

**Hampton Roads Transportation Accountability Commission
Funding Strategies Advisory Committee
(Formerly the HRTAC Technical Advisory Committee)**

November 17, 2015

9:30 AM – 11:30 AM

The Regional Building Board Room A, 723 Woodlake Drive, Chesapeake, Virginia 23320

AGENDA

- 9:30 am
1. Call to Order
 2. Minutes of the October 13, 2015 TAC Meeting
(Attachment 2)
Recommended Action: Approval
 3. HRTAC Plan of Finance Presentation – PFM and CDM Smith Consulting
(Attachment 3)
Recommended Action: For information
 4. New Business
 5. Next Meeting:
December 15, 2015
9:30 a.m. – 11:30 a.m.
The Regional Building Board Room
723 Woodlake Drive
Chesapeake, VA 23320
Adjournment

**Hampton Roads Transportation Accountability Commission (HRTAC)
Technical Advisory Committee
Summary Minutes of the October 13, 2015 Meeting**

The Hampton Roads Transportation Accountability Commission (HRTAC) Technical Advisory Committee Meeting was called to order at 9:34 a.m. in Conference Room D, 723 Woodlake Drive, Chesapeake, Virginia, with the following in attendance:

HRTAC Technical Advisory Committee Members in Attendance:

Lynn Allsbrook	W. Sheppard Miller, III
Joe Frank	C. Earl Sorey, Jr.
Harry Lester	Jody Wagner

HRTAC Executive Director

Kevin Page

Other Participants:

Scott Allaire	Tom Inglima
Deputy Secretary Grindly Johnson	David Miller
Kevin Hoeflich	Dan Papiernik
	Camelia Ravanbakht

HRTAC Technical Advisory Committee Members Absent:

Neal Crawford, Chair
James Koch

* Denotes Late Arrival or Early Departure

Others Recorded Attending:

Thelma Drake, Jeffrey Raliski (NO); Bob Matthias (VB); Frank Papcin (Citizens Advisory Committee); Scott Forehand, Don Quisenberry (eScribeSolutions); Nick Antonucci (HNTB); Kevin Rotty (PFM); Dianna Howard (TLP, VBTA, VBTP); Phil Lohr (WRA); Tony Gibson, James W. Long, III (VDOT)

Call to Order

In the absence of the Chair and Vice Chair, Member Mr. Earl Sorey, Jr. called to order the meeting of the HRTAC Technical Advisory Committee.

Public Comment Period (limit 5 minutes per individual)

Mr. Frank Papcin shared that upon observing Northern Virginia's plans for tolling, he is concerned about plans for Hampton Roads. He referenced the effects of tolls upon individual citizens as well as companies and stated that the toll should be related to what is necessary to build the roads.

Consent Item

Attachment 2

HRTAC Technical Advisory Committee Meeting – Summary Minutes – Page 1

October 13, 2015

Prepared by S. Forehand, ESSI

Mr. Sheppard Miller Moved to approve the minutes of the August 20, 2015 meeting; seconded by Mr. Harry Lester. The Motion carried unanimously.

Information Items

- Tolling Monies of Highway Facilities

Executive Director Kevin Page noted the information during the session will be presented by professional consulting firms for public finance, which will share cost estimates, anticipated revenue, methodologies, and scenarios in play elsewhere in the country.

Mr. David Miller from PFM explained that tolling traffic forecasts and scenarios along with predictions to support the financial plan are needed to accompany estimates of toll collection costs.

Mr. Joe Frank asked about the reliability of the data presented. He stated that he believed HRTAC should not rely 100% on tolls and should look at other revenue sources. Mr. Miller suggested that Mr. Scott Allaire from CDM Smith address that topic.

Mr. Scott Allaire from CDM Smith reviewed three levels of detailed traffic studies:

1. Sketch level, taking 4-6 weeks to examine existing data;
2. Intermediate, taking 3 months to include new data; and
3. Investment grade/Comprehensive, taking 6-12 months with more data assessments of plan, use, growth, value of time, simultaneous highway improvements (Investment grade/Comprehensive can be used in connection with bond financing).

Mr. Allaire stated that the work his firm is doing is at the Sketch level. Mr. Sheppard Miller questioned the data currently being used, and Mr. Allaire explained that it is comprised of current traffic counts.

Mr. Sheppard Miller asked if the plan is to predict human behavior; Mr. Allaire agreed. Mr. Allaire explained that the information is collected through a Stated Preference Service, which is a survey designed to elicit opinions on the value of time. It is distributed to 1,200-1,500 randomly targeted residents, commuters, and businesses that use the facilities.

Mr. Allaire concurred with Mr. Sheppard Miller's understanding that certain groups are targeted and then surveys sent to random members of the groups.

Mr. David Miller noted that long-term financial plans are all based on assumptions and that changes often occur over time. Mr. Sheppard Miller asked if the study includes any analysis of collateral impacts financially. HRTAC Executive Director

Kevin Page explained that the SEIS and economic indices would shed light on the matter.

Mr. Sheppard Miller expressed concern that the HRTAC Technical Advisory Committee needs clarity to report to HRTAC and the citizenry regarding the alternatives being considered and the expected results.

Mr. Harry Lester emphasized that a number of individuals had expressed displeasure about the results of the tolls on businesses in Portsmouth and requested an economic view of how tolls may affect communities on either side of the tolls. Mr. Sorey added that the Port Authority has commissioned a study to examine the impact of tolling on trucks.

Mr. Joe Frank stated that he understood that there is more data to come and wondered if moving forward without the information is premature. Mr. David Miller replied that the arrival of more information from VDOT is imminent.

Mr. Kevin Hoeflich from HNTB gave an overview of what is going on in the industry. He elaborated as to the meanings of the many acronyms that were going to be used in his presentation. Mr. Joe Frank requested that he use minimal acronyms. The following acronyms were explained:

- GEC - General Engineering Consultant;
- AET - All Electronic Tolling;
- PML - Price Managed Lanes;
- HOV - High Occupancy Vehicles;
- HOT - High Occupancy Toll lane;
- VES - Violation Enforcement System; and
- ETC - Electronic Toll Collection.

Mr. Hoeflich stated that projects can be partly funded by tolls. Mr. Sheppard Miller asked about the effects of the order of projects of new construction, expansion, etc. and when tolling would be viable. Mr. Hoeflich referred to the federal Value Pricing Program, allowing for building on interstates and tolling new capacity and replacement bridges.

Mr. Sheppard Miller stated that he understood federal law prohibits tolling a facility existing prior to the construction improvements. He asked if there is a process that allows applications for permission to do such. Mr. Hoeflich responded that he was unaware of a way to toll prior to beginning the project.

Mr. Sheppard Miller asked about the Value Pricing Pilot Program in Virginia. Mr. Hoeflich referred to the growing nationwide reliance on a market-driven toll lanes that offer a choice of free or payment of a fee for access and use. Across the country, most are converting to All Electronic Tolling (AET). He spoke on trends such as

incremental tolling of the interstate, price managed lanes, conversion to technologies in vehicles, and more. He reviewed types of tolling such as electronic tolling, toll-all-lanes, or managed lanes tolling. He noted that with electronic tolling, there are no toll booths and no barriers. Traditional tolling operations had a negative effect on safety, with people weaving in and out of traffic prior to choosing a type of lane. He added that paying at a high rate of speed electronically reduced safety concerns.

