0	$150
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**										
3.1	Conduct Congestion Relief Assessments	$150	$0	$0	$0	$0					$150
3.2	Conduct Permitability Assessments	$1,300	$2,000	$1,000	$500	$0					$4,800
3.3	Conduct Constructability Assessments	$150	$0	$0	$0	$0					$150
	Total Task 3 Costs	$1,600	$2,000	$1,000	$500	$0	$0	$0	$0	$0	$5,100
4	**CONDUCT SCENARIO PLANNING**										
4.1	Building the Base Data, Models, and Scenarios	$4,600	$2,428	$1,056	$901	$17	$33,300	$0			$42,302
4.2	Defining Alternative Future Scenarios	$2,140	$1,970	$857	$762	$0					$5,729
4.3	Defining Measures of Success	$1,500	$978	$564	$498	$17					$3,557
4.4	Evaluate 2015 Current Regional Conditions	$950	$652	$376	$332	$17					$2,327
4.5	Modeling the 2045 Baseline Alternative	$1,450	$1,184	$586	$486	$17					$3,723
4.6	Building the Alternative Scenarios	$1,350	$1,038	$752	$664	$17					$3,821
4.7	Evaluating the Scenarios	$0	$0	$0	$0	$0					$0
	Total Task 4 Costs	$11,990	$8,250	$4,191	$3,643	$85	$33,300	$0	$0	$0	$61,459
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**										
5.1	Working Group Meetings	$150	$2,785	$565	$454	$0					$3,954
5.2	Steering Committee Meetings	$50	$635	$0	$0	$0					$685
	Total Task 5 Costs	$200	$3,420	$565	$454	$0	$0	$0	$0	$0	$4,639
6	**MANAGE THE PROJECT**										
6.1	Weekly Coordination with Study Leadership	$0	$0	$0	$0	$0			$6,923	$150,000	$156,923
6.2	Schedule and Budget Oversight	$0	$0	$0	$0	$0					$0
6.3	Quality Assurance of Deliverables	$1,000	$0	$0	$0	$0					$1,000
	Total Task 6 Costs	$1,000	$0	$0	$0	$0	$0	$0	$6,923	$150,000	$157,923
	TOTAL COSTS	$18,730	$14,150	$5,956	$4,747	$3,285	$33,300	$0	$6,923	$150,000	$237,091

Attachment 7a

BAKER

Task No.	Task	Project Manager	Technical Manager IV	Senior Planner IV	Senior Traffic Engineer	Senior Planner II	Senior Planner I	Traffic Engineer III	Traffic Engineer II	Senior Engineer II	Senior Engineer I	Engineer	Technician	Traffic Engineer I	Traffic Engineer I	GIS Specialist	Administration II	Administration II	TOTAL
		$274	$305.34	$201.00	$169.20	$160.00	$148.00	$129.63	$122.61	$230.00	$195.00	$118.00	$113.00	$100.32	$88.29	$122.64	$92.25	$96.00	
1	**EXECUTE ENGAGEMENT PLAN**																		
1.1	Task Management																		0
1.2	Engagement Plan Review																		0
1.3	Implementation of Engagement Plan																		0
1.3a	Study Mailing List and Comment Database																		0
1.3b	Stakeholder Briefings and Presentations																		0
1.3c	Brochures, Factsheets, Handouts																		0
1.3d	Community Events and Outreach	20																	20
1.4	Website Upgrades and Maintenance																		0
	Total Task 1 Hours	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
	Total Task 1 Labor Cost	$5,470	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,470
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**																		
2.1	Develop Geometry of Preliminary Alternatives				40			80	80	40	120	240	240	40	40				920
2.2	Hydraulics and Hydrology									8	24	40	16						88
2.3	Structures									40	120	80	120						360
2.4	Utilities and Railroad Crossings									8		40	24						72
2.5	Planning Cost Estimates									32	56	80	40						208
	Total Task 2 Hours	0	0	0	40	0	0	80	80	128	320	480	440	40	40	0	0	0	1648
	Total Task 2 Labor Cost	$0	$0	$0	$6,768	$0	$0	$10,370	$9,809	$29,440	$62,400	$56,640	$49,720	$4,013	$3,532	$0	$0	$0	$ 232,692
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**																		
3.1	Conduct Congestion Relief Assessments			40	60	164								160	120				544
3.2	Conduct Permitability Assessments																		0
3.3	Conduct Constructability Assessments				60			80	40					80	80				340
	Total Task 3 Hours	0	0	40	120	164	0	80	40	0	0	0	0	240	200	0	0	0	884
	Task 3 Labor Cost	$0	$0	$8,040	$20,304	$26,240	$0	$10,370	$4,904	$0	$0	$0	$0	$24,077	$17,658	$0	$0	$0	$111,594
4	**CONDUCT SCENARIO PLANNING**																		
4.1	Building the Base Data, Models, and Scenarios		64	65	32	112	84	32	80							60	16		545
4.2	Defining Alternative Future Scenarios		48	39		40	96										16		239
4.3	Defining Measures of Success		32	23		28	48										8		139
4.4	Evaluate 2015 Current Regional Conditions		20	19		24	28										8		99
4.5	Modeling the 2045 Baseline Alternative		20	29		28	20										8		105
4.6	Building the Alternative Scenarios		33	43		140	42										16		274
4.7	Evaluating the Scenarios																		0
	Total Task 4 Hours	0	217	218	32	372	318	32	80	0	0	0	0	0	0	60	72	0	1,401
	Task 4 Labor Cost	$0	$66,259	$43,818	$5,414	$59,520	$47,064	$4,148	$9,809	$0	$0	$0	$0	$0	$0	$7,358	$6,642	$0	$250,033
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**																		
5.1	Working Group Meetings	120			50				50					50					270
5.2	Steering Committee Meetings	72			26				26					26					150
	Total Task 5 Hours	192	0	0	76	0	0	0	76	0	0	0	0	76	0	0	0	0	420
	Task 5 Labor Cost	$52,514	$0	$0	$12,859	$0	$0	$0	$9,318	$0	$0	$0	$0	$7,624	$0	$0	$0	$0	$82,316
6	**MANAGE THE PROJECT**																		
6.1	Weekly Coordination with Study Leadership	194								18									212
6.2	Schedule and Budget Oversight	140															46		186
6.3	Quality Assurance of Deliverables	248								2	11	18							279
	Total Task 6 Hours	582	0	0	0	0	0	0	0	20	11	18	0	0	0	0	46	0	677
	Task 6 Labor Cost	$159,183	$0	$0	$0	$0	$0	$0	$0	$4,600	$2,145	$2,124	$0	$0	$0	$0	$4,244	$0	$172,295
	TOTAL HOURS	794	217	258	268	536	318	192	276	148	331	498	440	356	240	60	118	0	5,050
	TOTAL LABOR COSTS	$217,167	$66,259	$51,858	$45,346	$85,760	$47,064	$24,889	$33,840	$34,040	$64,545	$58,764	$49,720	$35,714	$21,190	$7,358	$10,886	$0	$854,399

Attachment 7a

PRR

Task No.	Task	Senior Director - Colleen Gants	Director Treceé Strum-Gilliam	Associate Director - Brett Houghton	Associate Director - Laura LaBissoniere	Associate Director - Jennifer Rash	Consultant II - Meghan Robinson	Consultant II - Jessica Bedenbaugh	Senior Administrator - Justin Davis	Junior Administrator - Lauren Whalley-Hill	Consultant I - Mila Lassuy	Senior Consultant - Leslie Nayman	Consultant II - Nino Mascorella	Associate Director Jill Hannay	Senior Consultant Derek Moon	Associate Director Leigh-Ann Eng	Consultant II Connor Potebnya	Senior Consultant Chelsea Xavier	Consultant I Daniel Kessler	TOTAL
		$285.32	$260.61	$160.94	$160.94	$178.77	$98.01	$102.69	$104.61	$79.36	$77.47	$159.41	$95.23	$167.38	$229.94	$160.94	$118.41	$191.30	$80.38	
1	**EXECUTE ENGAGEMENT PLAN**																			
1.1	Task Management		20	16	16		20	16			16			20						124
1.2	Engagement Plan Review		6		10		10	6					6							38
1.3	Implementation of Engagement Plan		24	8			48	12												92
1.3a	Study Mailing List and Comment Database		8				10	6			20									44
1.3b	Stakeholder Briefings and Presentations																			0
1.3c	Brochures, Factsheets, Handouts		18		24		36	36					36	24						174
1.3d	Community Events and Outreach						20	24		20										64
1.4	Website Upgrades and Maintenance		64			40	20	20												914
	Total Task 1 Hours	0	140	24	50	40	164	120	0	20	36	0	42	140	250	20	280	40	40	1450
	Total Task 1 Labor Cost	$0	$36,485	$3,863	$8,047	$7,151	$16,074	$12,323	$0	$1,587	$2,789	$0	$4,000	184	250	20	280	40	40	$227,842
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**													$30,798	$57,485	$3,219	$33,155	$7,652	$3,215	
2.1	Develop Geometry of Preliminary Alternatives																			0
2.2	Hydraulics and Hydrology																			0
2.3	Structures																			0
2.4	Utilities and Railroad Crossings																			0
2.5	Planning Cost Estimates																			0
	Total Task 2 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Task 2 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ -
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**																			
3.1	Conduct Congestion Relief Assessments																			0
3.2	Conduct Permitability Assessments																			0
3.3	Conduct Constructability Assessments																			0
	Total Task 3 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Task 3 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	**CONDUCT SCENARIO PLANNING**																			
4.1	Building the Base Data, Models, and Scenarios																			0
4.2	Defining Alternative Future Scenarios																			0
4.3	Defining Measures of Success																			0
4.4	Evaluate 2015 Current Regional Conditions																			0
4.5	Modeling the 2045 Baseline Alternative																			0
4.6	Building the Alternative Scenarios																			0
4.7	Evaluating the Scenarios																			0
	Total Task 4 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Task 4 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**																			
5.1	Working Group Meetings		24				24							16						64
5.2	Steering Committee Meetings		8				4							8						20
	Total Task 5 Hours	0	32	0	0	0	28	0	0	0	0	0	0	24	0	0	0	0	0	84
	Task 5 Labor Cost	$0	$8,340	$0	$0	$0	$2,744	$0	$0	$0	$0	$0	$0	$4,017	$0	$0	$0	$0	$0	$15,101
6	**MANAGE THE PROJECT**																			
6.1	Weekly Coordination with Study Leadership		56				56							40						152
6.2	Schedule and Budget Oversight		16				16		30											62
6.3	Quality Assurance of Deliverables	15	24																	39
	Total Task 6 Hours	15	96	0	0	0	72	0	30	0	0	0	0	40	0	0	0	0	0	253
	Task 6 Labor Cost	$4,280	$25,019	$0	$0	$0	$7,057	$0	$3,138	$0	$0	$0	$0	$6,695	$0	$0	$0	$0	$0	$46,189
	TOTAL HOURS	15	268	24	50	40	264	120	30	20	36	0	42	248	250	20	280	40	40	1,787
	TOTAL LABOR COSTS	$4,280	$69,843	$3,863	$8,047	$7,151	$25,875	$12,323	$3,138	$1,587	$2,789	$0	$4,000	$41,510	$57,485	$3,219	$33,155	$7,652	$3,215	$289,131

Attachment 7a

EPR

Task No.	Task	Project Manager	Technical manager	Project Planner										TOTAL
		$189.00	$135.00	$90.00										
1	**EXECUTE ENGAGEMENT PLAN**													
1.1	Task Management													0
1.2	Engagement Plan Review													0
1.3	Implementation of Engagement Plan													0
1.3a	Study Mailing List and Comment Database													0
1.3b	Stakeholder Briefings and Presentations													0
1.3c	Brochures, Factsheets, Handouts													0
1.3d	Community Events and Outreach													0
1.4	Website Upgrades and Maintenance													0
	Total Task 1 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Task 1 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**													
2.1	Develop Geometry of Preliminary Alternatives													0
2.2	Hydraulics and Hydrology													0
2.3	Structures													0
2.4	Utilities and Railroad Crossings													0
2.5	Planning Cost Estimates													0
	Total Task 2 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Task 2 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**													$ -
3.1	Conduct Congestion Relief Assessments													0
3.2	Conduct Permitability Assessments													0
3.3	Conduct Constructability Assessments													0
	Total Task 3 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Task 3 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	**CONDUCT SCENARIO PLANNING**													
4.1	Building the Base Data, Models, and Scenarios	68	104	284										456
4.2	Defining Alternative Future Scenarios	72	112	128										312
4.3	Defining Measures of Success	64	80	92										236
4.4	Evaluate 2015 Current Regional Conditions	24	80	100										204
4.5	Modeling the 2045 Baseline Alternative	24	120	168										312
4.6	Building the Alternative Scenarios	32	240	300										572
4.7	Evaluating the Scenarios													0
	Total Task 4 Hours	284	736	1,072	0	0	0	0	0	0	0	0	0	2,092
	Task 4 Labor Cost	$53,676	$99,360	$96,480	$0	$0	$0	$0	$0	$0	$0	$0	$0	$249,516
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**													
5.1	Working Group Meetings													0
5.2	Steering Committee Meetings													0
	Total Task 5 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Task 5 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
6	**MANAGE THE PROJECT**													
6.1	Weekly Coordination with Study Leadership													0
6.2	Schedule and Budget Oversight													0
6.3	Quality Assurance of Deliverables													0
	Total Task 6 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Task 6 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	TOTAL HOURS	284	736	1,072	0	0	0	0	0	0	0	0	0	2,092
	TOTAL LABOR COSTS	$53,676	$99,360	$96,480	$0	$0	$0	$0	$0	$0	$0	$0	$0	$249,516

Attachment 7a

EDR GROUP

Task No.	Task	Project Manager	Strategic Adviser	Sr. Economist	Analyst II	Analyst I	Administration							TOTAL
		$162	$288	$181	$162	$137	$119							
1	**EXECUTE ENGAGEMENT PLAN**													
1.1	Task Management													0
1.2	Engagement Plan Review													0
1.3	Implementation of Engagement Plan													0
1.3a	Study Mailing List and Comment Database													0
1.3b	Stakeholder Briefings and Presentations													0
1.3c	Brochures, Factsheets, Handouts													0
1.3d	Community Events and Outreach													0
1.4	Website Upgrades and Maintenance													0
	Total Task 1 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Task 1 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**													
2.1	Develop Geometry of Preliminary Alternatives													0
2.2	Hydraulics and Hydrology													0
2.3	Structures													0
2.4	Utilities and Railroad Crossings													0
2.5	Planning Cost Estimates													0
	Total Task 2 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Task 2 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**													$ -
3.1	Conduct Congestion Relief Assessments													0
3.2	Conduct Permitability Assessments													0
3.3	Conduct Constructability Assessments													0
	Total Task 3 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Task 3 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	**CONDUCT SCENARIO PLANNING**													
4.1	Building the Base Data, Models, and Scenarios	72	24	52	72	72								292
4.2	Defining Alternative Future Scenarios	56	12	60	64	56	4							252
4.3	Defining Measures of Success	56	14	0	60	0	4							134
4.4	Evaluate 2015 Current Regional Conditions	32	4	4	48	40	0							128
4.5	Modeling the 2045 Baseline Alternative	32	4	4	48	40								128
4.6	Building the Alternative Scenarios	20	4	8	24									56
4.7	Evaluating the Scenarios													0
	Total Task 4 Hours	268	62	128	316	208	8	0	0	0	0	0	0	990
	Task 4 Labor Cost	$43,336	$17,837	$23,117	$51,192	$28,495	$950	$0	$0	$0	$0	$0	$0	$164,927
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**													
5.1	Working Group Meetings	34	8			8								50
5.2	Steering Committee Meetings	9												9
	Total Task 5 Hours	43	8	0	0	8	0	0	0	0	0	0	0	59
	Task 5 Labor Cost	$6,953	$2,302	$0	$0	$1,096	$0	$0	$0	$0	$0	$0	$0	$10,351
6	**MANAGE THE PROJECT**													
6.1	Weekly Coordination with Study Leadership	52	20											72
6.2	Schedule and Budget Oversight	26												26
6.3	Quality Assurance of Deliverables													0
	Total Task 6 Hours	78	20	0	0	0	0	0	0	0	0	0	0	98
	Task 6 Labor Cost	$12,613	$5,754	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$18,367
	TOTAL HOURS	389	90	128	316	216	8	0	0	0	0	0	0	1,147
	TOTAL LABOR COSTS	$62,901	$25,893	$23,117	$51,192	$29,591	$950	$0	$0	$0	$0	$0	$0	$193,644

Attachment 7a

McPherson Consulting

Task No.	Task	Study Manager $165.00	Senior Planner $105.00	Engineer $90.00	Intern $70.00	Admin Support $55.00								TOTAL
1	**EXECUTE ENGAGEMENT PLAN**													
1.1	Task Management	60				48								108
1.2	Engagement Plan Review													0
1.3	Implementation of Engagement Plan													0
1.3a	Study Mailing List and Comment Database													0
1.3b	Stakeholder Briefings and Presentations													0
1.3c	Brochures, Factsheets, Handouts													0
1.3d	Community Events and Outreach													0
1.4	Website Upgrades and Maintenance													0
	Total Task 1 Hours	60	0	0	0	48	0	0	0	0	0	0	0	108
	Total Task 1 Labor Cost	$9,900	$0	$0	$0	$2,640	$0	$0	$0	$0	$0	$0	$0	$12,540
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**													
2.1	Develop Geometry of Preliminary Alternatives	100		200										300
2.2	Hydraulics and Hydrology													0
2.3	Structures													0
2.4	Utilities and Railroad Crossings													0
2.5	Planning Cost Estimates													0
	Total Task 2 Hours	100	0	200	0	0	0	0	0	0	0	0	0	300
	Total Task 2 Labor Cost	$16,500	$0	$18,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ 34,500
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**													
3.1	Conduct Congestion Relief Assessments													0
3.2	Conduct Permitability Assessments													0
3.3	Conduct Constructability Assessments													0
	Total Task 3 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Task 3 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	**CONDUCT SCENARIO PLANNING**													
4.1	Building the Base Data, Models, and Scenarios													0
4.2	Defining Alternative Future Scenarios													0
4.3	Defining Measures of Success	20	80											100
4.4	Evaluate 2015 Current Regional Conditions													0
4.5	Modeling the 2045 Baseline Alternative													0
4.6	Building the Alternative Scenarios													0
4.7	Evaluating the Scenarios													0
	Total Task 4 Hours	20	80	0	0	0	0	0	0	0	0	0	0	100
	Task 4 Labor Cost	$3,300	$8,400	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$11,700
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**													
5.1	Working Group Meetings	16												16
5.2	Steering Committee Meetings													0
	Total Task 5 Hours	16	0	0	0	0	0	0	0	0	0	0	0	16
	Task 5 Labor Cost	$2,640	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,640
6	**MANAGE THE PROJECT**													
6.1	Weekly Coordination with Study Leadership													0
6.2	Schedule and Budget Oversight													0
6.3	Quality Assurance of Deliverables													0
	Total Task 6 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Task 6 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	TOTAL HOURS	196	80	200	0	48	0	0	0	0	0	0	0	524
	TOTAL LABOR COSTS	$32,340	$8,400	$18,000	$0	$2,640	$0	$0	$0	$0	$0	$0	$0	$61,380

Attachment 7a

Solstice

Task No.	Task	Lajoie												TOTAL
		$125.03												
1	**EXECUTE ENGAGEMENT PLAN**													
1.1	Task Management													0
1.2	Engagement Plan Review													0
1.3	Implementation of Engagement Plan													0
1.3a	Study Mailing List and Comment Database													0
1.3b	Stakeholder Briefings and Presentations													0
1.3c	Brochures, Factsheets, Handouts	12												12
1.3d	Community Events and Outreach													0
1.4	Website Upgrades and Maintenance													0
	Total Task 1 Hours	12	0	0	0	0	0	0	0	0	0	0	0	12
	Total Task 1 Labor Cost	$1,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,500
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**													
2.1	Develop Geometry of Preliminary Alternatives													0
2.2	Hydraulics and Hydrology													0
2.3	Structures													0
2.4	Utilities and Railroad Crossings													0
2.5	Planning Cost Estimates													0
	Total Task 2 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Task 2 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ -
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**													
3.1	Conduct Congestion Relief Assessments													0
3.2	Conduct Permitability Assessments	760												760
3.3	Conduct Constructability Assessments													0
	Total Task 3 Hours	760	0	0	0	0	0	0	0	0	0	0	0	760
	Task 3 Labor Cost	$95,023	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$95,023
4	**CONDUCT SCENARIO PLANNING**													
4.1	Building the Base Data, Models, and Scenarios													0
4.2	Defining Alternative Future Scenarios													0
4.3	Defining Measures of Success													0
4.4	Evaluate 2015 Current Regional Conditions													0
4.5	Modeling the 2045 Baseline Alternative													0
4.6	Building the Alternative Scenarios													0
4.7	Evaluating the Scenarios													0
	Total Task 4 Hours	0	0	0	0	0	0	0	0	0	0	0	0	0
	Task 4 Labor Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**													
5.1	Working Group Meetings	30												30
5.2	Steering Committee Meetings	20												20
	Total Task 5 Hours	50	0	0	0	0	0	0	0	0	0	0	0	50
	Task 5 Labor Cost	$6,252	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6,252
6	**MANAGE THE PROJECT**													
6.1	Weekly Coordination with Study Leadership	24												24
6.2	Schedule and Budget Oversight													0
6.3	Quality Assurance of Deliverables													0
	Total Task 6 Hours	24	0	0	0	0	0	0	0	0	0	0	0	24
	Task 6 Labor Cost	$3,001	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,001
	TOTAL HOURS	846	0	0	0	0	0	0	0	0	0	0	0	846
	TOTAL LABOR COSTS	$105,775	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$105,775

Attachment 7a

	BAKER	Other Direct Costs									
Task No.	Task	Reproduction	Travel	Lodging	Per Diem	Communication/Postage	Phase I Budget Shortage	Phase 3 Contingency			TOTAL
1	**EXECUTE ENGAGEMENT PLAN**										
1.1	Task Management										$0
1.2	Engagement Plan Review										$0
1.3	Implementation of Engagement Plan										$0
1.3a	Study Mailing List and Comment Database										$0
1.3b	Stakeholder Briefings and Presentations										$0
1.3c	Brochures, Factsheets, Handouts										$0
1.3d	Community Events and Outreach		$130								$130
1.4	Website Upgrades and Maintenance										$0
	Total Task 1 Costs	$0	$130	$0	$0	$0	$0	$0	$0	$0	$130
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**										
2.1	Develop Geometry of Preliminary Alternatives	$150									$150
2.2	Hydraulics and Hydrology										$0
2.3	Structures										$0
2.4	Utilities and Railroad Crossings										$0
2.5	Planning Cost Estimates										$0
	Total Task 2 Costs	$150	$0	$0	$0	$0	$0	$0	$0	$0	$150
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**										
3.1	Conduct Congestion Relief Assessments	$150									$150
3.2	Conduct Permitability Assessments										$0
3.3	Conduct Constructability Assessments	$150									$150
	Total Task 3 Costs	$300	$0	$0	$0	$0	$0	$0	$0	$0	$300
4	**CONDUCT SCENARIO PLANNING**										
4.1	Building the Base Data, Models, and Scenarios	$1,200	$1,063			$17					$2,280
4.2	Defining Alternative Future Scenarios	$1,050	$798								$1,848
4.3	Defining Measures of Success	$700	$399			$17					$1,116
4.4	Evaluate 2015 Current Regional Conditions	$350	$266			$17					$633
4.5	Modeling the 2045 Baseline Alternative	$350	$398			$17					$765
4.6	Building the Alternative Scenarios	$350	$266			$17					$633
4.7	Evaluating the Scenarios										$0
	Total Task 4 Costs	$4,000	$3,190	$0	$0	$85	$0	$0	$0	$0	$7,275
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**										
5.1	Working Group Meetings		$1,085		$60						$1,145
5.2	Steering Committee Meetings		$635								$635
	Total Task 5 Costs	$0	$1,720	$0	$60	$0	$0	$0	$0	$0	$1,780
6	**MANAGE THE PROJECT**										
6.1	Weekly Coordination with Study Leadership						$6,923	$150,000			$156,923
6.2	Schedule and Budget Oversight										$0
6.3	Quality Assurance of Deliverables	$1,000									$1,000
	Total Task 6 Costs	$1,000	$0	$0	$0	$0	$6,923	$150,000	$0	$0	$157,923
	TOTAL COSTS	$5,450	$5,040	$0	$60	$85	$6,923	$150,000	$0	$0	$167,558