Mr. Hoeflich described three ways to price-manage lanes:

1. Access where vehicles can enter and exit;
2. Price; and
3. Eligibility.

Advantages of Price Managed Lanes include the fact that everyone can travel in the lanes and prices can be varied according to time of day and speed.

Mr. Sheppard Miller concluded that it is better to provide additional lanes even if they are tolled rather than to have fewer lanes. Mr. Hoeflich noted additional positives of time savings, customer choice, and improved mobility through the entire corridor.

Mr. Hoeflich reviewed other suggested considerations for decision-making:

- Business lanes;
- Pricing structure—time of day, congestion level;
- Provision for access—is it direct access or a slip ramp, and how much access to allow;
- Management of lanes;
- Separation of lanes—barrier or delineation; and
- Video processing for payment.

Mr. Joe Frank asked if Virginia legislation provides an opportunity to prosecute toll violators. Mr. Dan Papiernik, from HNTB, offered that there was legislation addressing that issue.

Mr. Hoeflich recommended steps to elicit support for tolls and three considerations regarding toll collection:

1. Electronic Toll Collection (E-ZPass);
2. Processing of violations (Currently a VDOT function); and
3. Use of video billing or not.

Mr. Hoeflich showed a map of surrounding states and types of collections used.

Ms. Jody Wagner questioned whether the lanes that were being added on I-64 would be eligible for tolling. Ms. Grindley Johnson pointed out that only new capacity could be tolled. Ms. Johnson added that the potential for tolling the new construction needed to be addressed earlier and it was probably too late for the widening projects. Mr. Sorey interjected that there would also be NEPA concerns. Mr. Papiernik continued that additional permits would also be necessary. Dr. Camelia Ravanbakht offered that the FHWA decision would also be impacted if that avenue were pursued.

Mr. Scott Allaire spoke on tolling laws, types of tolling laws in existence, exemption laws, existing managed lanes revenues, and current scenarios being evaluated. He detailed congestion pricing data on the HRBT. He noted that section 129 of the U.S. Code states that new highways, bridges, and tunnels can be tolled and explained the following points:

- New lanes can be tolled;
- Rebuilt bridges and tunnels can be tolled;
- Reconstructed highways can be tolled; and
- HOV lanes can be converted to HOT lanes.

He explained that there were two major exemption programs that allowed tolling. The first being the Interstate System Reconstruction and Rehabilitation Pilot Program, which allows up to three states to reconstruct an existing interstate and toll it. He added that the program was provisionally filled, and that no state was taking advantage of the program.

The second program discussed by Mr. Allaire was the Value Pricing Pilot Program. Mr. Sheppard Miller asked if all interstates in Virginia could be subject to the value pricing toll. Mr. Allaire noted that all would be, provided that congestion is the issue. Ms. Johnson stated that she called for verification and found that I-64 would be eligible under the Value Pricing Pilot Program.

Mr. Sheppard Miller asked about operating costs of toll lanes, noting comparison is difficult in light of collection, maintenance, renewal, and replacement costs. Mr. David Miller noted that maintenance was not an HRTAC funding obligation, and he assumed that the cost of collections would be borne by tolls.

Mr. Allaire observed that public acceptance of managed lanes relates to allowance of options. Mr. Sheppard Miller remarked that the water crossings are the core of the

local transportation system. He continued that tolling the water crossings was in essence tolling the core, adding that the core is the State's responsibility.

Mr. Harry Lester noted that water crossings are more expensive than other types of projects. Mr. Sheppard Miller echoed previous statements that Hampton Roads is a donor region and taxes generated here are used to fund infrastructure in other parts of the state.

Executive Director Page stated that HRTAC should be hopeful in light of the fact that the region has two sizable applications for HB2 assistance in Richmond.

Mr. Frank asked about the anticipated toll rate. Mr. Allaire recollected the plan for Patriot's Crossing was \$3.00 or more, tolling all lanes.

Mr. Sheppard Miller questioned the rates for all tolls put into the system, and Mr. Frank asked about future projections of a break-even point on the toll rates. Mr. David Miller responded that there are six scenarios, each of which will show if there is a funding gap. Mr. Sheppard Miller requested information that reflects true costs, true impact, as well as the cost of doing nothing.

Mr. Frank noted that costs of projects is now valued at \$11 billion due to delays and recounted the costs of doing nothing to be job loss, population loss, port business, and general negativity on the economy of the region.

Mr. Allaire summarized the following scenarios:

1. Scenario 1—all day flat toll rate on all lanes of the High Rise Bridge, Patriots Crossing, HRBT, and MMBT at \$1.00 in 2015 dollars and escalating;
2. Scenario 2—begins at \$2.00;
3. Scenario 3—same as scenario 1 but with higher rate (congestion pricing) on HRBT with the result of shifting traffic to MMBT; and
4. Scenario 4—same as scenario 2, but at a higher rate.

Mr. Allaire added that additionally, these assumptions included the new High Rise bridge to be open in 2022, Patriot's Crossing to be open by 2025, HRBT to be widened by 2030, and the MMBT to be widened by 2035.

Mr. Frank asked about including the James River Bridge; the differential in traffic as compared to the others was noted.

Mr. Lynn Allsbrook requested clarification on the number of lanes for HRBT, and Mr. Allaire noted three lanes. Mr. Frank spoke on the need for an intermodal connection, but Mr. Tom Inglima reminded him that HRTAC is responsible for roads, bridges, and tunnels—not transit. Mr. Frank responded that the Commission needs to go to the legislature and request legislation allowing for such responsibility.

Attachment 2

Mr. Allaire shared information on \$1.00 and \$2.00 toll rates, expected revenues of various scenarios, escalation projections, and pricing options such as time of day and year, congestion, and direction. Mr. Frank pointed out that the building of Patriots Crossing will change the economic model. Mr. Miller asked about the car gap between the MMBT and the HRBT, and Mr. Allaire shared that it is a result of either trip purposes or congestion.

Mr. David Miller presented an update on the financial plan, projecting a graph denoting bond options.

Mr. Frank asked for clarity on “non-recourse toll revenue” and “double barrel toll road.” Mr. Miller explained non-recourse bonds to mean bond that are backed only by toll revenue bond. Double barrel toll roads would be recourse, with some kind of guarantee in addition to toll revenues or a toll road with covenants.

Mr. David Miller reviewed the process of issuing bonds, bond covenants, and the order in which to apply toll revenues, with the first being the payment of toll collection costs. He added that it is vital to follow the recommendations of the bond consultants.

Mr. Sheppard Miller asked about the genesis of the toll rate start number. Mr. David Miller stated that the firm examined rates in the region. Mr. Sheppard Miller requested cost expectations, and Mr. David Miller responded that the goal is to have the results in November.

Mr. Frank suggested that it will be vital to educate people about the value of tolling and the costs of not tolling. He added that putting a plan in place more quickly is an important goal and recommended examining alternatives that give opportunities to meet the goals.

Mr. David Miller indicated that alternatives are being explored with information on funding gaps, how much additional revenue could be made, higher toll rates, and others. He volunteered that the toll-all-lanes with congestion pricing may be the best scenario. He noted the importance of the toll rate covenant, the issuance of toll revenue bonds at the beginning of construction of each with the consultants performing four-year projections on the toll revenue and collection costs.

Mr. Frank stated that it was his understanding that the projects would be done one at a time. Mr. David Miller noted an overlap of some projects and that finance plans stretch far into the future.

Mr. Allsbrook questioned the advisability of building Patriots Crossing before widening the MMBT, and Ms. Johnson asked about plans for the 60-year-old HRBT.

Mr. Page stated that he believed HRTAC needs to discuss its responsibility to the HRBT, and Mr. Lynn Allsbrook expressed concern about closing any section of it.

Mr. Frank agreed on the importance of considering all critical parts of the transportation system. Mr. Page pointed out that the HRBT is not one of the nine projects, but nevertheless recognizes its importance within the system.

Mr. Sheppard Miller and Mr. Page recognized that there was a new member, Alan Whitt formerly of the CTB, that will be joining them soon.

Mr. Page requested that the committee set a consistent date for meetings and suggested Tuesdays before the regular HRTAC monthly meeting on the third Thursday of each month. He will send members an electronic notification.

Adjournment

With no further business to come before the Hampton Roads Transportation Accountability Commission Technical Advisory Committee, the meeting adjourned at 11:43 a.m.

Neal Crawford
HRTAC Technical Advisory Committee Chair



HRTAC Regional Financial Plan Initial Scenarios

November 17, 2015



HRTAC Financial Planning Process

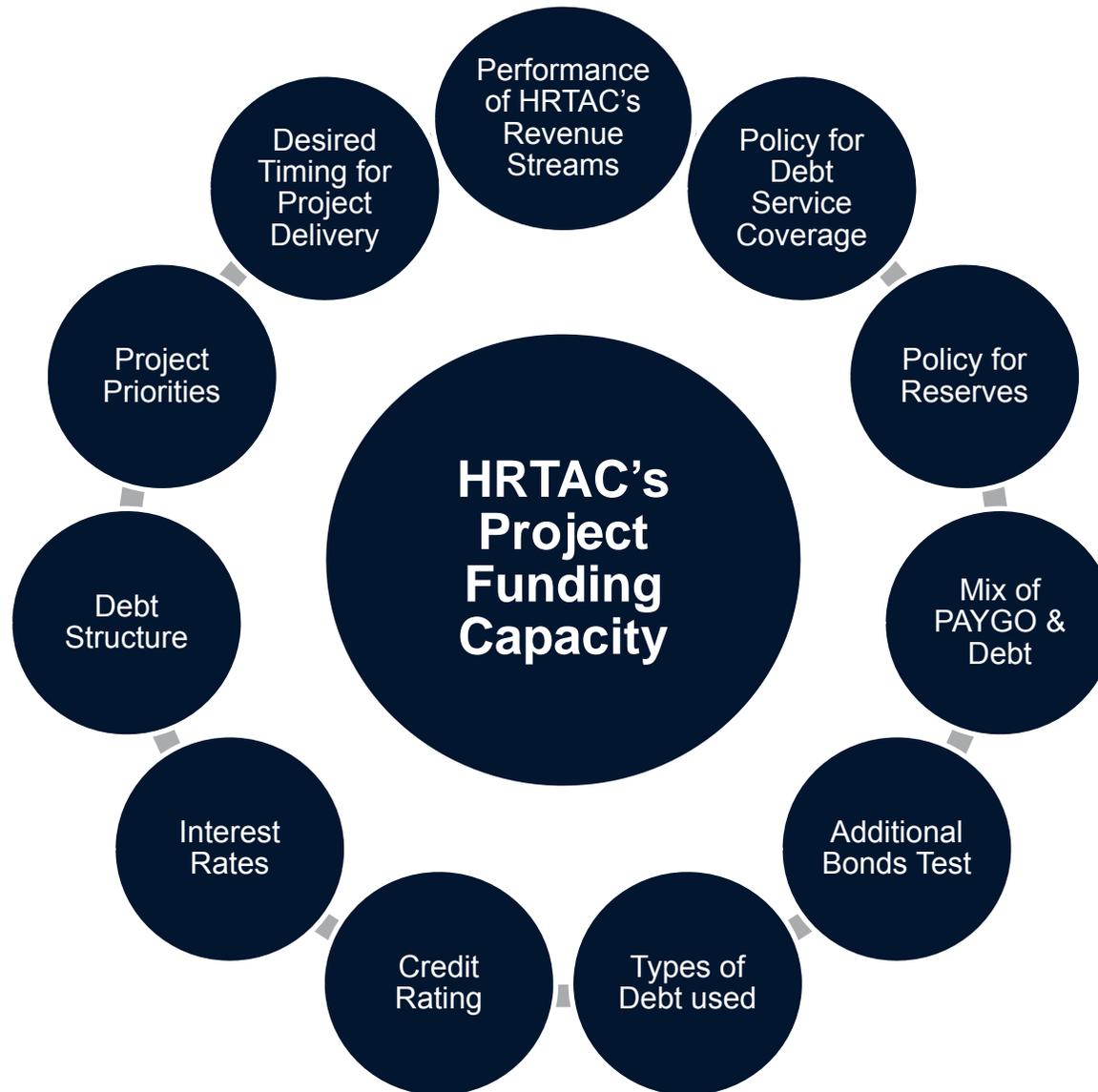
HRTAC Planning Approach

- ***Create a Regional Financial Plan to Fund All HRTAC Projects***
- Review all project schedules and cost estimates in year of expenditure dollars to support financial modeling.
- Decide on HRTF revenue growth projections, or range of growth projections, to analyze.
- Decide on bond covenants and structure, or appropriate range of bond parameters, to analyze.
- Develop a long term financial plan to determine HRTF funding capacity with a reasonable and fiscally unconstrained schedule for all projects.
- If all projects can't be afforded on a fiscally unconstrained basis, then analyze:
 - 1) Pushing projects further into the future, i.e. fiscally constrained schedule
 - 2) Additional state/federal funding needed to build on an unconstrained schedule
 - 3) Additional tax revenue needed to build on an unconstrained schedule
 - 4) Tolling needed to build on an unconstrained schedule
 - 5) Some reasonable combination of 1-4

Attributes of the HRTAC Financial Plan

- Objectivity
 - PFM does not “have a dog in this hunt”!
 - We will study the projects, revenue parameters, and schedule all as determined by HRTAC
 - The financial plan goal is to deliver the projects as quickly and effectively as possible within reasonable financial market constraints
- Transparency
 - All key assumptions will be discussed and thoroughly documented
 - We will ask tough and probing questions designed to get the decisions and feedback needed for consensus on a strategic financial plan
- Flexibility
 - Our financial model will be able to test different assumptions throughout development of the financial plan
 - Looking to the future, the financial plan can be modified as circumstances dictate

Evaluating HRTAC's Project Funding Capacity



Financial Planning History to Today

2004-2006 HRPDC Toll Feasibility Studies

- In 2004-05, HRPDC undertook a comprehensive study of regional projects and tolling

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

	Total Cost	Available Funding	P/D & E	Total Bond / Loan Funds	Funding Deficit	Const. Start Date	Toll Revenue Start Date
Scenario #1 HRX	4,152,400,000	193,500,000	81,000,000	2,805,000,000	1,153,900,000	2006	2006
Scenario #2 HRBT	1,845,500,000	116,300,000	36,000,000	1,729,200,000	-	2006	2006
Scenario #3 Midtown & MLK	548,800,000	251,100,000	12,600,000	297,700,000	-	2009	2009

- In 2006, HRPDC examined a consolidated toll system and additional funding – HRBT not improved, but I-64 widening, SPG, Dominion Blvd, & Rt 460 were included.
- Conclusion: A regional toll system and recurring tax revenue of \$200 million per year could complete all projects in a 20 year period.