Attachment 7a

PRR

Other Direct Costs

Task No.	Task	Reproduction	Travel	Lodging	Per Diem	Communication/Postage					TOTAL
1	**EXECUTE ENGAGEMENT PLAN**										
1.1	Task Management										$0
1.2	Engagement Plan Review										$0
1.3	Implementation of Engagement Plan					$500					$500
1.3a	Study Mailing List and Comment Database										$0
1.3b	Stakeholder Briefings and Presentations										$0
1.3c	Brochures, Factsheets, Handouts	$3,500									$3,500
1.3d	Community Events and Outreach	$250	$350	$200	$150	$200					$1,150
1.4	Website Upgrades and Maintenance					$2,500					$2,500
	Total Task 1 Costs	$3,750	$350	$200	$150	$3,200	$0	$0	$0	$0	$7,650
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**										
2.1	Develop Geometry of Preliminary Alternatives										$0
2.2	Hydraulics and Hydrology										$0
2.3	Structures										$0
2.4	Utilities and Railroad Crossings										$0
2.5	Planning Cost Estimates										$0
	Total Task 2 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**										
3.1	Conduct Congestion Relief Assessments										$0
3.2	Conduct Permitability Assessments										$0
3.3	Conduct Constructability Assessments										$0
	Total Task 3 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	**CONDUCT SCENARIO PLANNING**										
4.1	Building the Base Data, Models, and Scenarios										$0
4.2	Defining Alternative Future Scenarios										$0
4.3	Defining Measures of Success										$0
4.4	Evaluate 2015 Current Regional Conditions										$0
4.5	Modeling the 2045 Baseline Alternative										$0
4.6	Building the Alternative Scenarios										$0
4.7	Evaluating the Scenarios										$0
	Total Task 4 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**										
5.1	Working Group Meetings		$500	$250	$100						$850
5.2	Steering Committee Meetings										$0
	Total Task 5 Costs	$0	$500	$250	$100	$0	$0	$0	$0	$0	$850
6	**MANAGE THE PROJECT**										
6.1	Weekly Coordination with Study Leadership										$0
6.2	Schedule and Budget Oversight										$0
6.3	Quality Assurance of Deliverables										$0
	Total Task 6 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	TOTAL COSTS	$3,750	$850	$450	$250	$3,200	$0	$0	$0	$0	$8,500

Attachment 7a

EPR

Other Direct Costs

Task No.	Task	Reproduction	Travel	Lodging	Per Diem	Communication/Postage					TOTAL
1	**EXECUTE ENGAGEMENT PLAN**										
1.1	Task Management										$0
1.2	Engagement Plan Review										$0
1.3	Implementation of Engagement Plan										$0
1.3a	Study Mailing List and Comment Database										$0
1.3b	Stakeholder Briefings and Presentations										$0
1.3c	Brochures, Factsheets, Handouts										$0
1.3d	Community Events and Outreach										$0
1.4	Website Upgrades and Maintenance										$0
	Total Task 1 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**										
2.1	Develop Geometry of Preliminary Alternatives										$0
2.2	Hydraulics and Hydrology										$0
2.3	Structures										$0
2.4	Utilities and Railroad Crossings										$0
2.5	Planning Cost Estimates										$0
	Total Task 2 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**										
3.1	Conduct Congestion Relief Assessments										$0
3.2	Conduct Permitability Assessments										$0
3.3	Conduct Constructability Assessments										$0
	Total Task 3 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	**CONDUCT SCENARIO PLANNING**										
4.1	Building the Base Data, Models, and Scenarios	$3,400	$965	$846	$747						$5,958
4.2	Defining Alternative Future Scenarios	$1,090	$772	$752	$664						$3,278
4.3	Defining Measures of Success	$800	$579	$564	$498						$2,441
4.4	Evaluate 2015 Current Regional Conditions	$600	$386	$376	$332						$1,694
4.5	Modeling the 2045 Baseline Alternative	$1,100	$386	$376	$332						$2,194
4.6	Building the Alternative Scenarios	$1,000	$772	$752	$664						$3,188
4.7	Evaluating the Scenarios										$0
	Total Task 4 Costs	$7,990	$3,860	$3,666	$3,237	$0	$0	$0	$0	$0	$18,753
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**										
5.1	Working Group Meetings										$0
5.2	Steering Committee Meetings										$0
	Total Task 5 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
6	**MANAGE THE PROJECT**										
6.1	Weekly Coordination with Study Leadership										$0
6.2	Schedule and Budget Oversight										$0
6.3	Quality Assurance of Deliverables										$0
	Total Task 6 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	TOTAL COSTS	$7,990	$3,860	$3,666	$3,237	$0	$0	$0	$0	$0	$18,753

Attachment 7a

EDR GROUP

Task No.	Task	Other Direct Costs									
		Reproduction	Travel	Lodging	Per Diem	Communication/Postage	Survey - layout, printing, mailing, scanning	TREDIS			TOTAL
1	**EXECUTE ENGAGEMENT PLAN**										
1.1	Task Management										$0
1.2	Engagement Plan Review										$0
1.3	Implementation of Engagement Plan										$0
1.3a	Study Mailing List and Comment Database										$0
1.3b	Stakeholder Briefings and Presentations										$0
1.3c	Brochures, Factsheets, Handouts										$0
1.3d	Community Events and Outreach										$0
1.4	Website Upgrades and Maintenance										$0
	Total Task 1 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**										
2.1	Develop Geometry of Preliminary Alternatives										$0
2.2	Hydraulics and Hydrology										$0
2.3	Structures										$0
2.4	Utilities and Railroad Crossings										$0
2.5	Planning Cost Estimates										$0
	Total Task 2 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**										
3.1	Conduct Congestion Relief Assessments										$0
3.2	Conduct Permitability Assessments										$0
3.3	Conduct Constructability Assessments										$0
	Total Task 3 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	**CONDUCT SCENARIO PLANNING**										
4.1	Building the Base Data, Models, and Scenarios		$400	$210	$154		$33,300				$34,064
4.2	Defining Alternative Future Scenarios		$400	$105	$98						$603
4.3	Defining Measures of Success										$0
4.4	Evaluate 2015 Current Regional Conditions										$0
4.5	Modeling the 2045 Baseline Alternative		$400	$210	$154						$764
4.6	Building the Alternative Scenarios										$0
4.7	Evaluating the Scenarios										$0
	Total Task 4 Costs	$0	$1,200	$525	$406	$0	$33,300	$0	$0	$0	$35,431
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**										
5.1	Working Group Meetings		$1,200	$315	$294						$1,809
5.2	Steering Committee Meetings										$0
	Total Task 5 Costs	$0	$1,200	$315	$294	$0	$0	$0	$0	$0	$1,809
6	**MANAGE THE PROJECT**										
6.1	Weekly Coordination with Study Leadership										$0
6.2	Schedule and Budget Oversight										$0
6.3	Quality Assurance of Deliverables										$0
	Total Task 6 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	TOTAL COSTS	$0	$2,400	$840	$700	$0	$33,300	$0	$0	$0	$37,240

Attachment 7a

McPherson Consulting

Other Direct Costs

Task No.	Task	Reproduction	Travel	Lodging	Per Diem	Communication/Postage					TOTAL
1	**EXECUTE ENGAGEMENT PLAN**										
1.1	Task Management										$0
1.2	Engagement Plan Review										$0
1.3	Implementation of Engagement Plan										$0
1.3a	Study Mailing List and Comment Database										$0
1.3b	Stakeholder Briefings and Presentations										$0
1.3c	Brochures, Factsheets, Handouts										$0
1.3d	Community Events and Outreach										$0
1.4	Website Upgrades and Maintenance										$0
	Total Task 1 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**										$0
2.1	Develop Geometry of Preliminary Alternatives										$0
2.2	Hydraulics and Hydrology										$0
2.3	Structures										$0
2.4	Utilities and Railroad Crossings										$0
2.5	Planning Cost Estimates										$0
	Total Task 2 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**										$0
3.1	Conduct Congestion Relief Assessments										$0
3.2	Conduct Permitability Assessments										$0
3.3	Conduct Constructability Assessments										$0
	Total Task 3 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	**CONDUCT SCENARIO PLANNING**										$0
4.1	Building the Base Data, Models, and Scenarios										$0
4.2	Defining Alternative Future Scenarios										$0
4.3	Defining Measures of Success										$0
4.4	Evaluate 2015 Current Regional Conditions										$0
4.5	Modeling the 2045 Baseline Alternative										$0
4.6	Building the Alternative Scenarios										$0
4.7	Evaluating the Scenarios										$0
	Total Task 4 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**										$0
5.1	Working Group Meetings										$0
5.2	Steering Committee Meetings										$0
	Total Task 5 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
6	**MANAGE THE PROJECT**										$0
6.1	Weekly Coordination with Study Leadership										$0
6.2	Schedule and Budget Oversight										$0
6.3	Quality Assurance of Deliverables										$0
	Total Task 6 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	TOTAL COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Attachment 7a

Solstice

Other Direct Costs

Task No.	Task	Reproduction	Travel	Lodging	Per Diem	Communication/Postage					TOTAL
1	**EXECUTE ENGAGEMENT PLAN**										
1.1	Task Management										$0
1.2	Engagement Plan Review										$0
1.3	Implementation of Engagement Plan										$0
1.3a	Study Mailing List and Comment Database										$0
1.3b	Stakeholder Briefings and Presentations										$0
1.3c	Brochures, Factsheets, Handouts	40									$40
1.3d	Community Events and Outreach										$0
1.4	Website Upgrades and Maintenance										$0
	Total Task 1 Costs	$40	$0	$0	$0	$0	$0	$0	$0	$0	$40
2	**DEVELOPMENT OF PRELIMINARY ALTERNATIVES**										
2.1	Develop Geometry of Preliminary Alternatives										$0
2.2	Hydraulics and Hydrology										$0
2.3	Structures										$0
2.4	Utilities and Railroad Crossings										$0
2.5	Planning Cost Estimates										$0
	Total Task 2 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	**DETERMINATION OF CANDIDATE ALTERNATIVES (Screen 1)**										
3.1	Conduct Congestion Relief Assessments										$0
3.2	Conduct Permitability Assessments	$1,300	$2,000	$1,000	$500						$4,800
3.3	Conduct Constructability Assessments										$0
	Total Task 3 Costs	$1,300	$2,000	$1,000	$500	$0	$0	$0	$0	$0	$4,800
4	**CONDUCT SCENARIO PLANNING**										
4.1	Building the Base Data, Models, and Scenarios										$0
4.2	Defining Alternative Future Scenarios										$0
4.3	Defining Measures of Success										$0
4.4	Evaluate 2015 Current Regional Conditions										$0
4.5	Modeling the 2045 Baseline Alternative										$0
4.6	Building the Alternative Scenarios										$0
4.7	Evaluating the Scenarios										$0
	Total Task 4 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
5	**PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE**										
5.1	Working Group Meetings	$150									$150
5.2	Steering Committee Meetings	$50									$50
	Total Task 5 Costs	$200	$0	$0	$0	$0	$0	$0	$0	$0	$200
6	**MANAGE THE PROJECT**										
6.1	Weekly Coordination with Study Leadership										$0
6.2	Schedule and Budget Oversight										$0
6.3	Quality Assurance of Deliverables										$0
	Total Task 6 Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	TOTAL COSTS	$1,540	$2,000	$1,000	$500	$0	$0	$0	$0	$0	$5,040

Attachment 7a

2045 Long-Range Transportation Plan: Relationship with the Regional Connectors Study

Presented at Joint Steering/Policy Committee and Working Group Meeting
January 29, 2019

Dale M. Stith, AICP, GISP
Principal Transportation Planner

the heartbeat of HAMPTON ROADS TPO
Transportation Planning Organization

PRESENTATION OUTLINE

BACKGROUND

- Chronology of Events
- Memorandum of Understanding
- Approved Guidance for Scope of Work

LRTP OVERVIEW

- HRTPO Board-Approved LRTP
- 2040 LRTP Status
- 2040 LRTP Regional Priority Projects (Round 1)

2045 LRTP PLANNING MILESTONES

- Regional Travel Demand Model Update

COORDINATION: 2045 LRTP AND RCS

- LRTP Project Evaluation Process

2045 REGIONAL PRIORITY PROJECTS (ROUND 2)

- Evaluation Process
- Draft Evaluation
- Next Steps
- HRTPO Board Resolution 2018-03

RCS AND 2045 LRTP RELATIONSHIP – OPTIONS

CHRONOLOGY OF EVENTS - HIGHLIGHTS

October 20, 2016

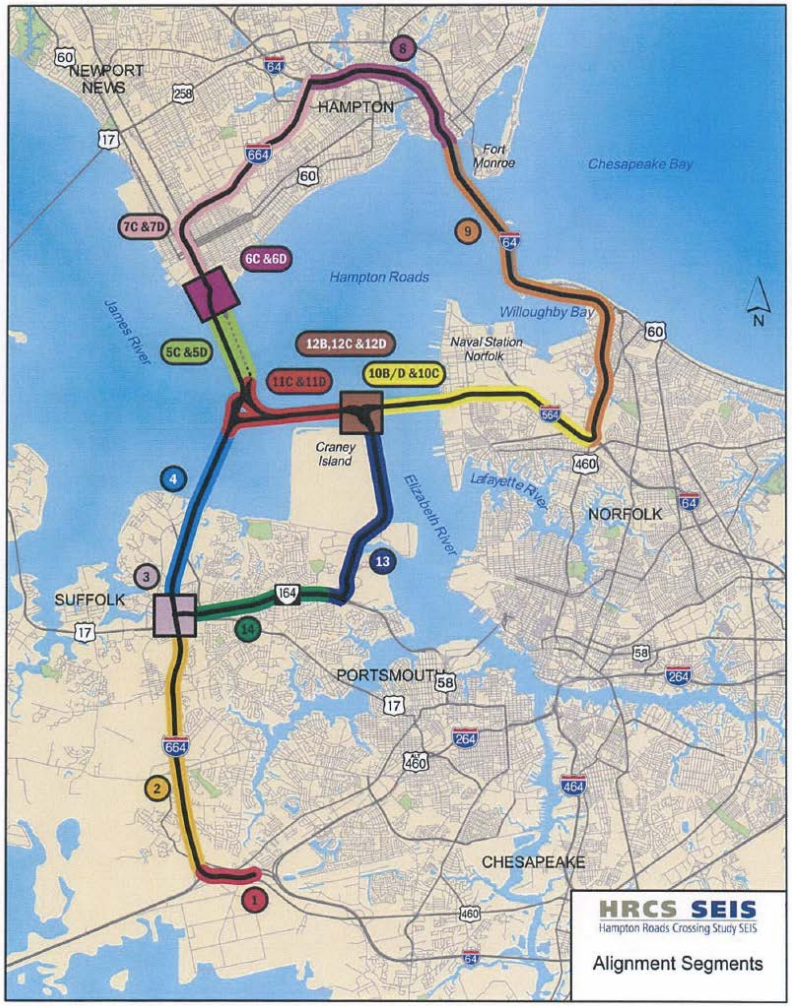
- The HRTPO unanimously approved HRCS Alternative A and Bowers Hill Interchange as the Preferred Alternative
- HRTAC unanimously supported the HRTPO's selection of Alternative A and Bowers Hill, and allocated up to $7 million to be applied toward the cost of additional feasibility studies

December 7, 2016

- The CTB approved Alternative A

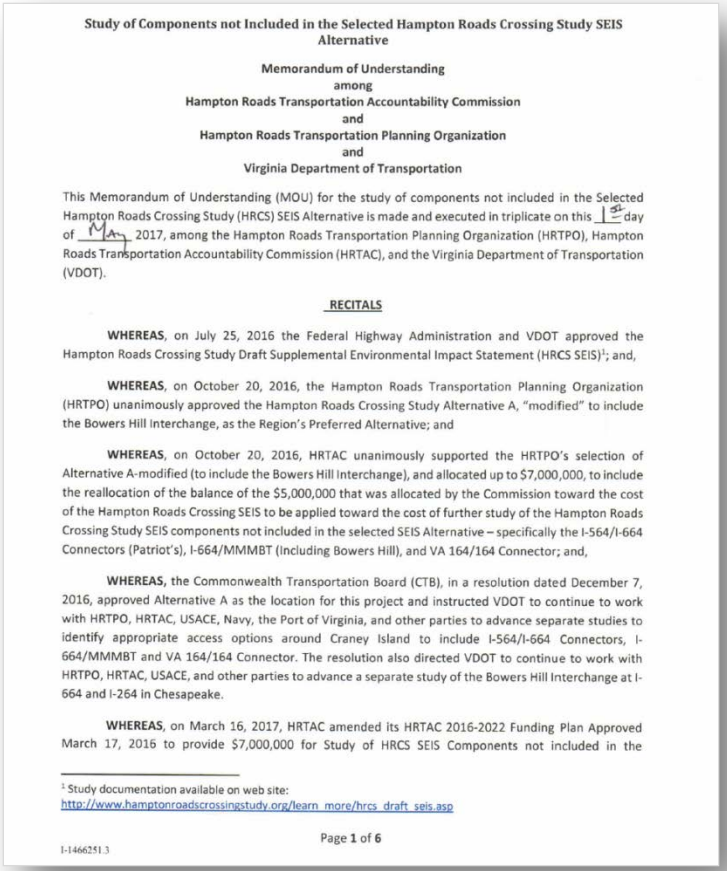
May 1, 2017

- A Memorandum of Understanding was signed between the HRTPO, VDOT, and HRTAC to advance the study effort in two separate components:
  - $4 million for Bowers Hill Interchange
  - $3 million for Additional Feasibility Studies, with a contingency of $4 million



BACKGROUND – MOU AND SCOPE

Memorandum of Understanding



Study of Components not Included in the Selected Hampton Roads Crossing Study SEIS Alternative

Memorandum of Understanding
among
Hampton Roads Transportation Accountability Commission
and
Hampton Roads Transportation Planning Organization
and
Virginia Department of Transportation

This Memorandum of Understanding (MOU) for the study of components not included in the Selected Hampton Roads Crossing Study (HRCS) SEIS Alternative is made and executed in triplicate on this 1st day of May 2017, among the Hampton Roads Transportation Planning Organization (HRTPO), Hampton Roads Transportation Accountability Commission (HRTAC), and the Virginia Department of Transportation (VDOT).

RECITALS

WHEREAS, on July 25, 2016 the Federal Highway Administration and VDOT approved the Hampton Roads Crossing Study Draft Supplemental Environmental Impact Statement (HRCS SEIS)[1]; and,

WHEREAS, on October 20, 2016, the Hampton Roads Transportation Planning Organization (HRTPO) unanimously approved the Hampton Roads Crossing Study Alternative A, "modified" to include the Bowers Hill Interchange, as the Region's Preferred Alternative; and

WHEREAS, on October 20, 2016, HRTAC unanimously supported the HRTPO's selection of Alternative A-modified (to include the Bowers Hill Interchange), and allocated up to $7,000,000, to include the reallocation of the balance of the $5,000,000 that was allocated by the Commission toward the cost of the Hampton Roads Crossing SEIS to be applied toward the cost of further study of the Hampton Roads Crossing Study SEIS components not included in the selected SEIS Alternative – specifically the I-564/I-664 Connectors (Patriot's), I-664/MMMBT (Including Bowers Hill), and VA 164/164 Connector; and,

WHEREAS, the Commonwealth Transportation Board (CTB), in a resolution dated December 7, 2016, approved Alternative A as the location for this project and instructed VDOT to continue to work with HRTPO, HRTAC, USACE, Navy, the Port of Virginia, and other parties to advance separate studies to identify appropriate access options around Craney Island to include I-564/I-664 Connectors, I-664/MMMBT and VA 164/164 Connector. The resolution also directed VDOT to continue to work with HRTPO, HRTAC, USACE, and other parties to advance a separate study of the Bowers Hill Interchange at I-664 and I-264 in Chesapeake.

WHEREAS, on March 16, 2017, HRTAC amended its HRTAC 2016-2022 Funding Plan Approved March 17, 2016 to provide $7,000,000 for Study of HRCS SEIS Components not included in the

[1] Study documentation available on web site:
http://www.hamptonroadscrossingstudy.org/learn_more/hrcs_draft_seis.asp

Page 1 of 6

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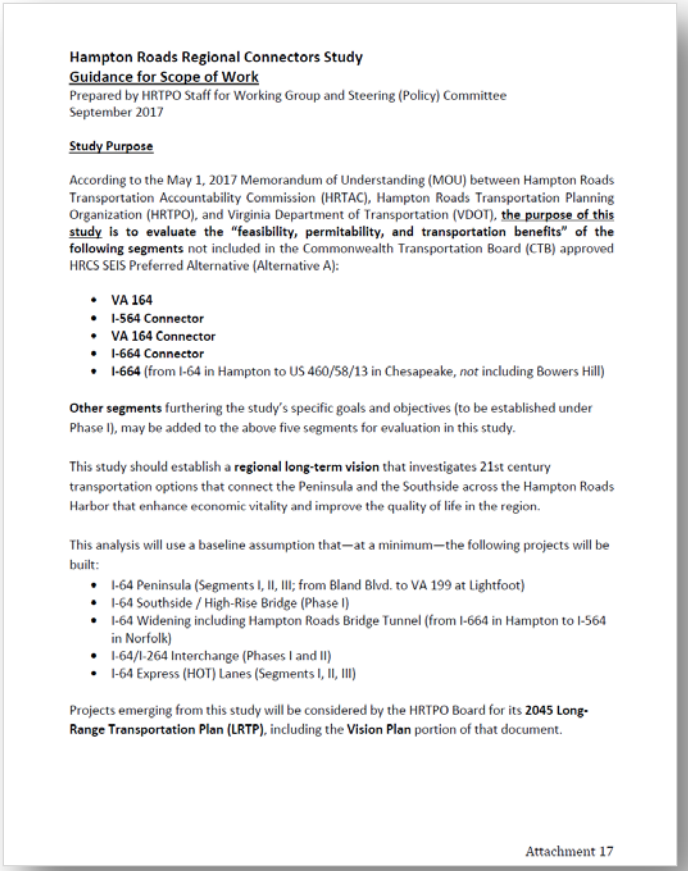
Guidance for Scope of Work



Hampton Roads Regional Connectors Study
Guidance for Scope of Work
Prepared by HRTPO Staff for Working Group and Steering (Policy) Committee
September 2017

Study Purpose

According to the May 1, 2017 Memorandum of Understanding (MOU) between Hampton Roads Transportation Accountability Commission (HRTAC), Hampton Roads Transportation Planning Organization (HRTPO), and Virginia Department of Transportation (VDOT), **the purpose of this study is to evaluate the "feasibility, permitability, and transportation benefits" of the following segments** not included in the Commonwealth Transportation Board (CTB) approved HRCS SEIS Preferred Alternative (Alternative A):

- **VA 164**
- **I-564 Connector**
- **VA 164 Connector**
- **I-664 Connector**
- **I-664** (from I-64 in Hampton to US 460/58/13 in Chesapeake, *not* including Bowers Hill)

Other segments furthering the study's specific goals and objectives (to be established under Phase I), may be added to the above five segments for evaluation in this study.

This study should establish a **regional long-term vision** that investigates 21st century transportation options that connect the Peninsula and the Southside across the Hampton Roads Harbor that enhance economic vitality and improve the quality of life in the region.

This analysis will use a baseline assumption that—at a minimum—the following projects will be built:

- I-64 Peninsula (Segments I, II, III; from Bland Blvd. to VA 199 at Lightfoot)
- I-64 Southside / High-Rise Bridge (Phase I)
- I-64 Widening including Hampton Roads Bridge Tunnel (from I-664 in Hampton to I-564 in Norfolk)
- I-64/I-264 Interchange (Phases I and II)
- I-64 Express (HOT) Lanes (Segments I, II, III)

Projects emerging from this study will be considered by the HRTPO Board for its **2045 Long-Range Transportation Plan (LRTP)**, including the **Vision Plan** portion of that document.