One Step Back; Three Steps Forward

- Hampton Roads Transportation Authority
 - \$200 million annually recurring tax revenue
 - Authority to toll regional projects
 - Legislation and regional taxes invalidated
- Downtown/Midtown Tunnels move forward as a P3
 - All lanes tolled
 - Large VDOT contributions
- Dominion Boulevard widening & bridge replacement moves forward
 - All lanes tolled
 - Relatively modest HRTPO contributions
 - Financed by City of Chesapeake as a toll system combined with the Chesapeake Expressway
- HB2313 passes and HRTAC is created

October 2013 Long Range Transportation Plan

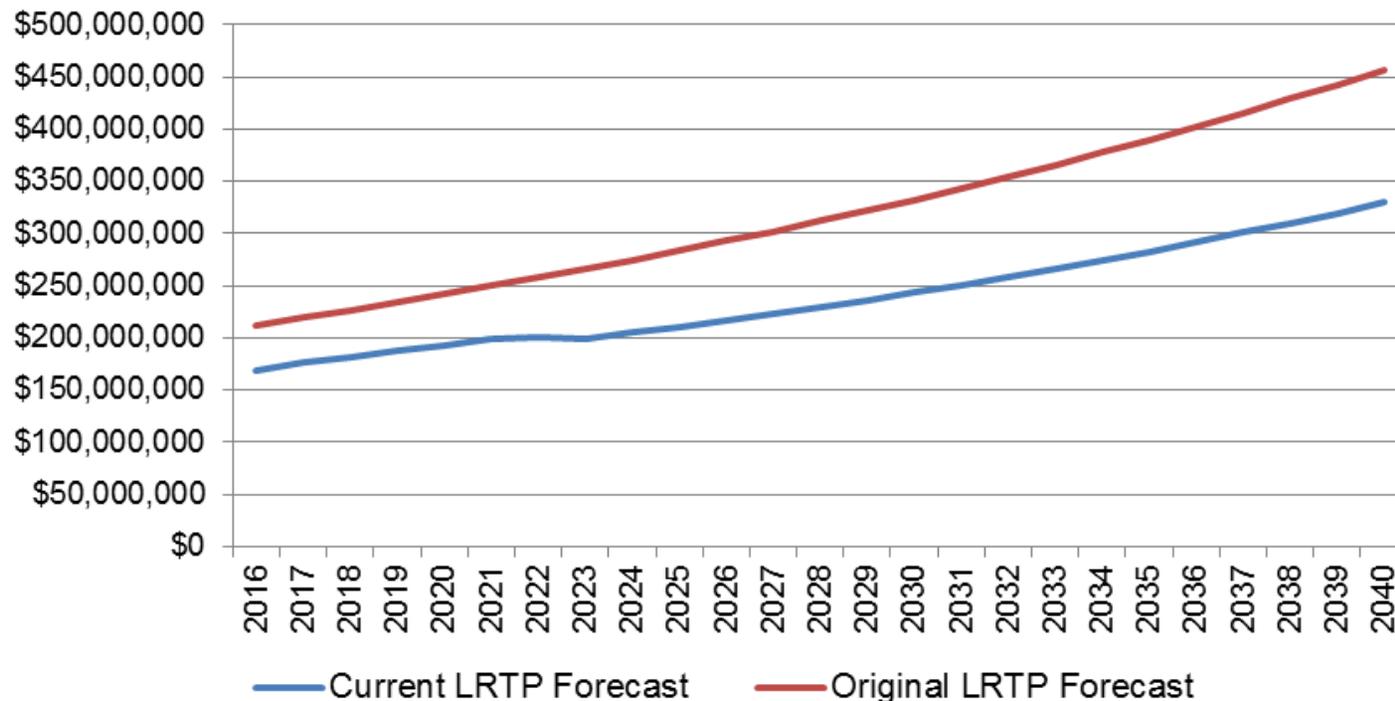
- HRTAC Projects included in 2034 LRTP
 - I-64 Peninsula Widening - Segments 1,2&3 including Ft. Eustis Blvd Interchange
 - I-64/I-264 Interchange – Phases 1&2
 - High Rise Bridge
 - Patriots Crossing
 - I-664 / MMBT (Monitor Merrimac Memorial Bridge Tunnel)
 - Rt. 460/58/13 Connector
- HRTAC Projects not included in 2034 LRTP
 - HRBT (Hampton Roads Bridge Tunnel)
- HRTAC Projects assumed to be tolled in 2034 LRTP
 - High Rise Bridge
 - Patriots Crossing
 - HRBT
 - MMBT

June 2015 Amended 2034 Long Range Transportation Plan

- HRTAC Projects included in amended 2034 LRTP
 - I-64 Peninsula Widening - Segments 1,2&3 including Ft. Eustis Blvd Interchange
 - I-64/I-264 Interchange – Phases 1&2
 - High Rise Bridge
 - Patriots Crossing
 - Rt. 460/58/13 Connector
- HRTAC Projects not included in amended 2034 LRTP
 - MMBT
 - HRBT
- HRTAC Projects assumed to be tolled in amended 2034 LRTP
 - None