Attachment 17

Background – MOU

Permitability:

- "….determine **feasibility, permitability, and transportation benefits necessary** to advance the Additional Corridors…"

HRTPO Duties:

- Ensure that all work is completed **in accordance w/all laws and regulations**
- **Lead working group** of HRTPO, HRTAC, VDOT, and local impacted jurisdictions
- **Lead formation of steering committee** of USACE, U.S. Navy, Port of Virginia, and local jurisdictions to develop scope of work and to determine consultant selection approach
- Develop a **regional consensus**

BACKGROUND - SCOPE

Guidance for Scope of Work

- Analysis will use a **baseline assumption** that includes improvements on:
  - I-64 Peninsula (Segments I, II, III)
  - I-64 Southside/High-Rise Bridge (Phase I)
  - I-64/HRBT
  - I-64/I-264 Interchange (Phases I and II)
  - I-64 Express (HOT) Lanes (Segments I, II, III)
- **Projects emerging from study will be considered by the HRTPO Board for its 2045 LRTP**
- Transportation Benefits, Community Impacts, and Financial Feasibility Analysis will **provide input to the 2045 LRTP**
  - Forecasts shall be done for year 2045
  - Regional scenario planning for year 2045
  - Transportation Benefit Measures incorporated into HRTPO Project Prioritization Tool for 2045 LRTP consideration

- **Working Group Reviewed and Provided Input**
  - July 14, 2017
  - September 15, 2017
- **RCS Steering Committee Endorsed and Recommended for HRTPO Board Approval**
  - October 5, 2017
- **Approved by HRTPO Board**
  - October 19, 2017

HRTPO Board-Approved LRTP

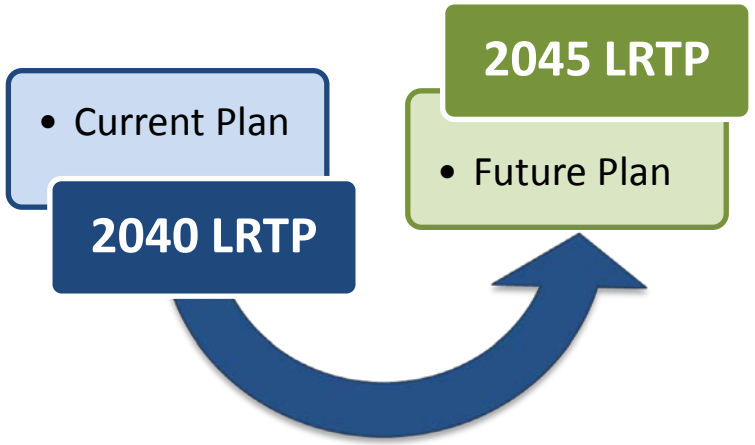
Per Federal Regulations:

- Any transportation project that receives federal funds or is categorized as "regionally significant" **must be included in the LRTP**
- "Regionally significant" projects must be included in the LRTP and Transportation Improvement Program (TIP) before FHWA/FTA issues a **Record of Decision (ROD)**

Federal and State Funding Sources: Projects must be consistent with regional LRTP

2040 LRTP Status

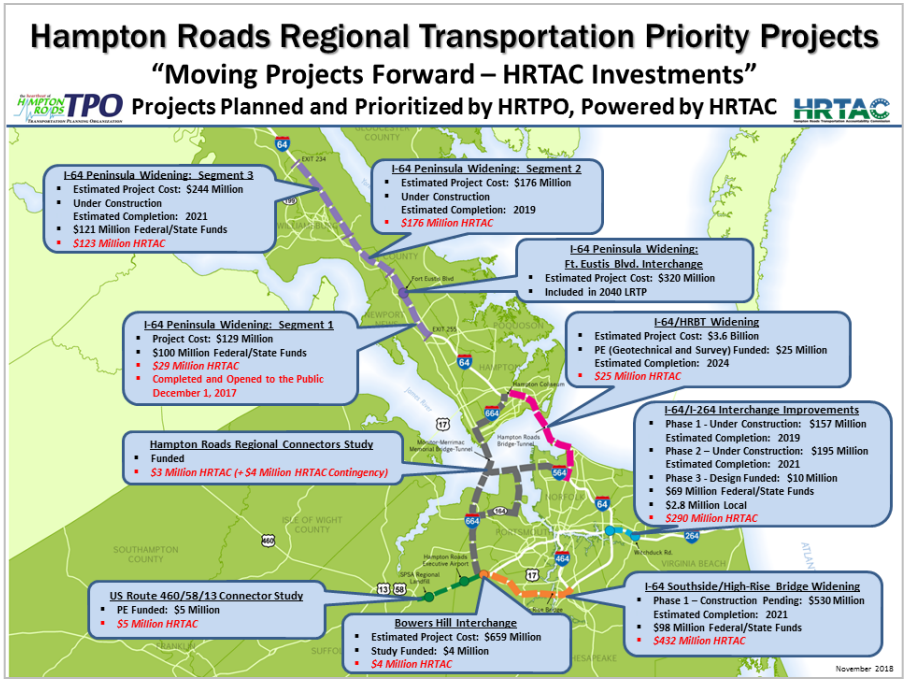
- Adopted June 2016
- Last Amended: October 2018
- Effective until June 2021



The LRTP is Updated to Reflect Changing Conditions such as:

- Regional Priorities
- Population and Employment Projections
- Economic Change
- Anticipated Travel Demand

2040 LRTP Regional Priority Projects



Group	Project	Estimated YOE* Cost	Estimated Opening Year
I	**I-64 Peninsula Widening**		
	Segment 1	$123 Million	2017
	Segment 2	$190 Million	2019
	Segment 3	$311 Million	2022
	I-64/I-264 (including Witchduck Rd Interchange)		
	Phase 1	$157 Million	2019
	Phase 2	$190 Million	2021
	Phase 3 Study	$10 Million	2018
II	**I-64 Southside Widening (including High Rise Bridge)**		
	Phase 1	$600 Million	2021
III	**Hampton Roads Harbor Crossing**		
	I-64/Hampton Roads Bridge-Tunnel Widening	$3.8 Billion	2024
	Regional Connectors Study	$3 Million (+ $4 Million Contingency)	2020
IV	**I-64 Southside Widening (including High-Rise Bridge)**		
	Phase 2	$1.7 Billion	2037
	Bowers Hill Interchange	$659 Million	2037
V	**I-64 Peninsula Widening**		
	I-64/Fort Eustis Blvd Interchange	$320 Million	2038
	US 460/58/13 Connector (including Regional Landfill and Hampton Roads Executive Airport Interchanges)		
	US 460/58/13 Connector	$396 Million	2038

Completed
Under Construction (or pending)
Under Study
Study Halted

2045 LRTP Planning Milestones

Year 1 (2016-2017)	Year 2 (2017-2018)	Year 3 (2018-2019)	Year 4 (2019-2020)	Year 5 (2020-2021)
Develop 2045 SE Control Totals	Update TAZ Data and Boundaries	Allocate 2045 TAZ Data	Revenue Forecast	Constrained Project List
Update Regional Land Use Data	Project Prioritization 2.0 (modifications)	Finalize modifications to Project Prioritization Tool	Project Evaluation/ Scenario Planning	Air Quality Conformity (6-month process)
TAZ Review/Delineation	Visioning/Regional Priorities Survey (statistically valid)	Updated Regional Travel Demand Model	Environmental Justice Analysis (may be incorporated in Tool)	Complete Documentation
Scenario Planning (research)	Goals, Objectives, Performance Measures/Targets	Refine Candidate Projects and collect Project Cost Estimates	Fiscal-Constraint Guidelines	
Project Prioritization 2.0 (research)	Needs Analysis (identify/collect candidate projects)	Project Evaluation/ Scenario Planning	Identification of Regional Priority Projects	
Develop Regional Priorities Surveys (scientific and public)	Scenario Planning (refine)	Environmental Coordination		

Year 1 (2016-2017)	Year 2 (2017-2018)	Year 3 (2018-2019)	Year 4 (2019-2020)	Year 5 (2020-2021)
Marketing 2040	Public Outreach: (visioning/transportation needs)	Public Outreach: Candidate Projects (collect and review)	Public Outreach: Review of Prioritization Scores	Public Outreach: Review of Constrained Project List
Marketing 2045 Kick-Off	Public Outreach: Scenario Planning	Information Campaign: Prioritization 2.0 (changes, importance)	Public Outreach: online/web tools fiscal-constraint	Note: Public Review/ Comment on Planning Documents throughout process
		School Outreach – Year 2/3 and Year 4		

Updated January 2019

Regional Travel Demand Model Update

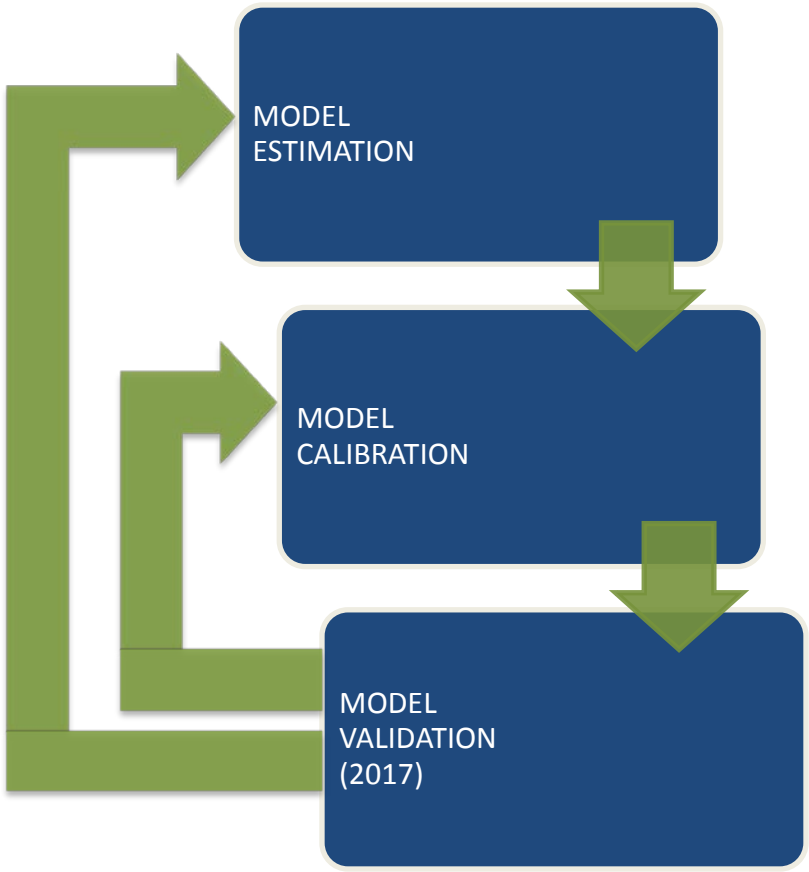
- Per Federal Regulations, base year data must be updated every 10 years
- Current Model: 2009 base year
- Updated Model: 2015 base year
  - Process initiated in 2016
- VDOT's Statewide Metropolitan Travel Demand Modeling On-Call Consultant
  - Anticipated completion: April 2019

- TAZ boundaries (2015)
- Demographic Data (2015, 2017, 2045)
- Highway and Transit Network (existing and planned)
  - Projects completed between 2009-2015, 2015-2017
  - Expanded model area (Franklin and Southampton)
  - Known/planned projects for forecast scenarios
- Traffic Count Data from VDOT and Localities (2015 and 2017)
- Transit Ridership Data and On-Board Survey Data (HRT, WATA, Suffolk Transit)
- HERE Network
- AirSage Cell Phone Origin-Destination Data
- StreetLight GPS Origin-Destination Data
- NHTS Data
- Observed Speed Data
- Toll Facilities Data
  - Information related to value of time studies previously conducted
  - Project specific volumes and current toll rates (2015 and 2017)
  - Planning level toll rate forecast
- Freight Data from VPA (Truck Zones, TEU forecasts: 2015 and 2045)

REGIONAL TRAVEL DEMAND MODEL UPDATE

- Calibrated to 2015
  - Established base year (cannot be more than 10 years old)
- **Validated to 2017**
  - **Utilizing 2017 traffic data to ensure model properly reflects travel behavior on 2017 network**
- Forecast year: 2045

- **<u>Baseline year for RCS and 2045 LRTP: 2025</u>**
  - Existing plus Committed Network:
    - I-64 Peninsula (Segments I, II, III)
    - I-64/I-264 Interchange (Phases I, II)
    - I-64 Southside/High-Rise Bridge (Phase I)
    - I-64/HRBT
    - I-64 Express (HOT) lanes (Segments I, II, III)



COORDINATION: 2045 LRTP AND RCS

2045 LRTP

REGIONAL CONNECTORS STUDY

Key Elements that should be consistent

Visioning

- Regional Vision for Connectivity, Economic Vitality, Quality of Life, etc.

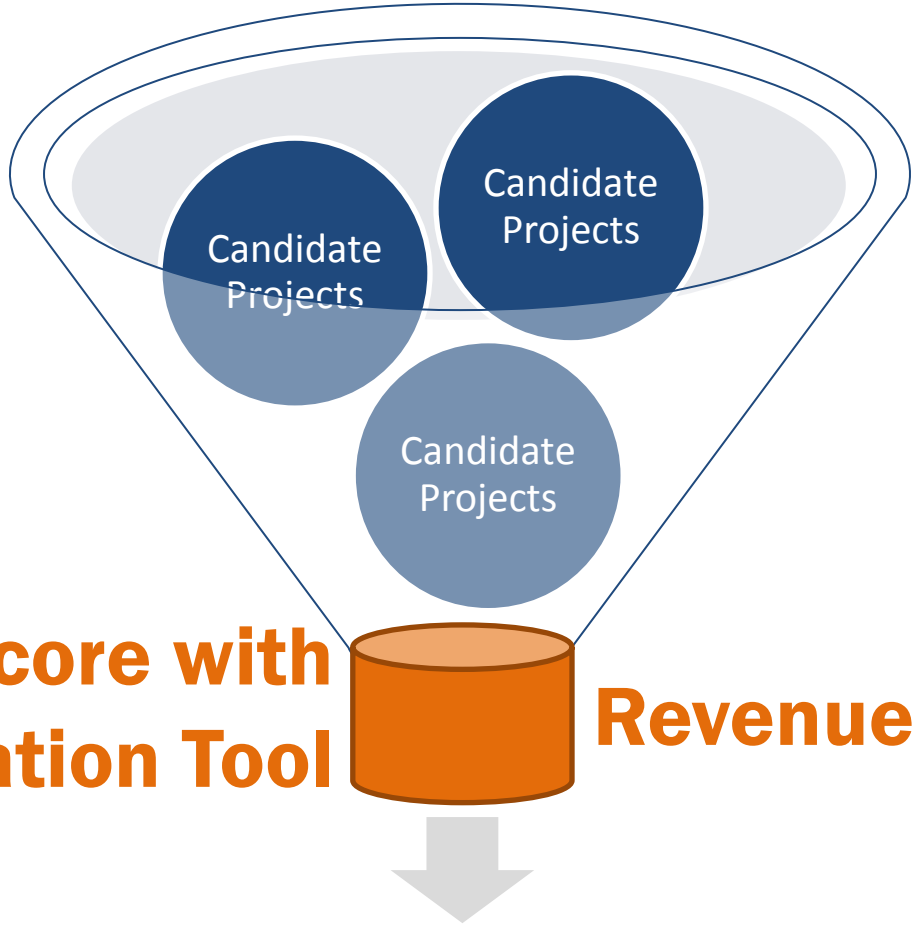
Scenario Planning

- Explore potential impacts of future trends
- Identify transportation investments that fare best

Prioritization

- Objective tool that evaluates transportation projects based on three components: Project Utility, Economic Vitality, Project Viability

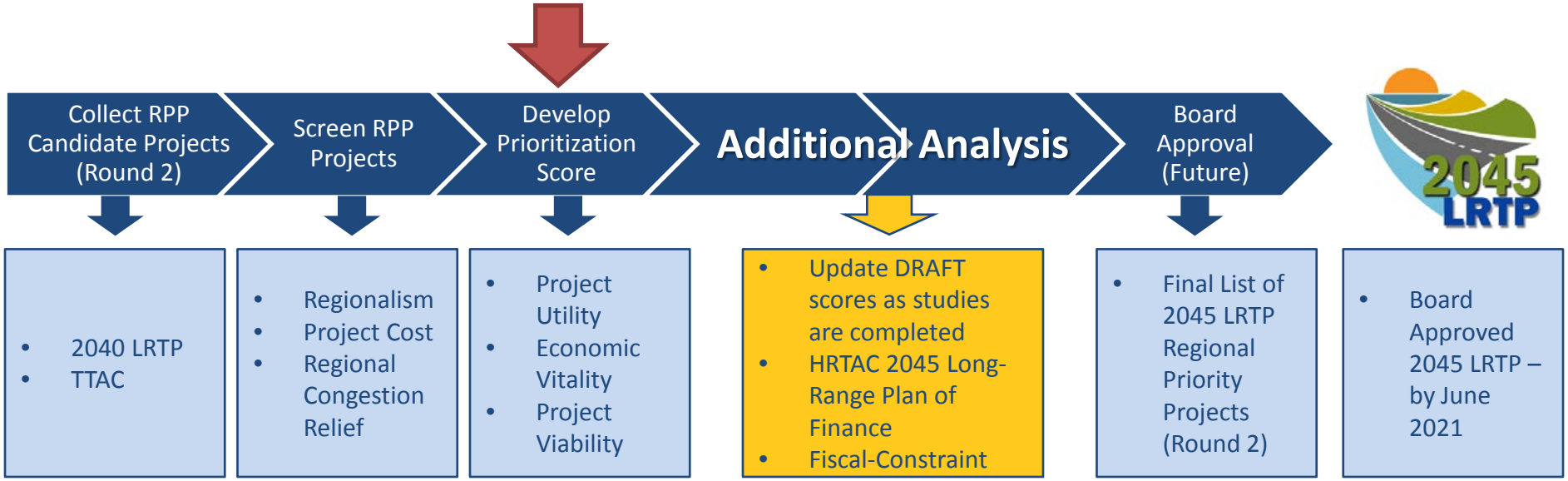
LRTP Project Evaluation Process



TOP PROJECTS INCLUDED IN LRTP

Regional Priority Projects (Round 2): Evaluation Process

- HRTPO Board Meeting – May 2017
  - Guidance from Board to establish a "pipeline" of Regional Priority Projects (Round 2)
- "HRTAC shall give priority to those projects that are expected to **provide the greatest impact on reducing congestion for the greatest number of citizens**" and "shall ensure that the moneys "shall be used for such construction projects."



Regional Priority Projects (Round 2): Evaluation Process

Assumptions for Regional Priority Projects (RPP) Project Evaluation

- Congestion Screen: Prioritization Tool
- Ongoing Regional Studies
  - I-64/I-264 Phase 3 Study
  - **Regional Connectors Study**
  - US Route 58 Study
- Update Project Prioritization Scores as studies completed

Project Utility (Project Effectiveness)

- Congestion
- System Continuity and Connectivity
- Safety and Security
- Cost Effectiveness
- Regional Significance

Economic Vitality (Potential for Economic Gain)

- Total Reduction in Travel Time
- Address the Needs of Basic Sector Industries
- Labor Market Access
- Increase Opportunity
- Impact on Truck Movement

Project Viability (Project Readiness)

- % Funding Committed
- % Design Complete
- Prior Planning Commitment
- NEPA Documents/Decisions

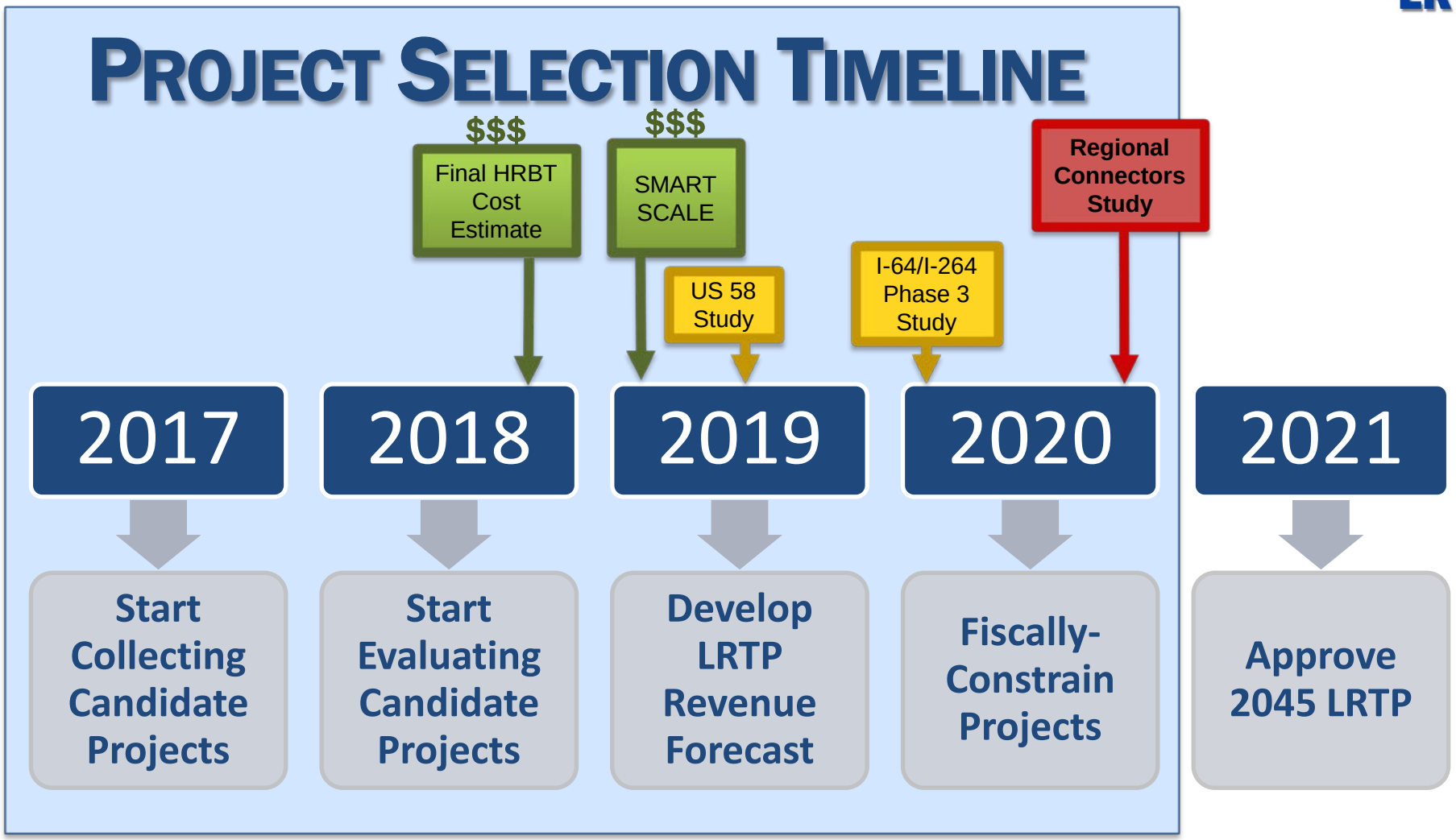
ELIGIBLE RPP CANDIDATE PROJECTS (ROUND 2) DRAFT SCORES – NOT IN PRIORITY ORDER

Candidate 2045 LRTP Regional Priority Project (Round 2)	Estimated Planning Level Project Cost, Current Year $ (in Millions)	DRAFT Project Utility Score (100 pts)	DRAFT Economic Vitality Score (100 pts)	DRAFT Project Viability Score (100 pts)	DRAFT RPP Round Total Score (Max 300 pts)
I-64/I-264 (Phase 3 Study - Round 1 Regional Priority Project) Construction Recommendations from Ongoing Round 1 Study of Remaining Movements	Unknown				**TBD**
I-64 Peninsula Widening					
I-64 Peninsula Widening to 6 Lanes - **Segment 4** (Rte 199 to James City/New Kent County line)	$300	82	85	25	**192**
I-64 Peninsula Widening to **8 Lanes** - Segment 1 (Jefferson Ave to Exit 247/Yorktown)	$500	80	85	25	**190**
I-664 Widening/MMMBT (Bowers Hill to Hampton Coliseum)	$4,000	79	95	15	**189**
I-264 Corridor Widening and Interchange Improvements					
I-264/Independence Blvd Interchange	$466	79	90	10	**179**
Entire I-264 Corridor from Military Hwy to Rosemont Rd (including adding capacity between Independence Blvd and Rosemont Rd and interchanges along corridor)	$2,400	76	85	3	**164**
I-264/Military Highway Interchange	$100	80	63	8	**151**
I-264/Rosemont Rd Interchange	$460	69	68	10	**147**
I-264 Widening from Independence Blvd to Rosemont Rd	$277	71	72	3	**146**
I-64/Denbigh Interchange	$350	76	95	5	**176**
I-564/I-664 Connector (Patriots Crossing)	$4,200	58	100	15	**173**
I-64/I-464 Interchange Improvements	$347	71	92	0	**163**
US 460/58/13 Connector 8-Lane Option (Bowers Hill to US 58 Bypass)	$590	62	35	13	**110**
Route 164 Widening (I-664 to Midtown Tunnel)	$195	67	29	8	**104**
US Route 58 Corridor	Unknown				**TBD**
Air Terminal Interchange (*project eligible as candidate Round 2 ONLY IF I-564/I-664 Connector is constructed)	Unknown*				**TBD***

Note: Evaluation of highlighted projects subject to change based on ongoing regional studies (red highlight indicates potential RCS recommendations)

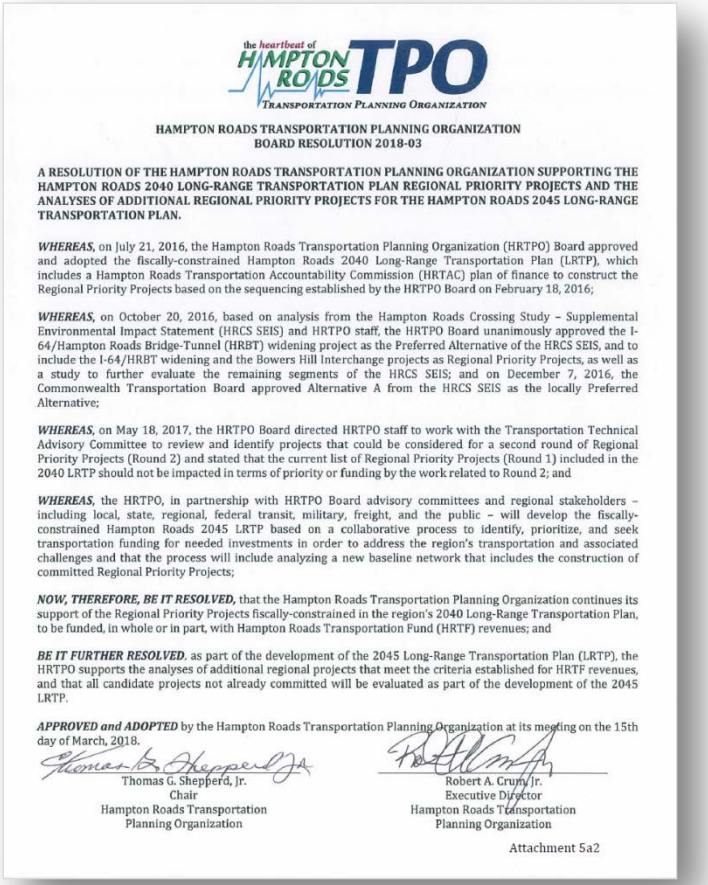
Regional Priority Projects: Next Steps

Project Selection Timeline



HRTPO BOARD RESOLUTION 2018-03

- "…develop the fiscally-constrained 2045 LRTP…**analyzing a new baseline network that includes the construction of committed Regional Priority Projects**…"
- "…the HRTPO supports the analyses of additional regional projects that meet the criteria established for HRTF revenues, and that **all candidate projects not already committed will be evaluated as part of the development of the 2045 LRTP**."



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TRANSPORTATION PLANNING ORGANIZATION

HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION
BOARD RESOLUTION 2018-03

A RESOLUTION OF THE HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION SUPPORTING THE HAMPTON ROADS 2040 LONG-RANGE TRANSPORTATION PLAN REGIONAL PRIORITY PROJECTS AND THE ANALYSES OF ADDITIONAL REGIONAL PRIORITY PROJECTS FOR THE HAMPTON ROADS 2045 LONG-RANGE TRANSPORTATION PLAN.

WHEREAS, on July 21, 2016, the Hampton Roads Transportation Planning Organization (HRTPO) Board approved and adopted the fiscally-constrained Hampton Roads 2040 Long-Range Transportation Plan (LRTP), which includes a Hampton Roads Transportation Accountability Commission (HRTAC) plan of finance to construct the Regional Priority Projects based on the sequencing established by the HRTPO Board on February 18, 2016;

WHEREAS, on October 20, 2016, based on analysis from the Hampton Roads Crossing Study – Supplemental Environmental Impact Statement (HRCS SEIS) and HRTPO staff, the HRTPO Board unanimously approved the I-64/Hampton Roads Bridge-Tunnel (HRBT) widening project as the Preferred Alternative of the HRCS SEIS, and to include the I-64/HRBT widening and the Bowers Hill Interchange projects as Regional Priority Projects, as well as a study to further evaluate the remaining segments of the HRCS SEIS; and on December 7, 2016, the Commonwealth Transportation Board approved Alternative A from the HRCS SEIS as the locally Preferred Alternative;

WHEREAS, on May 18, 2017, the HRTPO Board directed HRTPO staff to work with the Transportation Technical Advisory Committee to review and identify projects that could be considered for a second round of Regional Priority Projects (Round 2) and stated that the current list of Regional Priority Projects (Round 1) included in the 2040 LRTP should not be impacted in terms of priority or funding by the work related to Round 2; and

WHEREAS, the HRTPO, in partnership with HRTPO Board advisory committees and regional stakeholders – including local, state, regional, federal transit, military, freight, and the public – will develop the fiscally-constrained Hampton Roads 2045 LRTP based on a collaborative process to identify, prioritize, and seek transportation funding for needed investments in order to address the region's transportation and associated challenges and that the process will include analyzing a new baseline network that includes the construction of committed Regional Priority Projects;

NOW, THEREFORE, BE IT RESOLVED, that the Hampton Roads Transportation Planning Organization continues its support of the Regional Priority Projects fiscally-constrained in the region's 2040 Long-Range Transportation Plan, to be funded, in whole or in part, with Hampton Roads Transportation Fund (HRTF) revenues; and

BE IT FURTHER RESOLVED, as part of the development of the 2045 Long-Range Transportation Plan (LRTP), the HRTPO supports the analyses of additional regional projects that meet the criteria established for HRTF revenues, and that all candidate projects not already committed will be evaluated as part of the development of the 2045 LRTP.

APPROVED and ADOPTED by the Hampton Roads Transportation Planning Organization at its meeting on the 15th day of March, 2018.

Thomas G. Shepperd, Jr.
Chair
Hampton Roads Transportation Planning Organization

Robert A. Crum, Jr.
Executive Director
Hampton Roads Transportation Planning Organization

Attachment 5a2

RCS AND 2045 LRTP RELATIONSHIP

OPTION 1:

RCS continues concurrent schedule with 2045 LRTP

- RCS project recommendations will be considered for inclusion in the 2045 LRTP (along with other Regional Priority Candidate Projects)
- Consolidation of efforts (scenario planning, prioritization, public outreach, etc.)

RCS AND 2045 LRTP RELATIONSHIP

OPTION 2:

RCS developed separate from 2045 LRTP Schedule

- Potential RCS projects will not be evaluated for the 2045 LRTP as the study will still be underway
- Upon completion of the RCS, the 2045 LRTP could be amended to include 1 or more RCS projects, however:
  - Would require the removal of other project(s) to maintain fiscal-constraint
- Depending on completion date of RCS, 2045 socioeconomic forecast may not be valid and additional analysis might be warranted

Thank You!

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TRANSPORTATION PLANNING ORGANIZATION

ATTACHMENT 7B – PHASE 2 SCOPE COMMENTS

PHASE 2 SCOPE OF SERVICES OUTLINE COMMENTS

From: Mike Kimbrel <mkimbrel@hrtpo.org>
Sent: Thursday, December 20, 2018 3:48 PM
To: camelia.ravanbakht@outlook.com
Subject: Comments on RCS Phase 2 Scope of Services Outline

Camelia,

Upon review of the RCS Phase 2 Scope of Services Outline, HRTPO staff has the following comments:

1. Recommend performing the permitability assessments early in Phase 2, such as prior to Task 2 – Scenario Planning. There is no reason to include alternatives deemed to be unpermitable in the scenario planning and candidate project evaluation components of the study.

2. It appears that candidate projects are to be evaluated twice – once under Scenario Planning and again under Alternatives. This appears to be unnecessarily duplicative.

3. The second bullet on the last page of the outline is confusing (i.e. how exactly is the 80 runs computed)? In addition, some alternatives could be excluded from the model runs if they are deemed to be unpermitable. Recommend a rewrite of that bullet.

Thank you for coordinating the review of the draft Phase 2 Scope of Services Outline.

MK

Michael S. Kimbrel

Deputy Executive Director

Hampton Roads Transportation Planning Organization

The Regional Building 723 Woodlake Drive Chesapeake, Virginia 23320

mkimbrel@hrtpo.org| www.hrtpo.org | Phone: 757.420.8300 | Fax: 757.523.4881

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PHASE 2 DRAFT SCOPE OF WORK COMMENTS

From: Janek, George A CIV USARMY CENAO (US) <george.a.janek@usace.army.mil>
Sent: Monday, January 14, 2019 4:13 PM
To: Camelia Ravanbakht
Cc: Steele, Gregory C CIV USARMY CENAO (US); Lockwood, Keith B CIV USARMY CENAO (US); Walker, William T Jr CIV USARMY CENAO (US); Prisco-Baggett, Kimberly A CIV USARMY USACE (US); Kube, Peter R CIV USARMY CENAO (US); Anderson, Michael L CIV USARMY (US); Flowers, Jason R CIV USARMY CENAO (US); Pruhs, Robert S CIV USARMY CENAO (US)
Subject: Corps comments on Regional Connector Study, Phase 2 - Technical Analysis, Scope of Work

Camelia,

I know that these comments may be similar to others that we have made in the past, but here are comments relevant to the constructability and permits for the Regional Connector Study:

The consultant will be reviewing up to 10 alternatives, including five that were evaluated in the HRCS SEIS. The Corps will offer comments during the development of alternatives, but the alternatives development should follow a step-wise process. Milestones may include the following steps:

1. Defining a project purpose and need;
2. Developing a scoping and methodology for alternatives analysis;
3. Documenting the alternatives analysis, including the practicability of the different alternatives;
4. Developing the preferred alternative.

A similar process was used during the HRCS SEIS. To summarize, the alternatives must all have valid purpose and need, and the Corps is only able to permit the least environmentally damaging practicable alternative (LEDPA). It may be several years before the next permit application is submitted for a project associated with the Regional Connector Study, but information obtained during this alternatives analysis would eventually be included in such a permit application. Other permitting agencies, including the DEQ and VMRC, may also want to comment on the various alternatives as they are being developed.

Finally, the Corps would not permit an alternative that would obstruct or restrict navigation to the Craney Island Dredged Material Management Area (CIDMMA), or that would otherwise impair the Corps' ability to maintain and operate the CIDMMA. Likewise, the Corps will have to assess the different alternatives on the federally authorized Norfolk Harbor and Channel Federal Navigation Project and coordinate with maritime stakeholders on the impacts of those alternatives. More detailed information was provided in the USACE-Norfolk District Commander's letter dated June 29, 2016 to Ms. Angel Deem at VDOT. We provided a copy of this letter on November 16, 2018.

Thank you for the opportunity to comment on the RCS, Phase 2 - Technical Analysis Scope of Work. Please let us know if you have any questions.

George Janek
Norfolk District Corps of Engineers
Regulatory Branch
757-201-7135

==========

From: Eddy, Craig
Sent: Thursday, January 17, 2019 8:14 AM
To: 'jacksonc@portsmouthva.gov' <jacksonc@portsmouthva.gov>
Cc: Camelia Ravanbakht <Camelia.ravanbakht@outlook.com>
Subject: RE: Regional Connectors Study Documents

Hi Carl,

Thanks for your review comments. Camelia and I collaborated on our responses shown in red below. Please let us know if you have any further questions.

-Craig

Craig S. Eddy, PE, PTOE | Vice President | Michael Baker International
3200 Rockbridge Street, Suite 104| Richmond VA 23230 | [O] 804.282.1821 | [M] 804.814.1098
craig.eddy@mbakerintl.com | www.mbakerintl.com

We Make a Difference

From: Jackson, Carl <jacksonc@portsmouthva.gov>
Sent: Tuesday, January 15, 2019 4:02 PM
To: Camelia Ravanbakht <camelia.ravanbakht@outlook.com>; Eddy, Craig <Craig.Eddy@mbakerintl.com>
Cc: Baldwin, Bob <baldwinb@portsmouthva.gov>; Wright, James <wrightj@portsmouthva.gov>
Subject: EXTERNAL: RE: Regional Connectors Study Documents

Hey Camelia/Craig

Here are some preliminary comments I have on the Phase 2 Scope of Work:

- Although the scope mentions 14 public meetings (page 5), only 7 meetings are identified in Section 1.3 and the timeline only list two. Can you please reconcile? There will be two rounds of public meetings. Each round will consist of 7 meetings. The two rounds will occur at the times shown on the timeline.

- Is there any reason why the Churchland/Western Branch meetings are combined? We recommend a full public meeting in Portsmouth, possibly the Churchland Library, maybe a second one in Chesapeake near Bowers Hill? The Churchland/Western Branch meetings are not separate meetings, the slash was meant to signify either Churchland or Western Branch, not both. The locations are not set in stone and if we need more than 7 meetings to canvas the area, we will consider adding other locations.

- I caution use of the Regional Travel Demand Model with a 2015 baseline, which predates the MLK Extension, HOT Lanes and other facilities. TPO staff mentioned that there would be a 2017 validation. This would be a better baseline for consideration. A 2017 validation is under consideration for the RCS. The topic of 2015 base model with 2017 validation will be discussed at the January 29th Joint Meeting. Pros and Cons will be reviewed and a recommended action will be requested from the Joint committee members.

- Please consider a sub task to consider the impact of tolling and congestion in the region. The current scope assumes utilization of the updated model that VDOT and their consultant are currently developing. It is supposed to be available for use in March. It will include the facilities mentioned in the previous bullet and is capable of implementing tolls on facilities so those impacts can be studied. Congestion will be identified and assessed from model output, traffic analyses, and the microsimulation exercise for the alternatives. The Toll impact studies conducted by Dr Koch for the city of Portsmouth will be reviewed for the RCS Phase 2.

Thanks!

Carl E. Jackson, AICP

Manager of Transportation Planning

Portsmouth Planning Department

801 Crawford Street; Portsmouth, VA 23704

757-393-8836, x4205

Jacksonc@portsmouthva.gov

==========

From: Mike Kimbrel <mkimbrel@hrtpo.org>
Sent: Thursday, January 24, 2019 5:13 PM
To: camelia.ravanbakht@outlook.com; Eddy, Craig <Craig.Eddy@mbakerintl.com>
Cc: Robert A. Crum, Jr. <rcrum@hrpdcva.gov>; Rob Case <rcase@hrtpo.org>; Kendall Miller <kmiller@hrtpo.org>; Keith Nichols <knichols@hrtpo.org>; Dale Stith <dstith@hrtpo.org>
Subject: EXTERNAL: HRTPO Staff Initial Comments on RCS Phase 2 Draft Scope

Camelia and Craig,

Rob, Keith, and Dale provided comments in email, so I have compiled those below along with any comments I have. Kendall provided her comments in the draft scope document using Track Changes, so I have attached that file. I believe if you can address most or all of these comments in the revised version you send tomorrow, along with the revised schedule and cost pages, it will be beneficial for the members of the joint groups that will meet next Tuesday.

1. Page 3 - For the public meetings, the engagement team should also ensure transit availability for meeting locations.

2. Page 4 - Struck-through section – "The engagement team will assist HRTPO to plan the Regional Connectivity Symposium ..." Although this is not now part of the Phase 2 scope, it is an example of something the consultant team should be doing, not assisting HRTPO staff to do.

3. Page 4 - It doesn't seem like HRTPO staff should be the ones uploading information to the study website.

4. Page 7 - The second bullet indicates that an ITS system will be priced for where HOT lanes are proposed. Seems like ITS should be considered for all limited-access roadways regardless of whether there are HOT lanes or not.

5. Page 9 - Although the scope says congestion relief performance measures are to be determined, I'm not sure that specifically listing delay on existing crossings is appropriate at this point. The working group may decide to do that eventually, but we know that the benefits of some of the projects currently listed such as I-664 and Route 164 will largely be outside of these crossings.

6. Page 9 - Apparently this text—"the Corps will have to assess the different alternatives on the federally authorized Norfolk Harbor and Channel Federal Navigation Project"—should read — "the Corps will have to assess **the impact of** the different alternatives on the federally authorized Norfolk Harbor and Channel Federal Navigation Project".

7. Page 11 - In order to make the purpose of Task 4 (currently titled "Conduct Scenario Planning") clear, it is recommended that:
    a. the text "**A potential benefit of this process** will be to identify those transportation investments and projects that fare best in the analysis" be changed to "**The purpose of the scenario planning process** is to identify those transportation investments and projects that fare best in the analysis", and
    b. that the name of Task 4 be clarified to read "Task 4 – Conduct Alternatives Analysis via Scenario Planning".

I hope you find these comments helpful. We'll watch for the revised version of the docs tomorrow and then notify the recipients of the message to the Joint Meeting notice of their availability.

Thanks

MK

Michael S. Kimbrel

Deputy Executive Director

Hampton Roads Transportation Planning Organization

The Regional Building 723 Woodlake Drive Chesapeake, Virginia 23320

mkimbrel@hrtpo.org| www.hrtpo.org | Phone: 757.420.8300 | Fax: 757.523.4881

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REGIONAL CONNECTORS STUDY

PHASE 2 – TECHNICAL ANALYSIS

SCOPE OF WORK

Introduction

Phase 2 of the study will entail the technical analysis required to identify, assess, and prioritize potential transportation improvements to enhance connectivity between the Peninsula and the Southside of Hampton Roads. Phase 2 tasks are described in the following paragraphs.

TASK 1 – Execute Engagement Plan

This task outlines the process for the implementation of a Public Engagement Plan developed in Phase 1 of the Hampton Roads Regional Connectors Study (RCS). The subtasks associated with implementation of the Public Engagement Plan seek to inform, educate and engage stakeholders, residents, businesses, and travelers in the Hampton Roads Region. Phase 2 covers the period from January 2019 to April 2021. As such, the Public Engagement Plan will be reviewed on a quarterly basis to ensure alignment with the goals and objectives of the study and to address any additional information obtained through the engagement process. The Consultant Team will adhere to all applicable policies and procedures as directed by HRTPO and applicable federal guidelines covering MPOs and recipients of federal funds for planning purposes.

Commented [KM1]: 16 month period

Task 1.1: Task Management

The engagement task lead will provide a task-based progress report, participate in monthly team meetings and bi-weekly calls as appropriate with HRTPO staff and the project management team. Progress reports will summarize and report the percentage complete of each task and provide the basis for the monthly invoice. Progress reports will be provided to the project management team in acceptable format. The engagement task leader will attend Consultant Team meetings as needed, including but not limited to bi-weekly engagement team meetings, internal team meetings, and meetings with HRPTO staff as required. The engagement task leader will provide schedule updates to inform the master project schedule.

Task 1.2: Engagement Plan Review

The engagement team will perform a quarterly review of the RCS Engagement Plan. This review will include evaluation of the demographic profile, tools and tactics, metrics, stakeholder groups and key messages. Any revisions will be provided to HRTPO staff in track changes for review and acceptance. An electronic copy of each plan revision will be submitted.

Commented [KM2]: Who comprises the engagement team?

Task 1.3 Implementation of Engagement Program

The engagement team will conduct stakeholder outreach tasks to engage regional stakeholders as directed and approved by HRTPO. This will consist of outreach to the targeted stakeholders representing or living in the jurisdictions covered by HRTPO agreements. Activities to be implemented by the engagement team include:

Task 1.3a Study Mailing list and Comment Database

The engagement team will create, organize, and maintain a project database and mailing list to house contact details for agency representatives, elected officials, civic groups, businesses, and other important stakeholders. The engagement team will work closely with HRTPO to develop the agency and locality mailing list. The list will be used to disseminate project status information such as a study brochure and to notify people of upcoming in-person and online engagement opportunities.

Throughout the course of the study, the engagement team will expand and update the list by encouraging interested parties to refer others to the list or through mailing list signups via the study website. The engagement team will utilize database software such as MailChimp to maintain the database.

This database can also be used to house public meeting comments for extraction and future response development. The engagement will accept all public comments submitted during public outreach efforts and at public meetings. This effort will include: developing a public comment section of the database; collecting and cataloging all correspondence sent to the Consultant Team; categorizing all comments for inclusion in comment analysis or reports and creating the public outreach comment table summary for inclusion in the Engagement Report.

Task 1.3b Stakeholder Briefings and Presentations

The engagement team will schedule and conduct one~~two~~ round~~s~~ of stakeholder briefings with up to 40 regional stakeholders approved by HRPTO in Phase 1 (~~(~~to be held just before the first round of public meetings and after initial screening of alternatives)~~just before the first round of public meetings and after initial screening of alternatives and a second round after release of the draft final report)~~ and up to 25 community, nonprofit and business interest groups/organizations ~~surrounding each meeting series~~. Briefings and presentations task elements will include the development of handouts, PowerPoint presentations, maps, and the recording of meeting minutes as appropriate. A maximum of ~~130~~ 65 briefings and presentations will be conducted in Phase 2.

Task 1.3c Brochures, Factsheets and Handouts

The engagement team will prepare a maximum of ~~2~~ 1 meeting brochure~~s~~ to report on key project elements, milestones, and meeting dates. The~~wo~~ brochure~~s~~ will ~~would~~ be distributed at public meetings and made available on the project website.~~.~~ The content will include background information, schedule, study area maps, and other pertinent project information to support full participation by the public at the meetings. In addition, the engagement team will prepare one ~~two postcards~~ postcard or rack card~~s~~ to be featured as informational kiosks at community facilities. ~~These smaller, more portable formats,~~These smaller, more portable formats could highlight topics or special interests and could be

Commented [KM3]: I see this as potentially problematic to the work group.

Commented [KM4]: Just to make sure, what they are saying here, is that we will develop the list for the sub consultant, but that they will grow the list? I'm actually ok with that. T

Commented [KM5]: 65 Stakeholder briefings vs. one online public meeting and 7 scheduled meetings over a 16 month period. Is this correct?

Commented [KM6]: 1 brochure over a 16 month period is not enough

Commented [KM7]: How many brochures and comment cards will be created? For instance, "20,000 comment cards will be distributed to local libraries"

distributed at outreach event, community facilities, and as notification tools in advance of public meetings.

The engagement team will develop posters, flyers and meeting presentation templates for the study. The team will generate up to ~~10~~ 6 comment cards, fact sheets and/or flyers that highlight topics, promote events, or announce key milestones in the process. They may target specific audiences or interests or be oriented more generally. The fact sheets and flyers will support and supplement key messages throughout the process to keep the public and stakeholders informed.