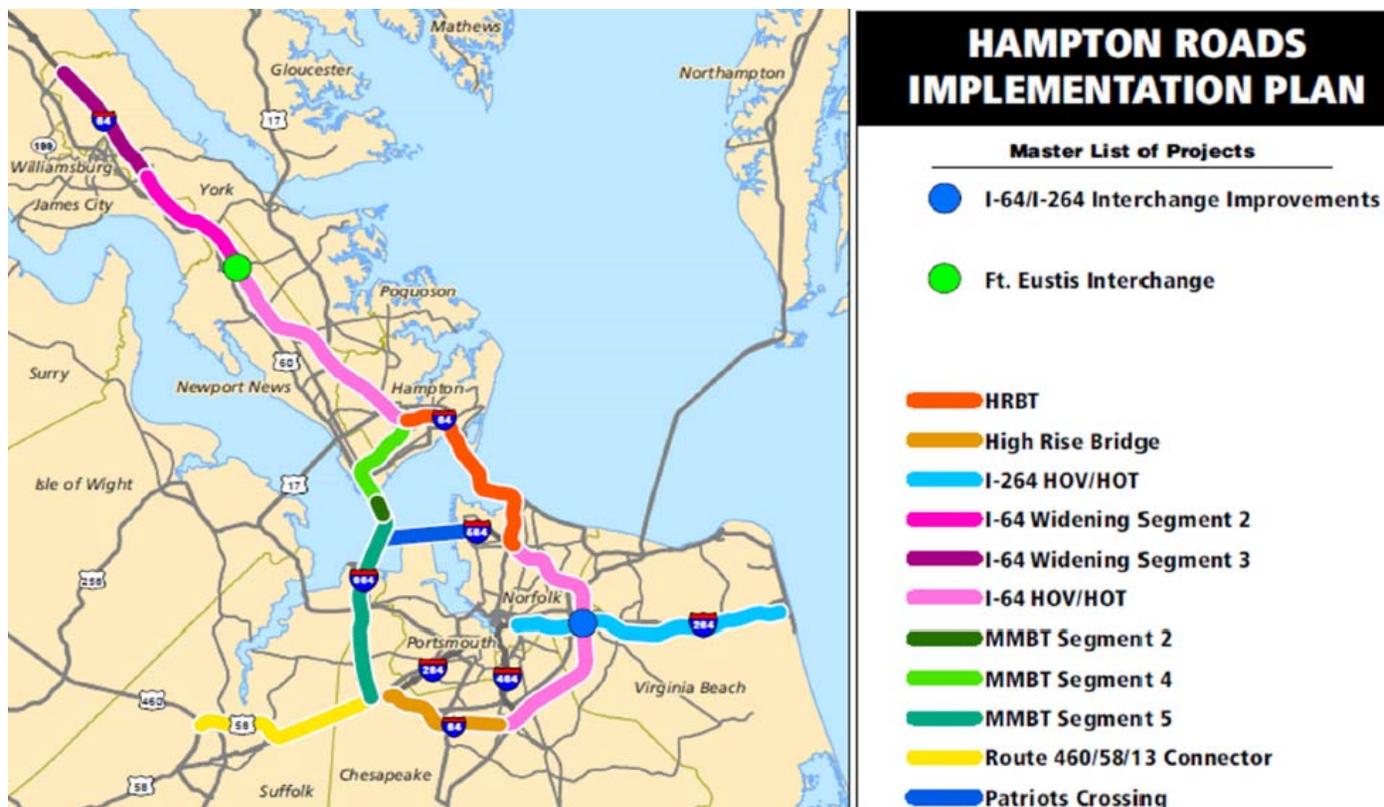
HRTF Revenue Assumptions

- The financing plan assumes the latest HRTF revenue forecast that PFM received in November 2015. The current estimates are lower than VDOT's original 2013 forecast:
 - \$2.0 billion lower in nominal dollars from FY 2016 to FY 2040
 - \$1.4 billion lower in today's dollars from FY 2016 to FY 2040 (discounted @ 2.5% to 2016)



Projects Included in the HRTAC Regional Financial Plan

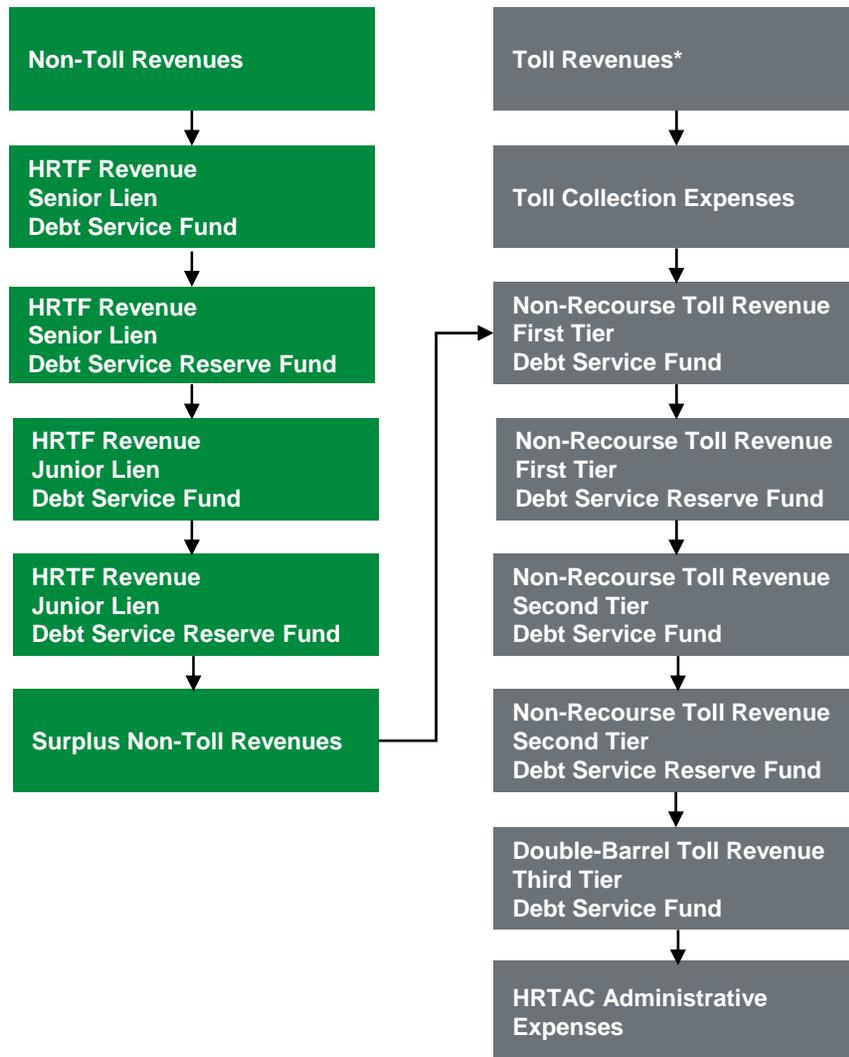
- Nine candidate projects endorsed by the HRTPO in October 2013, plus HRBT
- I-64 HOV to HOT Conversion is not included in the financial plan as it is not a HRTAC designated project.
 - PV of 40-year toll revenues is \$596M against capital cost of \$960M.
- HRBT is in the financial plan because it is part of the Hampton Roads Third Crossing SEIS and could be included in the Locally Preferred Alternative. In addition, forecasting a regional T&R requires an assumption be made regarding HRBT.



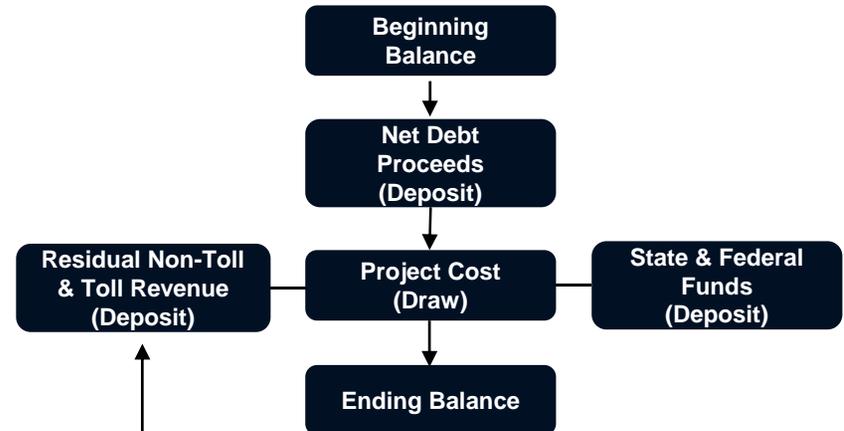
HRTAC Regional Financial Plan

Potential HRTAC Bonds Structure

Flow of Funds



Capital Funding



- Assumes toll collection costs paid by HRTAC and roadway O&M / R&R costs paid by VDOT
- Assumes some Commonwealth 9(c) and/or 9(d) credit enhancement capacity

Regional Toll System Concept

- Common approach to project planning and phasing for toll roads and other revenue generating infrastructure
- Common approach to setting toll rates considering both financial feasibility and traffic management
- Consolidated toll collection system and back office
- Ability to implement a regional toll system financing / bonding approach, as opposed to individual “stand-alone” project financing
- Integrated plan for toll projects and leveraging HRTF revenues
- Over time, significantly improved credit ratings and expended bonding capacity
- System revenues can fund system preservation costs over time

Why not a P3 Concession?