Task 1.3d Public Meetings

The engagement team will work with HRPTO to plan, host, and facilitate~~host and facilitate~~ one~~two~~ rounds of seven public meetings to take place during Phase 2 of the study. Each meeting will have an informational component and targeted and purposeful input opportunities. Meetings will be developed in a way that manages stakeholder expectations, promotes transparency and accountability for the process, creates understanding, and builds consensus for decisions and recommendations. The team anticipates the ~~each~~ meeting series to be held as follows: 3 Peninsula meetings (Williamsburg, Newport News, and Hampton) and 4 Southside meetings (Norfolk, Virginia Beach, the Churchland/Western Branch area, and Suffolk). The engagement team will identity meeting locations for HRPTO and Working Group approval, conduct onsite walk through and verify ADA accessibility, coordinate with and book~~book~~ meeting locations, provide refreshments, book court reporters, ~~provide refreshments, book court reporters~~, develop draft advertisements for meetings for HRTPO and Working Group approval, coordinate placement in various media (newspapers, ad buys, etc.) and secure, if required, any sign language interpreter and/or language translator as appropriate. ~~in various media (newspapers, ad buys, etc.) and secure, if required, any sign language interpreter and/or language translator as appropriate.~~

The engagement team will work with HRTPO to develop~~offer~~ an online open house or live stream session plan for first round of public meetings to be held in early 2020. The first meeting series will include one online event. Meeting notifications will be made in accordance with HRTPO policies and will use the full mailing list and locality networks. Social media and web announcements will be used. Additionally, in advance of the first set of meetings, a printed ad announcement with meeting information will be published in local media as approved by HRTPO and the Working Group. ~~each meeting series for a total of two online events. Meeting notifications will be made in accordance with HRTPO policies and will use the full mailing list and locality networks. Social media and web announcements will be used. Additionally, in advance of the first set of meetings, a printed ad announcement with meeting information will be published in local media as approved by HRTPO.~~

An online open house is very much like a traditional public open house, but information and community discussions are offered through a web forum or webinar. A variety of options are available. With a webinar option, participants can register using the GoToMeeting software. Once registered for the online open house, participants can access a library of information, view a PowerPoint presentation, and ask questions of staff through an interactive messaging feature. Interactive polling is also available. Another option is to live stream a public meeting via Facebook or another online tool. Providing these easy and accessible online tools will encourage community members to convene online to learn more about a project, share their ideas, and provide input to decision-makers. The Consultant Team will explore options and present findings to HRTPO and the Working Group for approval.

~~Task 1.3e Regional Connectivity Symposium~~

Commented [KM8]: How many printed in total?

Commented [KM9]: Sub Consultant should handle the public meetings

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Commented [KM10]: Consultant should handle setting up of live stream sessions

Commented [KM11]: I see this has been omitted, but I want to know what takes it place in phase 2, to ensure that minority populations are adequately engaged?

~~To engage traditionally underserved populations the engagement team will plan in coordination with HRPTO staff a symposium with the HRTPO EJ Roundtable, students and faculty from local Historically Black Colleges and Universities, and Title VI advocacy groups. The two- to three-hour meeting will be a facilitated conversation focused on regional connectivity for the purposes of informing the study recommendations and priorities.~~

~~The engagement team will assist HRTPO to plan the Regional Connectivity Symposium, select event location, develop an event management plan, speaker talking points, review of collateral materials, and provide day-of-event coordination.~~

Commented [KM12]: Sub consultant should not assist TPO Public involvement with Tasks for the RCC. Subconsultant should conduct tasks for the RCC.

~~Task 1.3f Community Events and Outreach~~

~~The engagement team will plan up to 5 informal in-person pop-up events to introduce the project and to obtain stakeholder perspectives on regional mobility, transportation planning, and connectivity. The team will select event locations, schedule, develop event activity plans, determine required staffing, and review collateral material~~.

In addition, the engagement team will investigate the use of ad space on ziosks in the region and a project informational video to be priced for HRTPO and Working Group consideration and approval.

~~Task 1.3g Engagement Summary Report~~

~~The final outreach documentation for the project will clearly highlight all activities, what we heard, and how it was considered and addressed. The final outreach summary will aid in communications for the project by telling the story of the engagement process and how the plan represents an inclusive and community-supported vision for the future.~~

Task 1.4 Website Upgrades and Maintenance

The team will develop content for use and subsequent uploading to the study website by HRTPO staff. This effort includes initial content for review by the project management team and HRPTO along with regular content updates at project milestones and content updates regarding public meetings and other pertinent events.

Commented [KM13]: TPO staff should not be engaged on this task

Task 1.4a Prepare Website Content

The Consultant team will develop a creative brief for Phase 2 to orient readers to the Regional Connectors Study and its phases.

As a part of Phase 2, the study website will be populated with fresh information as it becomes available, including analysis results, meeting dates, reports, and meeting/briefing dates. Updates and reporting documents such as one-pagers will be shared as they become available. Templates for these updates will be designed and developed as a part of this task. New content, including microsimulation of alternatives' traffic operating conditions, will be integrated into the site, and new components will be

added to the site as needed to accommodate this content. Original copywriting will be delivered as a part of these updates, and publication will be managed by the PRR team. Regular hosting and maintenance of the study website will also be covered under this scope.

A key feature of Phase 2 will be the development of an Interactive Map, which will require coordination to establish visual goals, data sources, and other content needs. Once designed, this map will be integrated into the existing study website.

Phase 2 will also feature a new Scenario Planning Page Template which will appear at the top-level navigation on the site. New copy will be developed, and technical analysis elements performed by team members will be uploaded. This page will be designed to feature animations and other graphical elements.

As the Study gathers momentum, a plan will be created to report events on a regular schedule, and a post template for these events posts will be created.

Finally, survey results will be shared in the form of a final report. Survey-generated publications will be added, and categories for these publication types will be created and added to the website backend.

Timing:

- ~~28~~ 13 months

Meetings:

- ~~14~~ 7 public meetings
- ~~5 "pop-up" meetings~~
- ~~Regional Connectivity Symposium~~
- Meetings with HRTPO staff: ~~24~~
- Working Group Meetings: 2
- Steering Committee Meetings: 2
- Other/Stakeholder Meetings: ~~130~~65

Deliverables:

- Study mailing list (electronic format)
- Comment database (electronic format)
- Meeting notes for stakeholder briefings, presentations, and public meetings
- Brochures, fact sheets, and handouts and comment sheets for public facing ~~meetings~~activities meetings
- Public Meeting ~~Engagement~~ Summary ~~Report~~
- Website deliverables

TASK 2 – Development of Preliminary Alternatives

Commented [KM14]: What does this mean? Earlier, you indicate that the TPO staff will publish items to the RCC website

Commented [KM15]: January 2018 to April 2019 is 16 months

The intent of this task is to develop preliminary alternatives to a sufficient level of detail to enable construction, right-of-way, and utility relocation planning-level costs to be developed, as well as to be able to determine each alternative's potential to be permitted and constructed. Permitability and constructability are two criteria that will be used to help screen the preliminary alternatives down to candidate alternatives. More information on that screening is provided in Task 3.2.

It is assumed that a maximum of ten (10) preliminary alternatives will be developed. They will include the five (5) corridors not programmed for funding in the HRCS SEIS which are:

- I-664
- I-664 Connector
- I-564 Connector
- VA 164
- VA 164 Connector

In addition to these five preliminary alternatives, an additional five (5) alternatives will be developed as a result of suggestions made at stakeholder interviews and comments received during other project engagement activities.

To the greatest extent possible, the Consultant team will use existing information available for the conceptual design of the alternatives, which includes: typical cross sections, alignments for roadways on new location, and geometric configurations of connection points to existing roadways.

The Consultant team will develop alternatives at a conceptual level in MicroStation format utilizing aerial photography and available GIS data. Elements of the conceptual development of the alternatives will include the following subtasks.

Based on Corps of Engineers input, the Corps will offer comments during the development of the alternatives, but the alternatives development should follow a step-wise process. Milestones in the development process may include the following steps:

- Defining a project purpose and need
- Developing a scoping and methodology for alternatives analysis
- Documenting the alternatives analysis, including the practicability of the different alternatives
- Developing the preferred alternative

Task 2.1: Develop Geometry of Preliminary Alternatives

Task 2.1a Design Criteria

Engineering design criteria for the Preliminary Alternatives will be established based on VDOT and AASHTO standards for the design speed and type of facility. Alignments will be developed to minimize known environmental impacts, minimize the need for right-of-way, minimize costs, and accommodate forecast traffic volumes. Horizontal alignments and vertical profiles will follow existing geometry where existing roadways are being widened. The beginning and ending stations of the alignments will be tabulated as well as proposed curve data.

The design of the alternatives will also include traffic analyses of connection points to existing facilities. These analyses will be undertaken to ensure that the design can adequately accommodate projected traffic volumes. The traffic analyses will be limited to Highway Capacity Manual (HCM) methodologies for merge, diverge, and weave sections on freeways and capacity analyses for arterial intersections. They will not include micro-simulation analyses (these will only be performed on the Candidate Alternatives).

Task 2.1b Typical sections and cross-sections

Typical sections for each alternative will be developed to meet VDOT and AASHTO requirements. Materials will match existing facilities (concrete or asphalt pavement). A description of the proposed pavement design will be developed, including proposed pavement depths for construction cost development. New facilities will be assumed to be asphalt pavement, unless otherwise directed. Cross-sections will be developed at 500' intervals for the purposes of developing earthwork quantities. Additional cross-sections will be developed at critical locations to assist in determining tie-in points and environmental and right-of-way impacts.

Task 2.2: Hydraulics and Hydrology

Conceptual analysis will be performed for major drainage structures (Q_{100} > 500 cfs), to determine feasibility and cost impacts. A description of floodplain impacts will be included where there is proposed encroachment on a floodplain. Roadway drainage will generally be assumed to be an open system (ditches). Where bridge structures, roadway barriers, sound walls, or retaining walls are required, closed drainage systems (inlets and pipes) will be assumed. These areas and approximate limits will be determined as part of the alternative development. Stormwater management will be estimated based on pollutant loading calculations for new impervious area. Approximate sizing of Stormwater management facilities to mitigate increases in Stormwater runoff will be performed based on "rule of thumb" estimates, but no design will be performed.

Task 2.3: Structures

Any new, widened, or reconstructed structures will be described. The approximate size and location of proposed bridge work will be developed at a conceptual level. The location, limits, and height of retaining walls and sound walls will also be developed at a conceptual level.

Task 2.4: Utilities and Railroad Crossings

Any major overhead utilities (such as electrical transmission lines, and transformer stations) will be identified, and the impact of any conflicts will be discussed. Any railroad crossings within the proposed roadway improvements will be identified and impacts described.

The conceptual plans will be turned into graphics for inclusion into the study report.

Task 2.5: Planning Cost Estimates

A planning level cost estimate (present year costs) will be developed for each preliminary alternative based on the conceptual designs and potential mitigation estimates. Quantities for major items such as roadway pavement, earthwork, drainage structures, bridges and walls will be based on the conceptual plans. The quantities will be multiplied by the average unit costs for the Hampton Roads District to arrive at the construction cost for these items. The cost of the remaining disciplines will be based on allowances or lump sum costs as follows:

- Mobilization
  - Mobilization will be presented as a lump sum cost based on a percentage of construction cost.
- Traffic Control & Maintenance of Traffic (MOT)
  - Ground Mounted signs will be estimated on a "per mile" basis
  - A planning level estimate will be prepared for an ITS system where HOT lanes are proposed. The ITS system will be presented as a lump sum amount.
  - Traffic MOT will be based on a percentage of the total construction cost of the project, typically 4-5% of construction cost.
  - Lighting will be based on a "per mile" basis where applicable.
- Stormwater Management, E&S and Wetlands
  - It will be assumed that Nutrient Credits will be purchased for approximately 25% of the increased pollutant load
  - Plantings for constructed wetlands or bioretention facilities will be based on a lump sum cost based on VDOT District averages.
  - The presence of wetlands and streams will be based on publicly available wetland inventories (NWI) and topographic maps and coordinated with the work described in Task 3.2. The impacts will be based on limits or disturbance. Wetland mitigation costs will be based on a per acre cost; stream impacts will be based on a linear foot cost.
  - Erosion & Sediment Control (E&SC) costs will be presented as a lump sum cost.
- Preliminary Engineering (Design) costs will be based on a percentage of the total construction cost of the project.
- Right-of-Way estimated costs will be determined by categorizing the property (residential vs. commercial), quantifying the right-of-way taking and applying per acreage costs for partial takes. Total takes will include relocation costs where applicable. Unit costs for right-of-way and relocation costs will be based on VDOT unit costs for the Hampton Roads District.
- Utility Protection and Relocation costs will be based on observations of above ground features, and record research. Utilities will be aggregated by type (water, sewer, power, gas, communication) and assigned to a range of sizes. An allowance will be made for smaller utilities/distribution lines. Larger utilities/transmission lines will be based on a linear footage basis.
- Railroad crossings – A cost for railway flaggers and watchperson service will be estimated for proposed railroad crossings. The cost will be presented as a lump sum cost.

For any ferry service alternative, a planning level estimate will be prepared for the capital costs and operating costs of ferry service. This estimate will be based on a life cycle cost analysis. The length of the period used for life cycle analysis will be determined in conjunction with the HRTPO, prior to development. The design ferry vehicle will be the Pocahontas which is the largest ferry vehicle on

VDOT's Jamestown-Scotland ferry route and can carry tractor trailers up to 56,000 pounds. Capital costs will be developed for major items, with allowances for smaller, aggregated items. Major capital costs will include the cost of ferries and ferry infrastructure, including the cost of docks and bulkheads, approach roadways/parking lots, right-of-way and support buildings with communications and other utilities. Operating costs will include ferry and support staff, and O&M costs for the ferries and supporting infrastructure.

Timing:

- 10 months

Meetings:

- Meetings with HRTPO staff: 0
- Working Group Meetings: 1
- Steering Committee Meetings: 1
- Other/Stakeholder Meetings: 0

Deliverables:

- Roadway typical sections
- Roadway alignment plans
- Cost estimates

TASK 3 – Determination of Candidate Alternatives (Screen 1)

Evaluation criteria will be determined for use in screening the Preliminary Alternatives down to Candidate Alternatives. The criteria will include, but not be limited to:

- Congestion relief
- Permitability
- Constructability

The intent of this initial screening is twofold. First, it will eliminate from consideration any alternative whose permitability is questionable. Second, it will eliminate any alternative that does not compare favorably to the other alternatives in these criteria. An alternative matrix will be prepared to illustrate the characteristics of each Preliminary Alternative and to facilitate comparison between them.

Task 3.1 Conduct Congestion Relief Assessments

Congestion relief performance measures are to be determined through interaction with the Working Group and HRTPO staff, but could include:

- Percent reduction of Average Annual Daily Traffic (AADT) and delay on existing Hampton Roads crossings (Hampton Road Bridge Tunnel, Monitor Merrimac Memorial Bridge Tunnel, and the James River Bridge)
- Percent reduction in Average Daily Vehicle Miles Traveled (VMT)

The comparison of these measures is part of the screening of the Preliminary Alternatives. In this task, the Consultant Team will run each alternative using the travel demand model for the 2045 Baseline future and organize the outputs based on the approved performance measures characterizing congestion relief.

Task 3.2: Conduct Permitability Assessments

Overview

The purpose of this task is to evaluate the regulatory permitability of preliminary alternatives. All regulatory permitability evaluations will be conducted by reviewing Federal, State, and Local regulatory requirements in conjunction with existing environmental conditions. The study team will determine potential regulatory fatal flaws as well as develop a prioritization tool for the analyzed alternatives.

The Consultant Team understands that the Corps will not permit an alternative that would obstruct or restrict navigation to the Craney Island Dredged Material Management Area (CIDMMA), or that would otherwise impair the Corps' ability to maintain and operate the CIDMMA. Likewise, the Corps will have to assess the different alternatives on the federally authorized Norfolk Harbor and Channel Federal Navigation Project and coordinate with maritime stakeholders on the impacts of those alternatives.

Task 3.2a. Data Collection Review

The focus of this task will be to review and analyze environmental (natural and cultural resources) data created to develop the regional mapping, with the goal of establishing a unified dataset for GIS based environmental alternatives review. The regional mapping and environmental overlays will define where sensitive natural and cultural resources are located to determine if preliminary alternatives can avoid and /or minimize impacts as part of the risk analysis. In addition, should resources not be able to be avoided and/or minimized, mitigation concepts will be evaluated as part of the analysis. This information will form the basis for regulatory permitability evaluations as part of the alternatives analysis. The data will be evaluated to provide regional leaders and analysts with accurate information from which to make strong, technically-supported decisions regarding regulatory viability.

Task 3.2b: Develop permitability requirements and evaluation parameters

In this task, a set of evaluation parameters will be developed to evaluate environmental and regulatory viability of the alternatives. Each evaluation parameter will relate to the targeted environmental resources and potential impacts in conjunction with Federal, State, and Local laws and regulations to create a framework for risk analysis, fatal flaw analysis, and alternative prioritization.

In addition, this task will establish a series of regulatory permitability factors that will be used to measure how each alternative contributes to the direct and indirect environmental impacts to ensure there is not a negative environmental impact to the resources of the region. The factors will serve as the measures of effectiveness against which to test each alternative. A matrix will be developed that aligns each metric according to an established objective for the region.

A key aspect of the evaluation parameters that will be explored in this task will be integration with HRTPO's Project Prioritization Tool to ensure compatibility between measures that are used in this project with measures used by the HRTPO in their transportation planning and programming efforts.

The final performance measures will be vetted with the Working Group and HRTPO staff and, as needed, and will be reviewed with the Steering Committee. The result will be a consensus on the methods and metrics that will be used to gauge success in the regulatory evaluation of each of the alternatives.

Task 3.2c: Evaluate Preliminary Alternatives
The next step in the regulatory permitability analysis is to evaluate environmental factors in conjunction with the design and construction factors. The goal of this task is to assemble and evaluate the performance measures for each Scenario based on land use/environmental metrics, design alternatives, and reasonable constructability. This is a key step in understanding the comprehensive environmental impacts of each alternative.

All regulatory permitability parameters and evaluations will be conducted by reviewing Federal, State, and Local regulatory requirements in conjunction with existing environmental conditions. This information will be used to determine potential regulatory fatal flaws as well as develop a prioritization tool for the analyzed alternatives.

Task 3.2d: GIS based environmental alternatives review to identify risk factors for permitability and fatal flaw analysis
At this point in the process, all the environmental conditions and regulatory drivers will have been assembled to allow the alternative evaluation process to begin. The purpose of this evaluation will be:

1. Establish the interaction between design and constructability requirements with exiting environmental conditions
2. Evaluate potential high level direct and indirect environmental impacts for each alternative
3. Evaluate potential regulatory fatal flaws
4. Create a framework for comparison to establish a prioritization of alternatives

Task 3.3: Conduct Constructability Assessments
Constructability assessments will consist of a cost/benefit (C/B) analysis using the planning level cost estimates prepared in Task 2.5 and costs associated with mitigation measures identified in the permitability assessment. The benefit criteria will be determined as part of the Scenario Planning Task 4.3 – Defining Measures of Success. A threshold for an acceptable C/B ratio will be determined through interaction with the Working Group and HRTPO staff and subsequently used as a determinant in the screening of the Preliminary Alternatives.

Timing:

- 9 months

Meetings:

- Meetings with HRTPO staff: 1
- Working Group Meetings: 1

- Steering Committee Meetings: 1
- Other/Stakeholder Meetings: 0

Deliverables:

- Alternative Matrix
- Memo Summarizing Environmental Drivers and Parameters for Evaluation
- Memo Summarizing Environmental Data and Regulatory Permit Review
- Presentation materials, posters and slide decks of Deliverables for public outreach process

TASK 4 – Conduct Scenario Planning

The Regional Connectors Study (RCS) Regional Scenario Planning process will provide insight to decisionmakers regarding the need for and the benefits of alternative transportation investments ~~in light of~~considering potential alternative future trends. The Scenario Planning process will consider a baseline 2045 scenario and three alternative 2045 scenarios that present plausible futures with respect to economic, demographic and technology drivers. The scenario analysis will link alternative future economic and demographic trends with land use, and the resulting socioeconomic forecasts will be tested with the regional travel demand model to understand the impacts to transportation and other performance measures. The scenario outcomes will provide a series of benchmarks against which to test the resilience of different transportation investments. A potential benefit of this process will be to identify those transportation investments and projects that fare best in the analysis - that provide the most cumulative benefit to the region regardless of which alternative future scenario is tested. This will be done by testing each of the Preliminary Alternatives against each scenario to gauge how robust each investment is with respect to the range of possible futures.

Throughout the RCS Regional Scenario Planning process, the RCS Working Group will work closely with HRTPO staff and the Consultant team to provide guidance, affirm scenarios, select drivers and performance measures, and evaluate interim and final results. The RCS Steering Committee that is overseeing the overall RCS process will also be updated on the progress on the Regional Scenario Planning effort and will receive the results of the scenario testing of Candidate Alternatives for evaluation and consideration in the overall RCS process. The results will also be shared with the public to provide input as part of the final assessment of investment and policy insights in the study.

The economic modeling tasks require model access and data license charges that are detailed in Appendix A.

Task 4.1: Building the Base Data, Models, and Scenarios

Overview

The purpose of this task is to build a series of datasets and maps that will be used as the basis for the Scenario Planning effort. It will require close coordination with technical staff from the HRTPO and effective communication with the Working Group to ensure that each step is documented and vetted, particularly because the data gathered in this task will be the foundation for all the scenario and modeling work in the following months.

The conversion of substantial amounts of data into useful information is a significant challenge that requires clear and concise data analysis and synthesis. The Consultant Team's planning process will be built upon developing an accurate, living library through assembling the compiled data into an organized structure and accessible formats, and by analyzing the data in a coordinated, comprehensive manner. The data collected and used in this study will be updated to provide regional leaders and analysts with accurate information from which to make strong, technically-supported decisions.

Task 4.1a. Kick Off and Data Collection

The focus of this task will be to review and analyze available data (much of it collected in Phase 1), with the goal of establishing a unified dataset for analysis of future scenarios, as well as to enable a foundational "benchmarking" of the core indicators of success in the Region. In addition, in this task we will hold a kick off meeting with the Working Group to guide the start of the technical and analytic process.

Task 4.1b: Build GIS Base for Scenario Planning

In this task, the Consultant Team will build a layered base, using GIS data, of the entire region to be used as the platform for spatial allocations in the Scenario Planning model. The initial data we anticipate assembling (some of which has been collected in Phase 1) includes information on demographics, housing, transportation, environment, infrastructure, governance, employment, education, finance and a host of other measures. In addition, we will organize this data in spatial terms, as layers on the regional GIS base map for future analysis.

A key step in building this base will be the determination of the scale of the "grid" to be used as the surface for the analysis of the region. There are several options for this grid, based on how the region is broken down into modules for different analytic purposes. These include:

- The TAZs used in the Regional Model
- Census Block Groups
- Existing parcel data
- An overlay grid of equal squares sometimes used for analysis purposes – usually ranging from 30x30 meter squares to 40-acre squares.

The type of grid used for the land use allocations will be determined once all the data is assembled to see which scale of grid is most conducive to data collection and analysis. In all cases, however, regardless of the primary grid chosen for analysis purposes, all data will of necessity be translated to the TAZ geography ultimately for use in the Travel Demand Model.

Task 4.1c: Build Place Types

The land use allocation aspect of the Scenario Planning process will be conducted through a "Place type" approach. This involves converting the existing and future land use data categories in the region into a series of typical community or "place" types, with names such as residential suburban community, agricultural community or high-density mixed-use community with a commercial or residential focus. These Place types will be used both to profile the existing land use pattern in the region and to construct each of the future land use scenarios.

The process of building a set of Place types will involve several steps, including:

- Profiling existing and future land use types in the region to develop a unified set of Place types that describe regional development patterns
- Developing quantitative summaries of each Place type that summarize land uses, developed areas, and environmental data for each
- Developing summary 3-D visualizations of each Place type, to clearly explain them to stakeholders and the public

Available HRTPO datasets of existing and future land uses will be used as the basis for the Place types, and they will be checked against air photos and parcel data from sample locations in the Region to calibrate the Place types to existing conditions.