- PFM hasn't been asked to provide a P3 scenario
- Concerns with a P3 Concession Approach
 - Commonwealth credit enhancement greatly expands toll revenue bonding capacity, but it is not easily compatible with P3 concessions and equity return objectives
 - A toll system concept greatly expands toll revenue bonding capacity and offers other benefits, but it is not easily compatible with P3 concessions
 - A single P3 concession for all toll projects is probably prohibitively too large
 - A single P3 concession for all toll projects likely could not be priced efficiently as projects are not financed & constructed at the same time
 - Multiple P3 concessions for all toll projects would create competing facilities with different tolling objectives and profit motives
- There is approximately \$75 billion of publicly issued non-recourse toll revenue debt outstanding in the US – It is a proven & successful approach
- Nothing associated with HRTAC bond issuance, a toll system approach, or Commonwealth credit enhancement prohibits a non-concession P3
 - DB-ATC, Private toll collections, DBOM, etc. are all available project delivery options

Non Toll Funding Assumptions

- The projects will be financed with a combination of pay-go cash and debt proceeds supported by non-toll funds and toll revenues
- Non-toll funds include HRTF, HRTPO, and VDOT funds
- HRTF
 - Based on VDOT's forecast received in November
- HRTPO and VDOT Funds
 - HRTPO includes CMAQ and RSTP
 - VDOT includes HB2 District and Statewide Programs, State of Good Repair (HRBT rehabilitation costs), and provision of pre-construction and construction management services
 - In total, assumes a present value of \$2 billion over 20 years - annual funds of \$100M in 2016 and increase by 2.5% per year from 2017 to 2035

HRTF Preliminary Funding Analysis – Current Estimates

- HRTF Revenues
 - \$160,031,725 in FY 2014; \$165,088,591 in FY 2015
 - \$5.96 billion nominal total from FY 2016 to FY 2040
- HRTF Bond Issuance
 - Issuance every 2 years; first series in 2016 and last series in 2038 when final construction ends
 - 30-year level debt service
 - A rated credit; 10-year historical average interest rates
 - 1.25x minimum coverage ratio
- Total bond proceeds - \$4.7 billion
 - Plus unspent HRTF revenues from 2014 to 2016 - \$0.325 billion
- Residual revenues over 20 years (from 2017 to 2038)
 - Present value (discounted at 2.5% to 2015) - \$1.2 billion
- Total present value funding of \$6.3 billion from HRTF for 2014 to 2038

Potential HRTAC Tolled Projects

Initial Construction and Tolling Sequence

- HRBT is part of a single SEIS study with Patriots Crossing and MMBT may be determined to be included in the locally preferred alternative.
- It is assumed that the High Rise Bridge project will be constructed first, followed by Patriots Crossing, HRBT, MMBT, and Rt. 460/58 Connector.
- Tolling will take place upon construction completion for all the projects except HRBT.
- HRBT tolling commences with HRBT construction financing, which is when Patriots Crossing is scheduled to be complete and opened to traffic.
 - In the two identified congestion pricing scenarios, HRBT will be tolled at \$1.50/\$1.00 or \$3.00/\$2.00 (peak/off-peak) levels plus inflation to 2025; the rates will be increased by 50% from their respective levels in 2030 when HRBT construction is finished.
- The table below depicts initial assumed timing of project development.

	High Rise Bridge	Patriots Crossing	HRBT	MMBT	Rt. 460/58 Connector
Start Construction	2017	2020	2025	2030	2035
Finish Construction	2022	2025	2030	2035	2038
Start Tolling	2022	2025	2025	2035	2038

HRTAC Projects: Project Development Schedule Summary

- All projects' assumed **fiscally unconstrained schedules** are as follows:

	PE Start Date	Construction Start	Construction Finish	PE Duration	Construction Duration
I-64 Widening - Segment 1	7/1/2014	1/1/2015	1/1/2018	6 mns	36 mns
I-64 Widening - Segment 2	7/1/2014	1/1/2016	1/1/2019	18 mns	36 mns
I-64 Widening - Segment 3	7/1/2014	1/1/2016	7/1/2018	18 mns	30 mns
Ft. Eustis Blvd Interchange	7/1/2014	4/1/2016	10/1/2018	21 mns	30 mns
I-64/I-264 Interchange - Phase 1	7/1/2015	4/1/2016	9/1/2019	9 mns	41 mns
I-64/I-264 Interchange - Phase 2	1/1/2016	1/1/2017	12/1/2021	12 mns	59 mns
High Rise Bridge	1/1/2015	1/1/2017	1/1/2022	24 mns	60 mns
Patriots Crossing	11/1/2017	1/1/2020	1/1/2025	26 mns	60 mns
HRBT	5/1/2023	1/1/2025	1/1/2030	20 mns	60 mns
MMBT	11/1/2027	1/1/2030	1/1/2035	26 mns	60 mns
Route 460/58/13 Connector	1/1/2033	1/1/2035	1/1/2038	24 mns	36 mns

Source:

- VDOT Presentation dated July 17, 2014
- Email correspondence dated July 29, 2015

HRTAC Projects

Project Cost Summary

- All projects' **fiscally unconstrained costs** are shown below:
 - PV are in 2014/2015 dollars; Inflated costs assume 2.5% per annum
 - Projects assuming HOT tolling cost more than the Toll All Lane alternative

Non-Toll Projects

	PV \$	Inflated \$
I-64 Widening - Segment 1	\$125,098,045	\$128,046,468
I-64 Widening - Segment 2	\$213,592,853	\$224,097,790
I-64 Widening - Segment 3	\$311,303,870	\$333,094,762
Ft. Eustis Blvd Interchange	\$180,603,787	\$193,692,556
I-64/I-264 Interchange - Phase 1	\$153,709,251	\$162,935,186
I-64/I-264 Interchange - Phase 2	\$190,031,747	\$208,782,479

Toll Projects

	PV \$		Inflated \$	
	HOT	Toll All Lane	HOT	Toll All Lane
High Rise Bridge	\$1,285,930,000	\$1,202,857,000	\$1,448,727,063	\$1,354,680,271
Patriots Crossing	\$4,018,670,000	\$4,018,670,000	\$4,870,038,360	\$4,870,038,360
HRBT	\$3,734,400,000	\$3,647,495,000	\$5,088,449,877	\$4,970,034,138
MMBT	\$4,043,370,000	\$2,837,196,000	\$6,272,607,898	\$4,390,240,878
Route 460/58/13 Connector	\$220,010,000	\$183,258,000	\$376,846,034	\$313,561,982

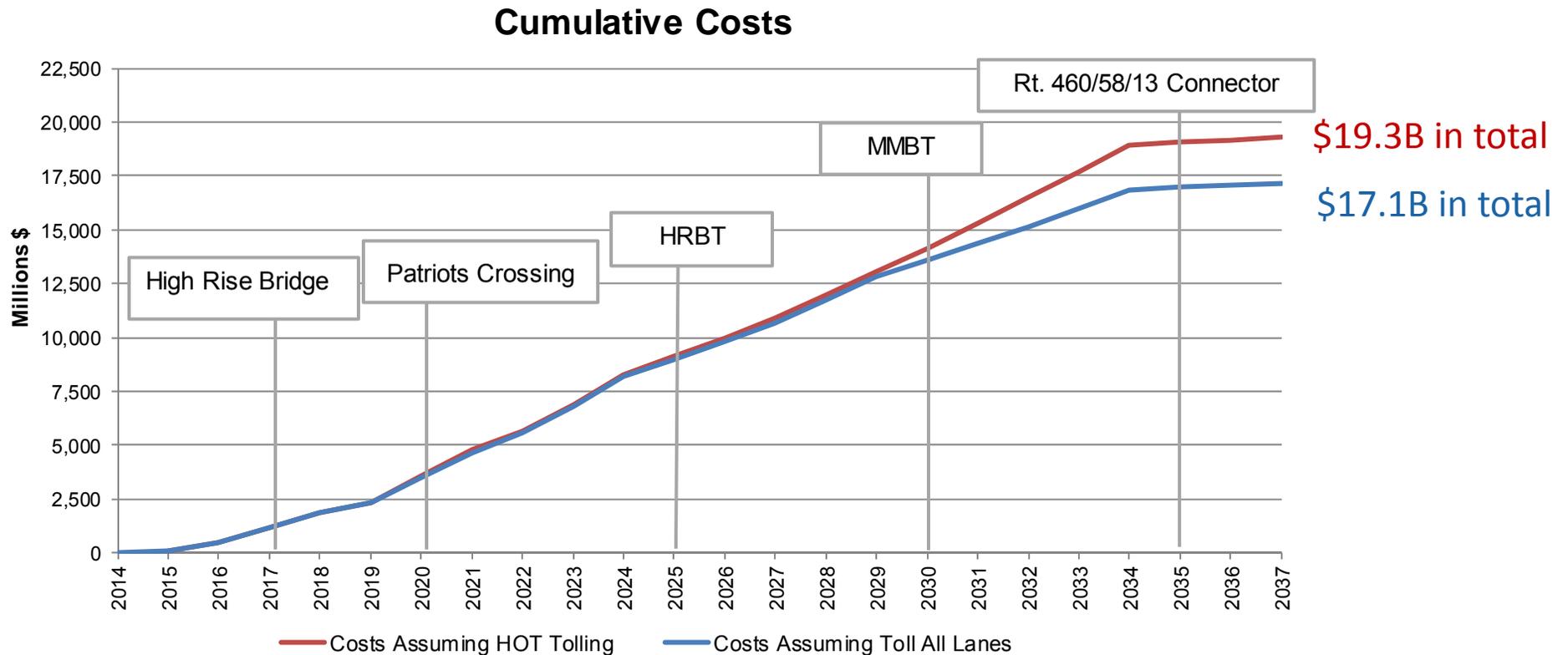
All Projects

	PV \$		Inflated \$	
	HOT	Toll All Lane	HOT	Toll All Lane
	\$14,476,719,553	\$13,063,815,553	\$19,307,318,474	\$17,149,204,872

Source: Cost Estimate by CH2MHILL prepared in July 2014 and October 2015

Preliminary Inflated Project Costs

- All projects assuming the schedules shown earlier and a 2.5% annual inflation rate (toll projects' construction start years are displayed).



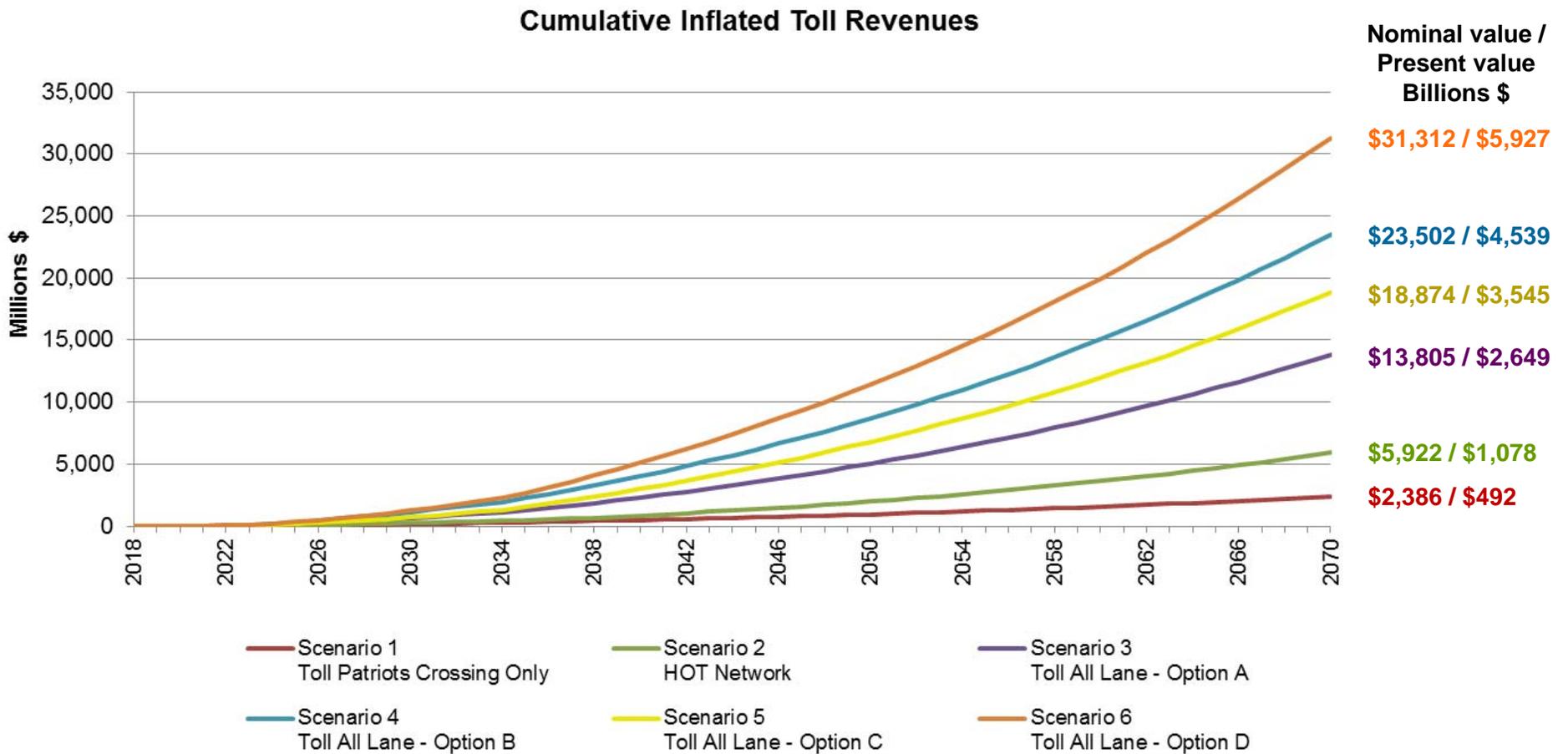
* Lines point to the time when each project's construction starts