Task 4.1d: Build "Virtual Present" Map of the Region

The Virtual Present map is a picture of where development is currently located in the Region. Building the Virtual Present involves allocating the Place types onto the GIS base map of the region to match the existing pattern of development and land uses on the ground today. The existing parcel-based land use data from HRTPO will be used for this, but where there are any potential gaps in the parcel dataset, we can use National Land Cover data to fill in the missing areas. The output will be a GIS map of the Region that converts the existing land uses to Place types, with resulting data derived from the Place types about land use, environmental features, accessibility and transportation characteristics.

Task 4.1e: Land Suitability Analysis

The Land Suitability Analysis is a necessary step to build future scenarios and land use allocations. To be able to allocate new development based on growth scenarios, it is necessary to understand which lands are suitable for development from a regulatory, environmental and existing conditions standpoint. In this task, a series of new data layers will be added to the Regional GIS base that describe the suitability of the land for development or redevelopment based on:

- Federal, state or local government-owned lands
- Environmental constraints
- Utilities, infrastructure and easements
- Zoning and other regulatory constraints
- Flood and inundation zones
- Value of land and improvements (if parcel level data is available in GIS)
- Other constraints or factors influencing development potential

Together, the Virtual Present map and the Land Suitability Analysis overlays will define where new growth is both feasible and (to some extent) likely to occur. This information will form the basis for allocating future growth for the land use portion of the scenario development process.

Task 4.1f: Calibrate "Virtual Present" to TAZ control totals

An important aspect of this process will be to calibrate the allocations of land use to the control totals for socioeconomic data in the Travel Demand Model for each TAZ. This task will involve modifying the Place type allocation in the Virtual Present so that the population and industry employment totals

match the controls in each TAZ according to the Travel Demand Model. This will ensure that the Virtual Present map exactly matches the spatial distribution of population and employment data that is used in the Travel Demand Model so that the Scenario Planning model and the Travel Demand Model are in synch. This will also highlight any significant differences between the 2015 land use data and the socioeconomic data in the Travel Demand Model.

Task 4.1g: Review Data on Economic Conditions and Trends

To support later development of economic "drivers" for use in scenario planning, the Consultant Team must first develop a baseline understanding of current economic conditions as well as key trends and drivers of future economic conditions. To this end, the Consultant Team will review HRTPO's 2015 profile of socioeconomic data and its 2045 regional socioeconomic forecasts, developed with the use of the Regional Economic Models Inc. (REMI). HRTPO will provide the Consultant Team with methodological documentation.

The Consultant Team will review and document trends and forecasts of several critical socio-economic and demographic variables, including employment by sector, population, population by age, households, household size, labor force participation, and migration by county. The Consultant Team will discuss the forecast process and results with Greg Grootendorst, Chief Economist of HRPDC, as needed. To support interpretation of these forecasts, they will be benchmarked against other sources of information, such as Federal and State data, as well as proprietary sources such as Moody's Economy.com. The Consultant Team will further outline and discuss the transportation implications of the socio-economic and demographic changes identified, as well as the key underlying assumptions within the REMI model or other parts of the forecasting process that drive outcomes. The Consultant Team will review embedded assumptions related to the types of economic drivers that will subsequently define alternative scenarios, to ensure divergent futures can be correctly "pivoted" from the baseline forecast, and to identify any key sources of uncertainty.

In addition to the broad regional review, the Consultant Team will conduct a specific review of expected trends at Port of Virginia facilities. This will include a review of port demand forecasts contained in the travel model and documented in PoV's 2065 master plan and a meeting with PoV staff. This review will ensure alignment between the travel model and the port's expectation and will support the option for integrating shifts in port activity (including mode shifts) as potential scenario drivers later in the process.

Task 4.1h: Identification of Economic Opportunities

In this task, the Consultant Team will review available information on identified economic development opportunities within the region that may affect spatial and industry patterns of ~~long-term~~long-term regional growth. This is expected to include a review of information collected by HRTPO regarding potential large parcel economic development sites, as well as discussions with staff concerning the way in which these sites are treated in the TPO's future forecasting process. In addition, the Consultant Team will review the Hampton Roads Economic Development Alliance report that identified competitive industries that could drive additional regional growth including advanced manufacturing & logistics, shared services (e.g. ADP), and IT. The Consultant Team will also review HRPDC's most recent Regional Economic Development Strategy (REDS) and Regional Benchmarking Study and will hold 1-2 stakeholder meetings with regional economic development experts. This information together will provide a basis

for defining potential scenario economic drivers that are specific to the Hampton Roads Region, with attention given to different potential economic diversification futures.

Task 4.1i: Economic and Financial Implications of Alternative Development/Industry Mix

The Consultant Team will conduct an initial review of data and tools available to connect alternative development (by Place type or industry) and transportation scenarios to likely economic and financial outcomes. This preliminary research will help parameterize the range of economic performance measure options available, to be further refined in Task 3. At a minimum, this will involve coordinating with TPO staff regarding options to use the TREDIS economic modeling system with or without REMI. TREDIS's modular framework enables economic impact evaluation either with the built-in Regional Dynamics economic model, or through integration with REMI. As part of this TREDIS review, the Consultant Team will coordinate with TPO staff regarding freight data options that enable the connection of commodity movements to economic activity and impacts. The vFreight county-to-county trade flow database will be the default option. However, should the TPO have access to new Transearch data via VDOT, this option can be considered as well.

The Consultant Team will also review data on average square feet per employee and development value per square foot by different development types. This can support definition of scenarios in both development and employment terms. In addition, the economic Consultant Team will conduct a scan of available research on the relationship between public sector infrastructure costs and development typologies, as a potential variable of interest.

Task 4.1j: Review Data Describing Regional Travel Behavior

The Consultant Team will assess the data underlying the updated (2015/2045) HRTPO travel model for its adequacy in sustaining the performance of the model and for use in developing the identified potential model enhancements and extensions. The Consultant Team's data assessment will [a] identify shortcomings, if any, of existing data, [b] prioritize needed data collection, and [c] describe alternative data collection methods for cost-efficiently updating the underlying model data. The Consultant Team will prepare a preliminary cost estimate and schedule for acquiring any needed data. The assessment will include a review of any available information including previous studies, surveys, and reports characterizing personal and commercial travel behavior in the region.

Because of the model evaluation completed in Phase I of this Study, there were several recommended actions based on acquiring GPS origin-destination data:

- Evaluate travel patterns associated with major facilities and harbor crossings. With respect to this study, it will be particularly important to understand and have the model represent well the travel markets that use the Harbor crossings.
- Evaluate and update external travel (XX, XI, IX) with respect to the region.
- Assess need for special generator representation. Determine travel patterns associated with the ports and any other major freight traffic generators in the region.

This review will include any data collection and analysis documented because of the ongoing HRTPO model modifications by VDOT to not duplicate efforts.

Task 4.1k: Evaluate Updated Regional Travel Demand Model

HRTPO model modifications are currently underway by VDOT and its consultants, including a base year update to Year 2015 - accommodating HRTPO's long range planning process. The Consultant Team is actively coordinating with VDOT and their consultants to incorporate recommendations deemed critical to this study for this model update. Once the model update is complete, the Consultant Team will conduct an evaluation of the updated model targeted to the application of the model for use in the RCS.

The Consultant Team will review available documentation describing the updated HRTPO model and associated performance. The review will include an examination of currently available base and future year model sets reflecting the updates, and the Consultant Team will execute the model set(s), mechanically verifying results and the implementation of updates as described in the documentation, as well as model performance, as needed to conduct a study-focused validation to ensure the model well represents the travel markets that use the Harbor crossings.

The Consultant Team will review and summarize the current model structure, modeling procedures, software, hardware, run scripts, and data flows. The Consultant Team will also review various model parameters, including vehicle and truck trip generation rates. Based on its review, the Consultant Team will describe the types of analysis that the model process is currently capable of supporting. If necessary, in concert with feedback from HRTPO staff, the Consultant Team will identify potential enhancements and extensions to the modeling process that will broaden and/or integrate the model's analysis capabilities to address study needs. The list of potential model enhancements will be prioritized by the Consultant Team. The Consultant Team will outline the steps and actions needed to implement each enhancement.

This review may recommend further modification and testing of the model sets and will produce a list of recommended enhancements for implementation. The Consultant Team will summarize review findings and recommendations in a technical memorandum. After allowing HRTPO sufficient time to review the draft recommendations, two Consultant Team members will meet with HRTPO staff at the HRTPO office to discuss and finalize any necessary model modifications.

Timing:

- 3+ months (note that the 2045 regional travel demand model will need to be available for some parts of Task 4.1)

Meetings:

- Meetings with HRTPO staff: 3
- Working Group Meetings: 3
- Steering Committee Meetings: 0
- Other/Stakeholder Meetings: 3-4

Deliverables:

- Scenario Planning Methodology White Paper
- Memo Summarizing Economic Trends and Opportunities
- Memo Summarizing Travel Behavior Data Review
- Memo Summarizing Travel Demand Model Evaluation
- GIS Base for Scenario Planning Model
- Place type Dataset

- 3-D Visualizations of Place types
- Virtual Present GIS Mapping
- Land Suitability GIS Mapping
- TAZ Calibration of Place types
- Presentation materials, posters and slide decks of Deliverables for public outreach process

Task 4.2. Defining Alternative Future Scenarios

Overview

This task is a crucial one in the overall process as it defines the set of alternative future scenarios that will be the basis for all the subsequent analysis and modeling in the project. There are two broad aspects to defining alternative scenarios. One is the engagement aspect and the other is the technical aspect. Each one is outlined below separately but, these two aspects will need to work together, with each major technical milestone having full input and vetting from the HRTPO staff, the Working Group and the Steering Committee.

It is assumed that there will be up to three Alternative Future Scenarios, in addition to the 2045 Baseline Scenario described in Task 5 below. As discussed in Phase 1 of this project, the 2045 Baseline Scenario is assumed to be HRTPO's 2045 forecast that is being finalized for the Travel Demand Model. The Alternative Future Scenarios will assume a level of growth that is in addition to the 2045 baseline growth in the model.

Task 4.2a: Identify Framework Scenarios

In this task, the Consultant Team will collaborate with the Working Group to define and affirm up to three draft "framework" scenarios. The Framework Scenarios will be simplified narrative descriptions of each scenario in plain language that describe the storyline for each alternative future. Through a series of work sessions with HRTPO staff and the Working Group, a set of draft frameworks will be developed, each of which profiles a different economic and growth future for the region. Some work has been done on this already in the region and the Consultant Team will be mindful not to reinvent the wheel but start with whatever has already been vetted with stakeholders to date.

Task 4.2b: Affirm Framework Scenarios

In this task, the Consultant Team will involve the Working Group and Steering Committee in a process of vetting and affirming the Framework Scenarios. Various techniques may be used to build consensus and affirmation in this task, including:

- Website questionnaires and interactive surveys (if broader exposure/input is desired)
- Focus group sessions with stakeholder groups
- Work sessions with the Working Group and Steering Committee

The result will be consensus on the part of the Working Group and Steering Committee on the three Alternative Future Scenarios that will go forward in this project, described in basic framework terms, without any quantitative analysis at this stage in the process.

Task 4.2c: Define Draft Drivers

Once the Framework Scenarios have been defined and vetted, the Consultant Team will use its research and technical expertise to propose a set of draft Drivers that will be used to develop the future scenarios. These drivers will be major change parameters in basic categories such as:

1. Demographics and location choice
2. Economy
3. Technology

Each category will have a set of quantitative drivers associated with it that will be used to construct the alternative future scenarios. Examples of the quantitative aspects of the drivers include things like:

- Population change by age cohort
- Place type location preference by age cohort
- Employment change by industry
- Adoption rate of transportation technology by Place type and/or age cohort

Drivers can sometimes be paired or interrelated to identify a potential outcome of interest. As an example, an increase in the number of workers with a college degree could be a driver of growth in knowledge-intensive industry sectors. Similarly, trends towards e-commerce can yield changes in the composition of truck trips and mileage on the transportation system.

The result of this task will be a set of Draft Drivers that can each be quantified and serve as model inputs for constructing the quantitative aspect of each of the future scenarios.

Task 4.2d: Define Scenario Socioeconomic Control Totals and Aggregate Spatial Assumptions

The Consultant Team will use the Drivers and the Framework Scenarios to create a set of socioeconomic control totals and aggregate spatial assumptions for each future scenario. The control totals will set the future levels of population and employment by industry for each scenario. Aggregate spatial assumptions will describe the decision-rules for spatial allocation of employment and population and will be developed by relating economic drivers to some combination of (a) Place types, (b) Specific major development sites, and (c) Existing clustering dynamics of industries within the region.

Once we identify drivers for each scenario, we will scan the academic literature and regional information collected in Task 1 to understand how each is related to changes in employment, population, and the spatial distribution of activity. This means that if the selected driver is, for example, level of educational attainment, we will use existing research to estimate the expected increase in regional employment associated with a certain change in the number of workers with a college degree. Similarly, a driver of reduced military spending would result in targeted decreases in the defense sector at military sites in the region. A successful diversification scenario might then also add employment to identified competitive industries, with spatial assumptions derived from the literature or based on existing clustering dynamics. Adjustments like these are what will differentiate the baseline scenario from a set of alternative scenarios.

This task will involve close coordination with technical staff to ensure that each scenario's control totals are realistic, plausible and fit within the storyline of each Framework Scenario defined in task 2a above.

We will also fine-tune the scenario drivers if we find that the anticipated effects of different drivers within the same scenario may have opposite effects, thereby diluting the overall impact of the scenario.

For the purpose of having apples-to-apples comparisons among scenarios, our starting assumption is that all three Alternative Future Scenarios will have the same overall regional control total for population and employment, although the spatial distribution and type of employment will vary for each scenario. However, this will need to be affirmed with staff and we are flexible if the staff's desire is to use different control totals for the scenarios, as long as the implications of this for the scenario analysis are clear for all.

Task 4.2e: Define Scenario Changes in Travel Behavior/System Performance

Changes in travel behavior are dictated by the nature and spatial allocation of activity, changes in perceived and actual costs of travel, availability of personal transportation modes, freight modal preferences associated with industry mix, and the efficiency of the transportation infrastructure in accommodating demand. Once we identify drivers for each scenario, we will scan the academic literature and regional information collected in Task 1 to understand how each is related to changes in all independent variables affecting travel behavior. The Regional Travel Demand Model, in conjunction with appropriate input data and parameter adjustments, will account for these behavior changes. With respect to drivers such as demographics and the economy, socio-economic data inputs to the travel model will reflect changes to travel behavior. Advances in technology such as ITS and connected/autonomous vehicles (C-AVs) will also impact the spatial allocation of land use. Technology will induce travel behavior changes that will depend on scenario assumptions regarding:

- market penetration of these technologies
- level of auto ownership (affects number of privately owned vs. shared C-AVs, zero occupant vehicle (ZOV) trips and other factors/behaviors related to mode share)
- parking location
- traveler values-of-time (and their effect on average trip lengths)
- trip rates (reflecting induced demand and mobility by seniors, children, and disabled)
- effective capacity of roadway infrastructure (due to platooning, higher density traffic flows)

Some of these variables will vary by Place type or other driver such as age cohort, facilitating assessment of the relationships between land use allocation and transportation performance. This task will involve close coordination with technical staff to ensure that each scenario's assumptions are realistic, plausible and fit within the storyline of each Framework Scenario defined in Task 2a. above.

Task 4.2f: Affirm Drivers and Scenario Parameters

In this task, the Consultant Team will use a similar process as in task 2b, above, to reconnect with the advisory groups to affirm each Scenario again in a quantified format with control totals, aggregate spatial assumptions, and changes in travel behavior for each. The result will be a consensus on the total amount and types of growth that each scenario will analyze in the subsequent tasks, as well as high-level parameters governing spatial distribution across the region and changes in travel behavior that will subsequently be reflected in the travel model.

Timing:

- 2-3 months

Meetings:

- Meetings with HRTPO staff: 2
- Working Group Meetings: 2
- Steering Committee Meetings: 1-2
- Other/Stakeholder Meetings: 2

Deliverables:

- Tech Memo on Framework Scenarios
- Infographics and Visualizations of Framework Scenarios
- Tech Memo on Drivers
- Tech Memo on Control Totals, Aggregate Spatial Assumptions, and Travel Parameters

Task 4.3: Defining Measures of Success

Overview

This task will establish a series of economic, land use and transportation factors that will be used to measure how each scenario contributes to a successful future for the Hampton Roads region. The factors will serve as the measures of effectiveness against which to test the overall regional impact of each scenario. It is anticipated that there will be numerous measures, but they will be grouped according to broad goals and objectives derived from the LRTP and RCS planning processes. Alignment with the HRTPO Project Prioritization Tool measures is also a priority. A matrix will be developed that aligns each metric according to an established objective for the region. The example below is purely for illustration and the objectives and metrics will be developed in coordination with staff and Working Group and relate to the overall vision for the region:

OBJECTIVE	MEASURE	METRIC	DATA SOURCE
Improve Regional Accessibility	Labor market access	Population within a 40-minute travel time of employment centers	Travel demand model (population and travel time skims)
	Job accessibility of ~~low income~~low-income residents	Jobs accessible within a 40-minute travel time	Travel demand model (population and travel time skims) and/or network-based accessibility measure
Preserve the environment and enhance resiliency	Resilient development patterns	Square feet of development in non-flood-prone areas	Land use allocation model and GIS data on flood-resilient areas
	Impact on unprotected natural areas or green infrastructure	Location of sensitive but unprotected natural areas; developed, or development near (1/4 mile).	A composite of natural features, development footprints
Enhance economic vitality	Cost of congestion	Monetized reliability costs borne by travelers	TREDIS and travel demand model to analyze VMT/ VHT subject to congestion
	Economic impacts of congestion	Forfeited jobs, wages, income, or GRP	TREDIS and travel demand model
	Good jobs	Average wages per worker	REMI and Adjusted Scenario Industry Composition

Task 4.3a: Develop Draft Performance Measures

In this task, a set of performance measures will be developed in four categories – land use, environmental, transportation, and economic. They will each relate to the specific modeling methodology used – the land use model and related GIS data, the Travel Demand Model, and the economic models (including TREDIS, REMI, and spreadsheet "models"). Many of these measures will be of aggregate regional performance. However, the Consultant Team also expects some subset of targeted measures related to cross-harbor connections, in support of understanding the need for improved regional connectors.

Task 4.3b: Correlation with HRTPO Project Prioritization Methodology

A key aspect of the performance measures that will be explored in this task will be integration with HRTPO's Project Prioritization Tool. Coordination between the Scenario Planning process and the HRTPO's project prioritization process will be a priority, and the Consultant Team will work with the staff to ensure compatibility between measures that are used in this project with measures used by the HRTPO in their transportation planning and programming efforts.

Task 4.3c: Affirm Final Performance Measures and Develop Performance Dashboard

The final performance measures will be vetted with the Working Group and HRTPO staff and, as needed, will be reviewed with the Steering Committee. The result will be a consensus on the methods and metrics that will be used to gauge success in the evaluation of each of the scenarios in subsequent tasks.

Once the final performance measures have been affirmed, the Consultant Team will develop a user-friendly interface to display the performance measures in a graphic dashboard format for use in public presentations and on the project website. The performance dashboard will allow a consistent way of comparing the scenarios and will show quantitatively how well each scenario helps the Region achieve its overall vision and goals for the future. It will be delivered in a format that allows HRTPO staff to use and update it later.

Timing:

- 2 months (measures)
- 1 month (dashboard)

Meetings:

- Meetings with HRTPO staff: 3
- Working Group Meetings: 1
- Steering Committee Meetings: 1 (optional)
- Other/Stakeholder Meetings: 0

Deliverables:

- Tech Memo on Performance Measures
- Performance Dashboard
- Infographics for Performance Measures

Task 4.4: Evaluate 2015 Regional Conditions

Overview

At this point in the process, all the elements will have been assembled to allow the scenario modeling process to begin. The first step in this process is to model and evaluate current (2015) conditions as a benchmark for future comparisons. The purpose of this initial model run is threefold:

1. To verify the modeling approach and outputs of the three modeling efforts – land use, economic and travel demand models – and make sure they are working in concert
2. To establish a picture of the region today using the approved Performance Measures to profile current conditions in the region for comparison against future scenarios
3. To calibrate the scenario model inputs and perform a "reality check" so that the model outputs plausibly profile current conditions from the standpoint of stakeholders

Task 4.4a: Evaluate 2015 land use, economics and travel conditions

Under this task, the Consultant Team will evaluate current regional conditions using information from the land use, economic and travel demand models and organize the outputs based on the approved performance measures and the Performance Dashboard as described above. In the case of the land use model, this involves calibrating and running the model to reproduce current conditions. The Travel Demand Model will be calibrated in Task 1k. above, so this task will just organize the outputs into the Performance Dashboard. Economic evaluation/modeling will involve a hybrid approach of spreadsheet-based evaluations and TREDIS-based modeling of the economic implications of avoidable transportation costs experienced by transportation system users and non-users because of system performance. The latter analysis will be supported by standard transportation data available from the regional travel demand model (e.g. network skims, O-D matrices, and V/C ratios).

While the exact nature of this analysis will be determined collaboratively within task 4.3, this analysis can potentially quantify the forfeiture of travel time and operating costs driven by congestion, lack of reliability, and other network constraints, as well as additional societal costs associated with degradation of environmental or safety conditions. It may also visualize and quantify forfeited labor and freight markets, as well as identify which facilities within the regional network contribute the most to the loss of regional accessibility and associated business productivity.

Task 4.4b: Validate Model Outputs and Data for 2015 Performance

Once an initial set of 2015 performance outputs have been generated from the models, this task will involve a validation of the data to ensure that it is a plausible portrayal of conditions in the Region for 2015. The Consultant Team will compare the 2015 land use model outputs against available data on regional economic and demographic conditions as well as other documented areas of performance to ensure that they generally match. This task may involve some adjustment of the model inputs and additional model runs to ensure that the 2015 model accurately outputs known measurable conditions in the Region.

Timing:

- 5 weeks

Meetings:

- Meetings with HRTPO staff: 2
- Working Group Meetings: 1
- Steering Committee Meetings: 0

- Other/Stakeholder Meetings: 0

Deliverables:

- Land Use, Economic and Travel Demand model runs/evaluations for 2015 Current Conditions
- Dashboard Outputs for Model Runs
- 2015 Land Use Allocation and Transportation Model sets for HRTPO use

Task 4.5: Modeling the 2045 Baseline Alternative

Overview

At this point in the process, based on work from the previous tasks, we will have a working set of models that portray an accurate picture of conditions in the Hampton Roads region for 2015. The next series of tasks will create the "baseline" alternative for 2045 that matches HRTPO's Travel Demand Model assumptions and outputs. This first scenario will be called the 2045 Baseline Scenario because it will be the standard of comparison for all the other future scenarios. It establishes a baseline pattern and level of growth in the Region that has already been vetted with the Region's public and stakeholders through the HRTPO's transportation planning process. All the other future scenarios will use this Baseline as a starting point in adding further growth based on enhanced future conditions in the "storyline" of each scenario. To correlate to HRTPO's long range transportation planning process, we will ensure the following assumptions for the 2045 Baseline Alternative:

- Use the 2045 future socioeconomic forecasts by TAZ from the Travel Demand Model
- Use the 2045 Existing + Committed network from the Travel Demand Model

Task 4.5a: Developing the 2045 "Virtual Future" map of the Region

In the same process as creating the Virtual Present, above, this task will assign the Place types according to the 2045 land uses from the Travel Demand Model. We will use the 2045 control totals from the Travel Demand Model to ensure correlation of the socioeconomic data with the Travel Demand Model. This task will involve iterations and cross checking so that the Place types assigned within each of the Region's 1,500 TAZs each contains the same total population and employment numbers as the Travel Demand Model.

Task 4.5b: Conduct 2045 Baseline model runs for land use, economics and travel demand models

Under this task, the Consultant Team will conduct model runs of the land use, economic and travel demand models for the 2045 Baseline future and organize the outputs based on the approved performance measures outputted into the Performance Dashboard as described above.

Once the model outputs have been organized into the Performance Dashboard, a clear picture of the 2045 state of the Region based on current trends and policies should emerge.

In addition, this task will involve running the outputs from the Travel Demand Model through the TREDIS model (as in all subsequent scenario tests from this point on). This task will also involve affirming the assumptions and outputs to-date with the Working Group as an important check in before proceeding to the next steps of testing alternative future scenarios. Note that the performance output of this model run, should it take place before similar model runs for the overall RCS study, will provide useful information regarding future deficiencies.