Initial Project Financing Scenarios

- Six project financing scenarios are identified including HRBT.
- CDM Smith and CH2MHILL have provided T&R and capital cost estimates for all scenarios.
 - 1) Toll Patriots Crossing Only** assumed \$2.00 fixed toll rate
 - 2) HOT Network**
HOT on existing I-64 HOV lanes, High Rise Bridge, HRBT, MMBT, and Rt. 460/58 Connector; \$2 fixed toll rate all lanes on Patriots Crossing
 - 3) Toll All Lanes – Option A**
\$1 on High Rise Bridge, Patriots Crossing, HRBT and MMBT; HOT on Rt. 460/58 Connector
 - 4) Toll All Lanes – Option B**
\$2 on High Rise Bridge, Patriots Crossing, HRBT and MMBT; HOT on Rt. 460/58 Connector
 - 5) Toll All Lanes – Option C**
Same as Scenario 3 except peak & off-peak congestion pricing at \$1.5 & \$1 on HRBT
 - 6) Toll All Lanes – Option D**
Same as Scenario 4 except peak & off-peak congestion pricing at \$3 & \$2 on HRBT

** All stated toll rates are in 2015 dollars; toll rates are inflated by 2.5% annually*

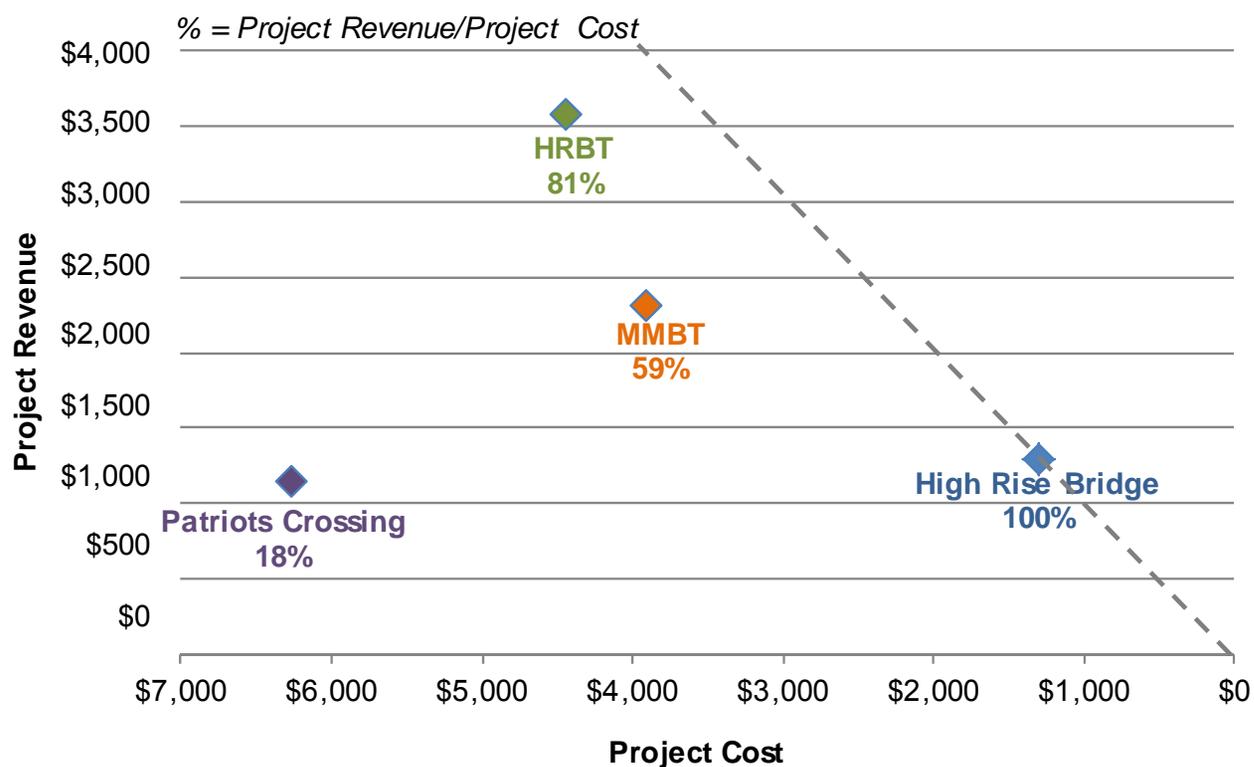
Preliminary T&R Estimates



*Revenues through 2070 discounted to 2016 @ 5.0%

Toll Revenue to Cost Efficiency

- The ratio of toll revenues/project costs is an indication of how self-supporting each project can be and how it impacts the network financing.



- Project Cost in millions = construction costs inflated to respective construction start years @ 2.5%
- Project Revenue in millions = 40-year toll revenues discounted to respective construction start years @ 5.0%

HRTAC Scenario 1 – 6 Results (Present Value; 2016 \$s)

- Scenario 1-6 are not financially feasible with the previously discussed non-toll and toll revenues and other assumptions.
- In order to have all projects completed by 2040, PFM has analyzed the following:
 - 1) Additional grant funds, OR
 - 2) Increase annually recurring tax revenues

	Scenario 1 Toll Patriots Crossing Only	Scenario 2 HOT Network	Scenario 3 Toll All Lanes Option A	Scenario 4 Toll All Lanes Option B	Scenario 5 Toll All Lanes Option C	Scenario 6 Toll All Lanes Option D
<i>\$ millions</i>						
Present Value of Additional Grants Needed*	6,122	6,971	3,773	1,874	2,948	751
Additional Tax Revenue Needed**	229	265	133	60	104	19

Note:

*PV of grants net of residual revenues through 2040 discounted to 2016 @ 2.5%

**Additional HRTF revenue in 2016 needed; annual revenues thereafter are based on the new assumed 2016 revenue and grow at the growth rates as the current estimates.

HRTAC Scenario 1 – 6 Results (Future Value)

- Scenario 1-6 are not financially feasible with the previously discussed non-toll and toll revenues and other assumptions.
- In order to have all projects completed by 2040, PFM has analyzed the following:
 - 1) Additional grant funds, OR
 - 2) Increase annually recurring tax revenues

	Scenario 1 Toll Patriots Crossing Only	Scenario 2 HOT Network	Scenario 3 Toll All Lanes Option A	Scenario 4 Toll All Lanes Option B	Scenario 5 Toll All Lanes Option C	Scenario 6 Toll All Lanes Option D
<i>\$ millions</i>						
Future Value of Additional Grants Needed*	7,799	9,005	4,528	2,045	3,551	642
Additional Tax Revenue Needed**	229	265	133	60	104	19

Note:

*FV of grants net of residual revenues through 2040

**Additional HRTF revenue in 2016 needed; annual revenues thereafter are based on the new assumed 2016 revenue and grow at the growth rates as the current estimates.

Ideas for Potential Solutions to Close the Funding Gaps

- HRTF revenue “floor” for the fuel tax and/or new source(s) of regional revenue
 - Requires General Assembly Approval
- VDOT funds HRBT rehabilitation entirely from State of Good Repair
 - Need to determine how much of total cost is rehabilitation of existing facilities
- VDOT provides and separately funds all construction management (~10%)
 - Present value \$1.3 billion and future value \$1.7 billion
- Consider toll rates higher than studied
- Direct regional HB2 funds to HRTAC projects
 - Need to determine what is reasonably expected for the region and priorities
- Consider alternate project construction & tolling sequencing
 - For example, constructing High Rise Bridge, HRBT, and MMBT prior to Patriot Crossing allows for toll revenue capacity to finance all projects before 2040 using the toll system
- Consider eliminating projects from the 2040 LRTP
 - Not as simple as subtracting costs as you also subtract toll revenue and/or change traffic & revenue patterns on other facilities