Timing:

- 6 weeks

Meetings:

- Meetings with HRTPO staff: 2
- Working Group Meetings: 1
- Steering Committee Meetings: 0
- Other/Stakeholder Meetings: 0

Deliverables:

- Land Use Allocation for 2045 Baseline Conditions
- Land Use, Economic and Travel Demand model runs/evaluations for 2045 Baseline Conditions
- Dashboard Outputs for Model Runs
- Presentation materials, posters and slide decks of Deliverables for public outreach process
- 2045 Land Use Allocation and Transportation Model sets for HRTPO use
- Economic Model sets for HRTPO use

Task 4.6: Building the Alternative Scenarios

Overview

Up to this point, the workflow has concentrated on developing quantifiable models and profiles of conditions in the Region for 2015 and for the adopted 2045 vision from the Travel Demand Model. The next series of tasks will focus on developing and testing alternative future Scenarios for the year 2045 based on the scenario "storylines" developed in earlier tasks of this process. These next tasks will involve operationalizing the Scenarios with the assumptions (i.e., future economic and land use forecasts, future land use allocation for each scenario, technology assumptions in the Travel Demand Model, etc.) that have been developed to define each Scenario.

It is important to note that each of the alternative Future Scenarios will allocate growth that is in addition to the growth inherent in the 2045 Baseline model from the Travel Demand Model. This means that each Scenario is dealing with an additional increment of growth above and beyond the assumed growth for 2045 in the Travel Demand Model. In addition, it is important to note that each Scenario will use the same Existing + Committed transportation network as in the 2045 Baseline Scenario. These two considerations should help in maintaining consistency and provide an 'apples-to-apples' comparison among scenarios.

Task 4.6a: Develop Land Use Allocations for 3 Alternative Future Scenarios

The first step in building each of the alternative future Scenarios from a land use standpoint is to "paint" the appropriate scenario-based pattern of land uses (using Place types) onto the regional Base Map. This pattern will be based on the future assumptions about land uses and growth, including demographic drivers, described in each Scenario. Each Scenario will have assumptions about how and where future growth will happen in relation to the economic future that each Scenario envisions. These assumptions are likely to incorporate both specific assumptions about growth opportunities derived from identification of industry clusters or large development sites, as well associations between

economic growth patterns and Place types. Based on that economic future, we will allocate to Place types by TAZ to match the overall control totals under each Scenario.

The product of this task will be a series of land use allocations, one for each future Scenario, that are derived from the growth and economic profiles of each Scenario. These land use allocations will then be used as the basis for the model runs in Task 7 to determine the impacts of each scenario.

Task 4.6b: Convert Land Use Allocations to TAZ Spatial Datasets for 3 Scenarios

Once the land use allocations for each Scenario have been completed, it will be necessary to translate them to the socioeconomic data required by the Travel Demand Model. For each Scenario, this involves converting the grid-based Place type map into the TAZ map with associated socioeconomic data used for the Travel Demand Model. The population and employment data built into each Place type will be converted to a TAZ geography for the Travel Demand Model.

This is an important step as it will allow both the Travel Demand Model and the TREDIS economic model to use the same assumptions for growth and land use for each Scenario.

Task 4.6c: Confirmation/Coding of Candidate RCS projects for testing

Transportation improvements defined by the Candidate Alternatives will be "coded" into the Existing + Committed network using planning data available from HRTPO. Coding will include information such as facility description, alignment, and capacity information associated with improvements. Network coding will also specify locations of toll assessment and toll values, if applicable. The Consultant Team will review and confirm project coding assumptions with HRTPO. There will be one project network for each Candidate Alternative. Note, the schedule assumes the component Candidate Alternatives will have already been coded into the travel demand model network by Michael Baker some time prior to the end of this phase of work, but the modeling will be completed in the phase that follows.

Timing:

- 2-3 months

Meetings:

- Meetings with HRTPO staff: 2
- Working Group Meetings: 1
- Steering Committee Meetings: 0
- Other/Stakeholder Meetings: 0

Deliverables:

- Land Use Allocations for 3 Future Scenarios
- TAZ Calibration for 3 Future Scenarios

Task 4.7: Evaluating the Scenarios

Overview

The next step in the scenario modeling process is to run the various models for each Scenario and evaluate the results. The goal of this task is to assemble and evaluate the performance measures for each Scenario based on economic, transportation and land use/environmental metrics. As noted above, each Scenario will use the same transportation network (Existing + Committed) but will have different growth assumptions, land use patterns, and transportation behavior or technology assumptions. The Consultant Team will compare the scenario results to the 2045 Baseline to infer differences in performance attributed to the scenario drivers. This is a key step in understanding the potential range of future outcomes without regard to transportation investment choices. The analysis of performance from transportation investments will be conducted in Task 8.

Task 4.7a. Travel Demand Modeling of 3 Scenarios

In this task the Travel Demand Model will be run for all 3 Alternative Scenarios. Socio-economic datasets developed in Task 6b and parameters associated with the technological assumptions for the scenarios vetted in Task 2e will serve as inputs to the TDM, distinguishing each scenario. The outputs from each model run will be summarized on the Performance Dashboard and will be used for the economic modeling.

Task 4.7b. Economic Modeling of 3 Scenarios

In this task, each of the Travel Demand Model outputs for the 3 Scenarios will be run through TREDIS modeling and potentially other spreadsheet economic models to analyze the potential economic benefits and impacts to the Region for each Scenario. The outputs from each model run will be summarized on the Performance Dashboard and will be used for the overall evaluation of Scenarios.

Task 4.7c. Land Use modeling of 3 Scenarios

In this task, each of the land use allocations for the 3 Scenarios will be analyzed through land use modeling in the same way as for the 2015 Current Year and the 2045 Baseline Scenarios. The outputs will allow comparisons of indicators such as land use efficiency, accessibility to destinations, environmental impacts, etc. The outputs from each model run will be summarized on the Performance Dashboard and will be used for the overall evaluation of Scenarios.

Task 4.7d. Public and Stakeholder Vetting of the Scenario Evaluations

Once all the model runs for the 3 Scenarios have been completed and the outputs summarized, the Consultant Team will use outreach approaches to bring the public and key stakeholders into a process of understanding and vetting the results of the Scenario Evaluation. *This subtask will take place in the subsequent phase of work and is not included in the Phase II budget.* ~~We will work with the Working Group to confirm the involvement approach which may include website interactive surveys, focus group sessions, public workshops, and work sessions with the Working Group.~~

~~The result will be a public awareness of the conclusions of the Scenario Evaluation and support for proceeding with the next task, which will involve testing each of the Candidate Regional Connector projects (screened for permitability) against the Scenarios.~~

Timing:

- 3 months ~~(possible extension overlapping Task 8 for ongoing outreach)~~

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Meetings:

- Meetings with HRTPO staff: 3
- Working Group Meetings: 1
- Steering Committee Meetings: 1
- Other/Stakeholder Meetings: 0

Deliverables:

- Land Use, Economic and Travel Demand model runs for 3 Future Scenarios
- Dashboard Outputs for Model Runs
- Tech Memo on Scenario Evaluation
- Presentation materials, posters and slide decks of Deliverables for public outreach process

Task 4.8: Evaluating the Candidate RCS Projects

Overview

The final step in the scenario analysis is the assessment of transportation investment impacts by scenario. In this task, the Consultant Team will run each Candidate Alternative (screened for permitability) for each scenario. The Consultant Team will scope up to 20 model runs per scenario that will be a combination of runs used to develop demand estimates associated with each Candidate Alternative and additional runs to check for cause and effect relationships (such as particular pairings of Candidate Alternatives). The schedule assumes the component Candidate Alternatives will have already been coded into the travel demand model network in the main RCS study process prior to the beginning of this task.

~~**Task 4.8a: Confirmation/Coding of Candidate RCS projects for testing**~~

~~Transportation improvements defined by the Candidate Alternatives will be "coded" into the Existing + Committed network using planning data available from HRTPO. Coding will include information such as facility description, alignment, and capacity information associated with improvements. Network coding will also specify locations of toll assessment and toll values, if applicable. The Consultant Team will review and confirm project coding assumptions with HRTPO. There will be one project network for each Candidate Alternative. Note, the schedule assumes the component Candidate Alternatives will have already been coded into the travel demand model network by Michael Baker some time prior to the beginning of this task~~end of this phase of work, but the modeling will be completed in the phase that follows~~.~~

~~**Task 4.8b: Travel Demand Modeling for 3 Scenarios (each Candidate project)**~~

~~Using the networks developed in Task 7a and scenario specific socio-economic data and parameters, run the TDM for each Candidate Alternative over each of the 3 scenarios. Provide quality control checks on associated output. The modeling results for the newly coded Candidate ALternatives will be compared against results of similar alternatives or benchmarks (if available) to determine appropriateness of the results. Ad-hoc sensitivity testing may be performed under certain circumstances if the results of the Candidate Alternatives are not intuitive. The results for each Candidate Alternative will be compared against all project scenarios and the Existing + Committed network demand estimates to uncover and flag any potential issues in the results.~~

~~**Task 4.8c: Performance Evaluation of 3 Scenarios (each Candidate project)**~~

~~In this task, the Consultant team will complete the performance dashboard for each candidate RCS project, though not necessarily each model run due to the large volume of information. The Consultant Team will work with HRTPO staff and the Working Group to identify the most meaningful comparisons and will then determine any further iterations to run to explore cause and effect in performance in Task 4.8c. Also, the Consultant Team will provide all necessary input data for HRTPO staff to run the HRTPO Project Prioritization Tool for each set of Candidate Alternatives under each scenario to provide a ranking of each Candidate Alternative by scenario, as illustrated in the table below. This information will provide an important basis for assessing how robust the Candidate Alternatives are for potential future conditions.~~

~~Project Rank~~	~~2045 Baseline E+C~~	~~Scenario 1 E + C~~	~~Scenario 2 E + C~~	~~Scenario 3 E + C~~
~~E+C + RCS 1~~	~~5~~	~~8~~	~~15~~	~~8~~
~~E+C + RCS 2~~	~~4~~	~~6~~	~~4~~	~~2~~
~~E+C + RCS 3~~	~~5~~	~~3~~	~~20~~	~~15~~
~~...E+C + RCS 20~~	~~8~~	~~9~~	~~3~~	~~9~~

~~HRTPO seeks to evaluate the transportation benefits of Candidate Alternatives and the extent to which they achieve the goal of enhancing economic vitality and improving the quality of life in the region. To do so, the Consultant Team will use TREDIS to translate travel model results describing travel time, distance, reliability, and market access, into regional economic impacts expressed in terms of jobs, labor income, business sales, and GDP, with detail available by industry sector, and over time. The TREDIS FREIGHT module will allow targeted analysis of the implications of transportation performance for freight-reliant industries. Given the number of Candidate Alternatives, and the desire to test performance of every alternative under the baseline as well as all alternative scenarios, the Consultant Team will make use of TREDIS's batch mode to support easy import of project details and export of key economic performance results.~~

~~**Task 4.8d: Develop Microsimulation Models (NEW TASK)**~~

~~**Existing Conditions Microsimulation Model**~~

~~This task will involve developing a VISSIM model based on the traffic conditions for the existing study area roadway network completed as part of Phase 1. The most important aspect of this existing conditions model is to accurately model existing roadway operations and driving behavior so that these characteristics can be carried forward when the model is updated with future land use travel patterns and future traffic data. This will involve calibrating the microsimulation using the queue lengths obtained from INRIX data and travel times developed as part of Phase 1. This task may also involve some adjustment of the model inputs and additional model runs to ensure that the existing conditions microsimulation model accurately outputs known measurable conditions in the Region.~~

2045 Baseline Microsimulation Model

Similar to the task of updating the Regional Travel Demand Model to a 2045 baseline scenario, the existing conditions VISSIM model will be updated to establish a baseline 2045 microsimulation model. This will include adding committed roadway projects and updating traffic volumes and travel patterns based on the outputs from the Regional Travel Demand Model for the 2045 baseline scenario. It is important that this task be coordinated with 2045 regional model updates so that the baseline scenarios for both components (microsimulation model and regional model) correlate with the HRTPO's Long Range Transportation Plan. Simulations will be prepared at the six (6) system-to-system interchanges in the Hampton Roads region (I-64/I-664, I-64/I-564, I-64/I-264, I-64/I-464, I-64/I-264/US-58, and I-664/164).

This task will also involve affirming the assumptions and outputs to-date with the Working Group as an important check before proceeding to the next steps.

2045 Microsimulation for 3 Scenarios (3 No-Build Conditions)

Similar to the alternative scenarios that will be coded into the Regional Travel Demand Model, it is important to note that each of the alternative Future Scenarios will allocate traffic volume growth that is in addition to the growth inherent in the 2045 Baseline microsimulation model. This means that each Scenario is dealing with an additional increment of traffic increases above and beyond the assumed growth for the 2045 baseline microsimulation model. The 2045 baseline VISSIM microsimulation model will be updated by adding the traffic volumes and traffic patterns for each of the three alternative scenarios. This is a necessary step because it is assumed that one of the three alternative land use scenarios will occur with or without the preferred Candidate Alternative(s).

The outputs from these three 2045 Scenario **No-Build** microsimulations will used for comparison against the three 2045 Scenario **Build** microsimulations to determine the congestion relief for each planning scenario/Candidate Alternative pair. This will maintain consistency and provide an 'apples-to-apples' comparison among Candidate Alternatives for each planning scenario.

Simulations will be prepared at the six (6) system-to-system interchanges in the Hampton Roads region.

Task 4.8e: Evaluate Candidate Alternatives

Candidate Alternatives will be coded into the VISSIM microsimulation model for each future land use scenario (4). The microsimulations for these alternatives will only include the major highways and system-to-system interchanges and not the entire study area roadway network. The outputs of these microsimulations will be compared to the 2045 baseline outputs to evaluate the congestion relief in much greater detail than the regional model scenario comparison.

Candidate Alternatives will be coded along with the same Existing + Committed roadway network as the microsimulation models for the 2045 Baseline Scenario and 2045 No-Build scenarios. This will maintain consistency and provide an 'apples-to-apples' comparison among Candidate Alternatives for each scenario planning option.

Timing:

- 10 months (concurrent with other tasks to the extent possible)

Meetings:

- Meetings with HRTPO staff: 3
- Working Group Meetings: 2
- Steering Committee Meetings: 1
- Other/Stakeholder Meetings: 0

Deliverables:

- VISSIM models
- Technical Memorandum on microsimulation analysis results

Task 4.8f: Additional iterations to check for cause and effect relationships and preparation of final results

After the initial testing of individual candidate projects, the Consultant Team will hold a workshop with the Working Group and HRTPO staff to identify any final questions to be addressed with final model runs and/or extraction of data (such as select link analysis) from the model set. After this meeting, the Consultant Team will conduct any final iterations and will prepare the final results for presentation to the Working Group and Steering Committee. In these meetings, these groups will provide input on the most relevant data, insights, and 'story lines' to be carried forward in final reporting.

Timing:

- 4 months

Meetings:

- Meetings with HRTPO staff: 3
- Working Group Meetings: 2
- Steering Committee Meetings: 1
- Other/Stakeholder Meetings: 0

Deliverables:

- Travel Demand model, economic model, and prioritization tool runs
- Dashboard Outputs for Model Runs
- Tech Memo on RCS project evaluation
- Final scenario planning land use and travel demand model files

Task 4.9: Reporting Results

Overview

In this final task, the Consultant Team will work with HRTPO Staff, the Working Group, and the Steering Committee to distill the insights from the scenario process and package them for sharing with the public. The schedule assumes the HRTPO staff will carry the results forward into further outreach, but this effort can be undertaken with Consultant Team support if desired.

~~**Task 4.9a Scenario Results Workshops**~~

~~In this task, the Consultant Team will take the materials and input generated in Task 4.8 and prepare a work session to be held individually or jointly with the Working Group and Steering Committee to discuss the scenario analysis results and to provide input on investment, policy, and other recommendations to carry forward from the analysis.~~

~~**Task 4.9b Packaging Scenario Results**~~

~~The Consultant Team will document the results of the Task 4.9a workshop in the form of a presentation, website content, and a draft report that capture the full scenario planning steps and findings. This information will be used by HRTPO staff for ongoing outreach. After a period of initial outreach and input, the Consultant Team will present final findings to the Working Group and Steering Committee at the conclusion of Task 4.9.~~

~~*Timing:*~~

- ~~3 months (possibly extended for public outreach)~~

~~*Meetings:*~~

- ~~Meetings with HRTPO staff: 3~~
- ~~Working Group Meetings: 2~~
- ~~Steering Committee Meetings: 2~~
- ~~Other/Stakeholder Meetings: TBD~~

~~*Deliverables:*~~

- ~~Draft and final presentation of scenario planning results~~
- ~~Draft and final website content of scenario planning results~~
- ~~Draft and final scenario planning report~~

TASK 5– Prepare for and Attend Meetings (Working Group and Steering Committee)

Task 5.1: Working Group Meetings

The Consultant team will be represented by the Project Manager at all meetings (barring unforeseen conflicts) and supplemental team members depending upon the type of expertise being presented/discussed at each meeting. Discipline experts have estimated the number of Working Group meetings they will attend in each of the task/subtask summaries in this scope of services.

Task 5.2 Steering Committee Meetings

The Consultant team will be represented by the Project Manager at all meetings (barring unforeseen conflicts) and supplemental team members depending upon the type of expertise being presented/discussed at each meeting. Discipline experts have estimated the number of Working Group meetings they will attend in each of the task/subtask summaries in this scope of services.

Timing:

- 28 months

Meetings:

- Meetings with HRTPO staff: 0
- Working Group Meetings: 15
- Steering Committee Meetings: 10
- Other/Stakeholder Meetings: 0

Deliverables:

- Power Point slides and meeting handouts

~~TASK 6 – Prepare Documentation~~

~~Task 6.1: Draft Study Report~~

~~The study report will include summaries of Phase 1 and Phase 2 activities and be supplemented via appendices, which will include, but not be restricted to, the technical reports and technical memorandums for each of the major tasks in Phase 1 and Phase 2. The report outline is shown below:~~

- ~~Executive Summary~~
- ~~Introduction~~
- ~~Existing Conditions~~
- ~~Regional Survey~~
- ~~Stakeholder Interviews~~
- ~~Travel Demand Model~~
- ~~Engagement~~
- ~~Scenario Planning/Alternatives~~
- ~~Recommendations~~

~~Review comments will be solicited from the Working Group, Steering Committee, and HRTPO staff. Comments from the Working Group, the Steering Committee, and HRTPO staff will be discussed in the respective Working Group and Steering Committee meeting forums (unless a joint meeting is preferred). Those meetings will provide direction regarding the revisions to be made to the draft report that will subsequently be made available to the public prior to the second round of public information meetings. An electronic version of the draft report will be made available through channels outlined in the engagement plan.~~

~~Following the second round of public meetings, comments received at the meetings will be presented to the Working Group, Steering Group and HRTPO staff for discussion that will lead to decisions regarding the revisions to be made. If the revisions are substantive (i.e. – new alternatives are agreed to be studied, or more detailed analyses are required), another draft report will be prepared for review by the Working Group, Steering Committee, and HRTPO staff. An electronic version of the revised draft report will be made available. 50 hard copies will be produced, complete with appendices.~~

~~If the revisions are not substantive, the Consultant Team will initiate the preparation of the final report.~~

~~Task 6.2: Final Study Report~~

~~Following discussion of the comments received on the Draft Report and the notice to proceed on the preparation of the Final Report from the Working Group and Steering Committee, the Consultant Team will prepare the Final Report.~~

~~An electronic version of the final report will be made available through engagement channels. 200 hard copies will be produced, complete with appendices.~~

~~*Timing:*~~

- ~~10 months~~

~~*Meetings:*~~

- ~~Meetings with HRTPO staff: 2~~
- ~~Working Group Meetings: 2~~
- ~~Steering Committee Meetings: 2~~
- ~~Other/Stakeholder Meetings: 0~~

~~*Deliverables:*~~

- ~~Draft study report (200 Executive Summaries and 50 complete reports)~~
- ~~Final study report (20 Executive Summaries and 50 complete reports)~~
- ~~Draft and final study report appendices (50 copies for draft and 50 copies for final)~~
- ~~Draft and final website content of study report~~

TASK ~~7~~6 – Manage the Project

Task ~~7~~6.1: Weekly Coordination with HRTPO leadership

Consultant Project Manager will participate in weekly coordination calls with HRTPO Project Manager and other HRTPO staff (assume ~~100~~ 56 conference calls).

Task ~~7~~6.2: Schedule and Budget Oversight

Consultant Project Manager will monitor schedule and budget on monthly basis and make changes to schedule, as needed. Budget monitoring will occur monthly during preparation of monthly progress reports so that any budget issues can be included in those reports.

Task ~~7~~6.3: Quality Assurance of Deliverables

Consultant PM will review all documentation and deliverables before they are forwarded to the HRTPO Project Manager for distribution to the Working Group and HRTPO staff.

Timing:

- ~~28~~ 13 months

Meetings:

- Meetings with HRTPO staff: 42
- Working Group Meetings: 0
- Steering Committee Meetings: 0
- Other/Stakeholder Meetings: 0

Deliverables:

- Coordination meeting minutes

Schedule:

The attached schedule shows the anticipated timeline in blue with key milestones of committee meetings and deliverables shown. This schedule~~, if commenced in January,~~ is anticipated to meet HRTPO's requirements for coordination with the LRTP process. Note that the schedule depends on receiving the 2015 regional travel demand model in January/February, the 2045 regional travel demand model in April, and completing the Phase 2 RCS Study permitability/constructability screening by January 2020.

APPENDIX A: ECONOMIC MODELS & DATA

Cost Assumptions

12-month TREDIS subscription for HRTPO region (13-counties)

= $19,800 for 12-months up to 8 counties + $500 x 5 additional counties = $22,300

Either vFreight add-on OR Transearch connection (if Transearch data available through VDOT)

= $10,000

Task 1i includes a decision point to select among these:

As part of this TREDIS review, the Consultant Team will coordinate with TPO staff regarding freight data options that enable the connection of commodity movements to economic activity and impacts. The vFreight county-to-county trade flow database will be the default option. However, should the TPO have access to new Transearch data via VDOT, this option can be considered as well.

Given duration of project effort, assume 2-year subscriptions:

= 2 x ($22,300 + $10,000) = $64,600

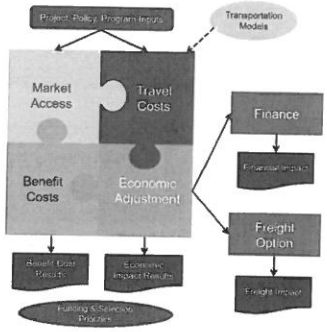
Note: If HRTPO would prefer, the subscription can be billed in 1-year increments. These costs are currently included in Task 1.

TREDIS PACKAGE	Term	Study Areas	Users	Training & Support	Subscription Cost $US
US Regional MPO Subscription	12 months	Up to 8 counties	Up to 3	10 hours	$19,800
Optional Add-ons					
vFreight county level freight data	12 months	1 state	--	--	$10,000
Transearch connection	12 months	1 state	--	--	$10,000
Additional county	12 months	1 county	--	--	$500

HRTPO Independent Use: Note that the TREDIS subscription comes with 3 independent log-ins. HRTPO could independently use TREDIS as well as take advantage of the designated training and project/program support via phone, email, and web meeting. All subscriptions include unlimited technical support.

Attachment 7b

Model Background



TREDIS Model:

TREDIS® is the ***transportation economics suite*** – a unique decision support system for transportation planners that spans economic impact analysis, benefit-cost analysis, and financial analysis, as well as freight and trade impact analysis. It is the only system applicable for all modes – covering passenger and freight transport via aviation, marine and rail modes, as well as truck, car, bus, bicycle, and pedestrian travel. It is widely recognized for its high level of documentation, which is backed by published research, and its transparency, allowing users to trace the calculation of results. TREDIS is the most widely used system for economic impact analysis of transportation projects in the US and Canada.

Fact sheet on using TREDIS for economic impact analysis: http://tredis.com/images/pdf-docs/datasheets/TREDIS-Economic%20Impact%20Analysis%202014.pdf

TREDIS Freight:

The TREDIS FREIGHT module provides State DOTs, MPOs and transportation organizations with unsurpassed analysis capabilities that support freight planning, strategy development, project prioritization, economic impact assessment, and benefit-cost evaluation as well as meeting several other Federal requirements. These capabilities are enabled by a clearly laid-out framework that (a) brings together available transportation, economic and trade data, and (b) integrates industry, commodity and modal perspectives.

TREDIS Freight can be set up with one of two data options:

TREDIS vFreight provides data on county-to-county freight flows by 2 or 3-digit SCTG commodity level and both domestic and international mode. This data is integrated within the TREDIS economic impact module to enable more accurate and detailed industry impact evaluations based on the specific composition of commodity flows at the county level. It can also be used to identify existing freight dependence within a region.

TREDIS Fueled by Transearch® integrates IHS Global Insight Transearch data (purchased separately) into the TREDIS model. This enables corridor-level analysis of freight flows and economic reliance on/impacts of freight.

-----Original Message-----
From: Mike Kimbrel <mkimbrel@hrtpo.org>
Sent: Sunday, January 27, 2019 12:44 PM
To: Eddy, Craig <Craig.Eddy@mbakerintl.com>; Camelia Ravanbakht <camelia.ravanbakht@outlook.com>
Cc: Robert A. Crum, Jr. <rcrum@hrpdcva.gov>; Kendall Miller <kmiller@hrtpo.org>
Subject: EXTERNAL: RCS Draft Phase 2 Scope Review

Craig & Camelia,

I have reviewed the latest (clean) version of the draft scope and have some comments I hope may be addressed quickly so we can send the scope, schedule, and cost information out early Monday morning. Most of these comments are relatively minor and should be easy to address.

1. Page 2, Task 1.3b - second line needs correction - currently reads "to provide and over of the project". The last line needs correction also.

2. Page2, Task 1.3c - first line "maximum of one" seems odd. Does that mean there may be zero? Sixth line "featured as informational kiosks" needs correction.

3. Page 3, Task 1.3d - what is "collateral material" and what is a "ziosk"?

4. Page 3, Task 1.4a - second line - I think the Working Group wants input on website content. Also, why is there a 1.4a when there is no 1.4b?

5. Page 4, under Meetings, should the 65 Other/Stakeholder meetings still be listed?

6. Page 9, Task 3.2b - last paragraph, second line - I think the "and" at the beginning of the sentence should be removed.

7. Page 10, Task 3.2d - end of first line of first bullet - I think "exiting" should be "existing".

8. Page 14, second paragraph - I don't think we should mention Greg by name in the scope document. Let's say "with the Chief Economist of HRPDC".

8. Page 14, Task 4.1h - third line from bottom - I don't think we need "together".

9. Page 19, Task 4.2f - first sentence - I think "task 2b" should be "Task 4.2b".

10. Page 22, Task 4.4a - fifth line - I think "Task 1k" should be "Task 4.1k".

11. Page 25, Task 4.7 - I believe we have pulled all of Task 4.7 from the scope for Phase 2, correct? If so, all of the text for Task 4.7 should be deleted (pages 25 - 26).

12. Page 27, Task 4.8 - I believe we have pulled all of Task 4.8 from the scope for Phase 2. Of so, the section from the top of page 27 should be deleted.

13. Page 28, Tasks 6.1 and 6.3 - I believe your references to the HRTPO Project Manager are meant to refer to the RCS Project Coordinator. You may also want to add something to Task 6.1 to refer to other interested parties on those weekly calls.

14. Page 29, sentence above the table - I think "Task 1" should be "Task 4.1".

I hope you find this helpful. The earlier we can get the corrected version Monday (1/28) morning, the better.

Thanks
MK

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

HRTPO REGIONAL CONNECTORS STUDY

PHASE 1 STATUS REPORT

January 29, 2019

Michael Baker INTERNATIONAL

Phase 1 Tasks

- Task 1 – Develop and Initiate Engagement Program
  - Subtask 1.1A – Conduct One-on-One Interviews with Local Governments
  - Subtask 1.1B – Conduct One-on-One Interviews with other Local Agencies
  - Subtask 1.2 – Prepare Study Engagement /Outreach Plan
  - Subtask 1.3 – Develop and Maintain Study Website
  - Subtask 1.4 – Develop and Conduct Regional Survey
- Task 2 – Evaluate Regional Travel Demand Model
- Task 3 – Determine Scenario Planning Effort
- Task 4 – Update Existing Conditions Information
- Task 5 – Present Findings to Working Group

Task 1 – Develop and Initiate Engagement Program

- Task 1.1.A and Task 1.1.B –stakeholder interviews completed, summary matrix finalized
- Task 1.2 – Draft Engagement/Outreach Plan reviewed, being finalized
- Task 1.3 – Website content and design still under development
- Task 1.4 – Regional survey results highlighted on following slides

HRTPO REGIONAL CONNECTORS STUDY

STAKEHOLDER INTERVIEW SUMMARY

What is heard most from constituents/members as concerns regarding transportation in the region?

- Commuters paying tolls feel the commute time is getting longer (not worth the cost and charges occurring outside of peak hours)
- Unpredictability of travel times throughout the region
- Lack of alternative routes and lack of public transit options
- Sailors and lower income individuals struggle financially with the toll costs (HOV, Express – HOT/Toll); consider incentives or discounts to help
- HOV lanes have not been beneficial; difficult to carpool with various work schedules and need to get the public to understand the benefits
- Use tax dollars to make congestion relief projects that are free to use and publicly available (could alleviate some congested areas)
- Bus system – more coverage and greater frequency
- Consider building more sidewalks, bike/pedestrian trails/lanes to help connectivity
- Consider more parking for Shipyard workers
- The light rail is internal to Norfolk; lacking connectivity elsewhere through the region

Transportation & Regional Economic Vitality & Quality of Life

- Advantages – access to water, tourism (historic resources), military
- Disadvantages - geographically isolated, sea level rise, lack of transit options, roadway congestion (delays, unreliability, cut through traffic), jurisdictions not working together, restrictions imposed by water
- Dependent upon: tourism, the port, government/defense
- Connecting the 'Southside and the Peninsula' is critical for growth in the region

Strengths & Weaknesses of Current Transportation System

- **Strengths**
  - There's expandability and multiple options available across the region to be a multimodal system
  - I-64 capacity improvements
  - The Tide as a backbone to other modal solutions

- **Weaknesses**
  - Gap in I-64 on Peninsula to complete widening to Richmond
  - Lack of transit connectivity, predictability, coverage, and frequency
  - Congestion (car dependent region)
  - Link SmartScale, HRTAC and TPO processes to compare projects and their needs

Trends observed in the Hampton Roads Region

- Aging Population – less inclined to go longer distances and face traffic
- Funding – will it continue to be focused on regional mega projects or trickle down to the localities for secondary projects? Suggest finding alternative sources.
- Quality of life impacted by congestion
- Collaboration of localities improving to help move people throughout the region
- Climate Change/Sea Level Rise being involved with land use discussions (impacts to military installations)
- Mixed-Use Areas being discussed to provide live-work-play options

Specific Study Questions & Measures of Success

- Project(s) Supported by stakeholders
  - Widening of I-64
- Data/Performance measures stakeholders would like included in the Regional Connectors Study
  - Travel time
  - Accessibility
  - Sea level rise/climate change
  - Movement of people, goods and services
  - Regional benefits vs. local jurisdiction benefits
- Additional segments HRTPO should consider:
  - Improving Route 17
  - Separate/adjacent tunnel for traffic out of NIT
  - New crossing just east of Williamsburg with connection to US 17, I-664, or US 460/17 on southside
  - Ferry Service – Hampton, Norfolk, Newport News connections
  - I-87 to NC
  - Western extension of proposed I-664 Connector to US 17

Technology to consider for the future…

- Expand advanced traveler information systems to inform commuters (real time info)
- Autonomous trucks to operate more during non-peak hours
- Regional charge centers for electric cars
- Technology to alert for flooding

What is your vision for a Regional Transportation System in Hampton Roads?

- Improved multimodal transportation infrastructure, services, and connectivity
  - Every mode has a role to play in the system, determine the right role in the right places and engage ALL localities
- Enhanced transit services – better reliability, accessibility, and frequency
- Better connections between Southside and the Peninsula

HRTPO REGIONAL CONNECTORS STUDY

REGIONAL SURVEY RESULTS

Purpose

The Hampton Roads Transportation Planning Organization (HRTPO) conducted the regional survey to help inform a regional long-term vision for 21st century transportation options for the Hampton Roads region. The survey was developed to better understand the priorities and travel experiences of people in the Hampton Roads region.

Methods

- Statistically valid survey mailed to 20,000 randomly selected households within the Hampton Roads region (see Appendix B).
- Follow-up reminder postcard mailed one week after the survey mailing.
- Respondents could choose to take the survey online (available in English, Spanish, and Tagalog).
- Most were completed by mail (73%) and 23% were completed online.
- An unweighted total of 1,612 people responded to the survey invite, for a response rate of 9%.
- The following demographics were underrepresented –African Americans, those with incomes under $25,000, and those under 35 years of age. To ensure these diverse groups were represented, a total of 120 respondents from the Precision Sample online panel completed the online version of the survey.
- To ensure demographic representation, data were weighted by age using the 2012 –2016 American Community Survey (ACS) data to match the demographic profile of the Hampton Roads region.
- Overall, an unweighted total of 1,732 people completed the survey for a margin of error of +/-2.4%.
- Figures in the report summarize frequencies for the survey questions.
- Note that some totals in the charts may add up to somewhat less or somewhat more than 100% due to rounding, and in some cases where respondents provided multiple responses.
- Only statistically significant relationships are discussed throughout the report. To achieve the cut-off for statistical significance, regressions must have a 0.05 significance level (a 95 percent confidence level).

Traveling in the entire Hampton Roads Region: Key Findings

- When looking at the Hampton Roads region overall, respondents were concerned about congestion and reported areas of improvement, but were not highly critical of the overall roadways in the region.
- Respondents thought making traffic faster was a top priority overall for the region while maintenance, congestion and tolling were the biggest transportation-specific concerns.
- When asked how to reduce congestion, most wanted improvements to existing roadways and to match improvements with future growth and development.
- Time spent traveling greatly affects quality of life, although most in the region reported being satisfied with the time it took to commute to work.
- Regardless of whether it was weekend or weekday, respondents felt lukewarm about the impact traffic had on their ability to travel for recreational activities.
- Respondents were split over the utilization of public transit in the region, but for those who did not use it, convenience and preferences for driving their own car limited their usage of public transit.
- In general, people preferred television to learn more about planned future improvements to the region, but saw social media and the radio as other viable avenues of communication.

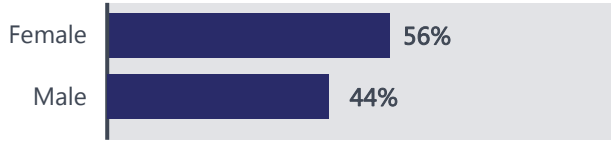
Traveling between the Peninsula and the Southside: Key Findings

Traveling between the Peninsula and the Southside was a key source of frustration among respondents.

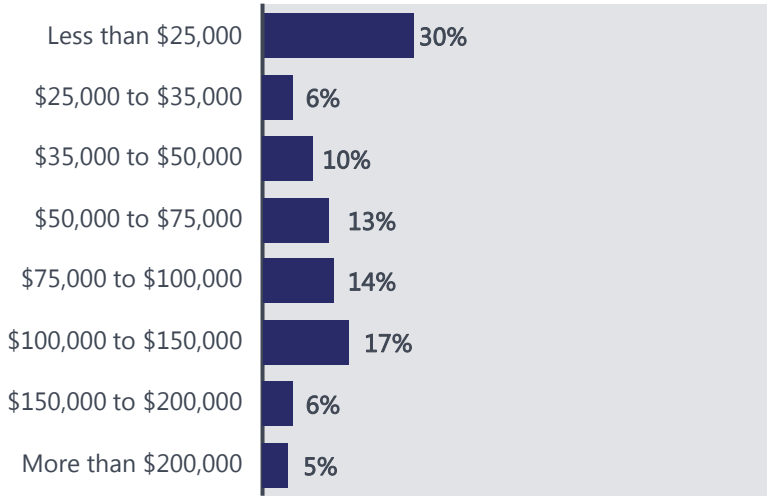
- Location greatly impacts quality of life as many respondents reported making major life choices to avoid using the roadways connecting the Peninsula to the Southside.
- Though a majority described the connectors as slow, many also said that increasing predictability of travel time would ease the pain of dealing with congestion. Only a third of respondents were unsure if increasing predictability would affect how they used the roads.
- People are traveling in the region for a variety of reasons, but the most commonly reported are for errands and visiting family/friends.
- Compared to the entire Hampton Roads region, fewer people regularly drove alone between the Peninsula and the Southside.

Demographic Profile – Part 1

Gender



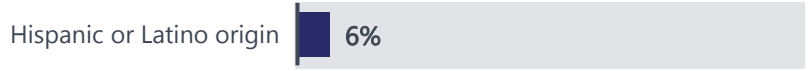
Household Income



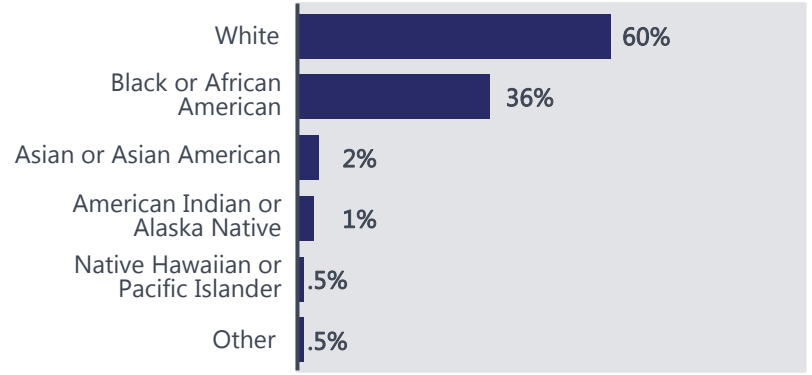
See Appendix C (pg. 39) for comparison to the Census's American Community Survey

Due to rounding, or options where participants could select multiple answers, percentages may not sum to 100%. Rounding occurs on all demographic slides.

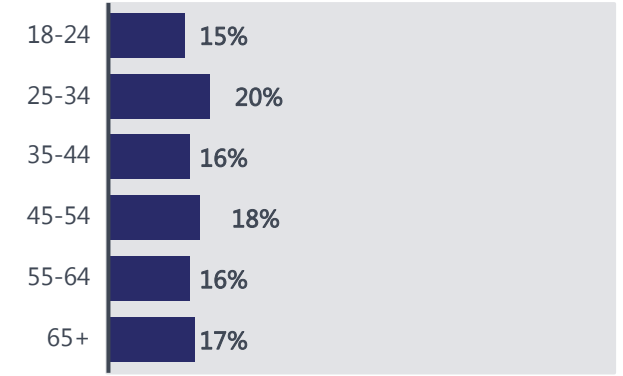
Ethnicity



Race

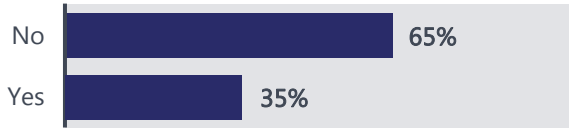


Age

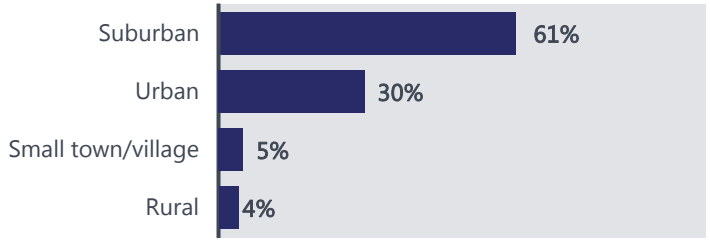


Demographic Profile – Part 2

Do you have children under 18 years of age living at home?

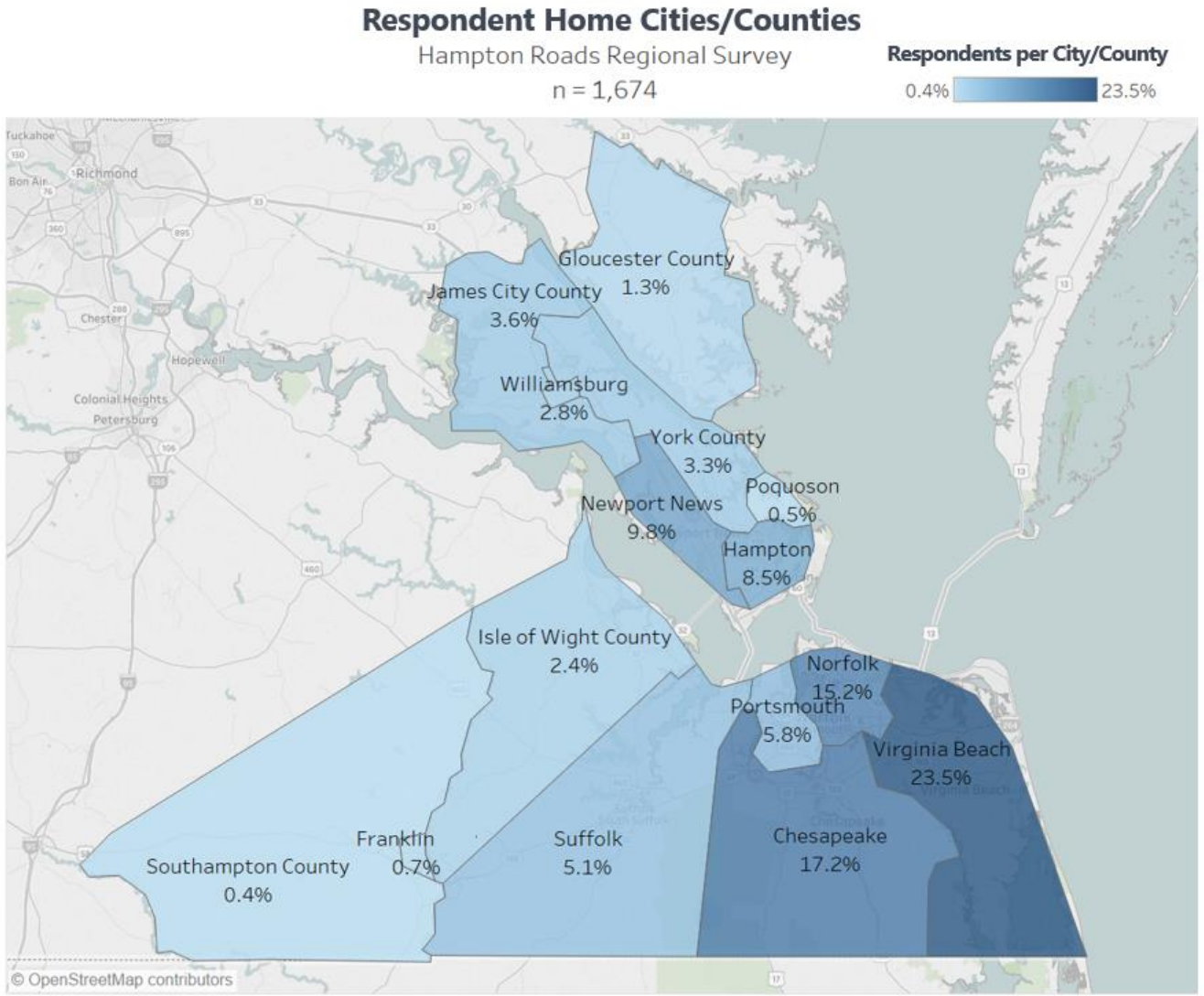


What type of community do you live in now?



Due to rounding, or options where participants could select multiple answers, percentages may not sum to 100%. Rounding occurs on all demographic slides.

Demographic Profile: Respondent Home City/County



Task 2 – Evaluate Regional Travel Demand Model

- Reviewed model sets
- Assessed support capability
- Assessed data
- Coordinated with TPO, VDOT, Working Group regarding planned model updates
- Identified model enhancements required
- TASK COMPLETE

Task 3 – Determine Scenario Planning Effort

- Consultant team and HRTPO staff collaboration completed
- Scope of work for Phase 2 developed, approved, and initiated

Task 4 – Update Existing Conditions Information

- Draft report reviewed and revised accordingly
- Final report submitted and under review

Task 5 – Present Findings at Working Group Meeting

- Working Group – received status update January 10

Schedule

PHASE 1		Week of																																			
		June		July					August				September				October					November				December					January				*February*			
Task No.	Task Name	18	25	2	9	16	23	30	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	*4*	*11*	*18*	*25*
1.1	Prepare Study Engagement/Outreach Plan																																					
1.2	Develop and Maintain Study Website																																					
1.3	Conduct One-On-One Interviews																																					
1.4	Develop and Conduct Regional Survey																																					
2.0	Evaluate Regional Travel Demand Model																																					
3.0	Determine Scenario Planning Effort																																					
4.0	Update Existing Conditions Information																																					
5.0	Present Findings at Working Group Meeting																																					
	Prepare Phase 2 Scope of Work																																					

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

HRTPO REGIONAL CONNECTORS STUDY

PHASE 2 SCOPE OF SERVICES

January 29, 2019

Michael Baker INTERNATIONAL

Scope of Services

- Alternative development and assessment
- Scenario planning

Costs

	Hours	Labor Costs	ODC's	TOTAL COST
TOTALS	11,446	$1,753,846	$237,091	$1,990,937

Schedule

DRAFT

Regional Connectors Study - Phase 2 Schedule

Task No.	Task	2019 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	2020 JAN
TASK 1	EXECUTE ENGAGEMENT PLAN													
1.1	Task Management													
1.2	Engagement Plan Review													
1.3	Implementation of Engagement Plan													
1.3a	Study Mailing List and Comment Database													
1.3b	Stakeholder Briefings and Presentations													
1.3c	Brochures, Factsheets, and Handouts													
1.3d	Community Events and Outreach													
1.4	Website Upgrades and Maintenance													
TASK 2	DEVELOPMENT OF PRELIMINARY ALTERNATIVES													
2.1	Develop Geometry of Preliminary Alternatives													
2.2	Hydraulics and Hydrology													
2.3	Structures													
2.4	Utilities and Railroad Crossings													
2.5	Planning Cost Estimates													
TASK 3	DETERMINATION OF CANDIDATE ALTERNATIVES (SCREEN 1)													
3.1	Conduct Congestion Relief Assessments													
3.2	Conduct Permitability Assessments													
3.3	Conduct Constructability Assessments													
TASK 4	CONDUCT SCENARIO PLANNING													
4.1	Building the Base Data, Models, and Scenarios													
4.2	Defining Alternative Future Scenarios													
4.3	Defining Measures of Success													
4.4	Evaluate 2015 Current Regional Conditions													
4.5	Modeling the 2045 Baseline Alternative													
4.6	Building the Alternative Scenarios													
TASK 5	PREPARE FOR AND ATTEND MEETINGS (WORKING GROUP AND STEERING COMMITTEE)													
5.1	Working Group Meetings													
5.2	Steering Committee Meetings													
TASK 6	MANAGE THE PROJECT													
6.1	Weekly Coordination with Study Leadership													
6.2	Schedule and Budget Oversight													
6.3	Quality Assurance of Deliverables													

Draft Deliverables
Final Deliverables
Steering Committee Meetings and Presentations
Working Group Coordination Meeting

Continuous Task
Draft Task Schedule

HRTPO to approve updated Prioritization Tool
2015 Regional Travel Demand Model available
2045 Regional Travel Demand Model available

Next Steps

- Complete Phase 1 tasks
- Continue work on Scenario Planning
- Collaborate with Working Group to determine scope of Phase 2
- Gain Working Group approval of Phase 2 scope and costs
- Gain Steering Committee approval of Phase 2 scope and costs
- Submit Phase 2 scope and costs for HRTPO Board approval (Feb 21)