



Agenda

CTB Rail and Transit Subcommittee Meeting
VDOT Central Office – HR Training Room
1221 East Broad Street
Tuesday, June 21, 2022
9:00 a.m.

1. Approval of the May 17, 2022 Minutes
2. Director's Update – *Jennifer DeBruhl*
3. HJ 542 Virginia Transit Equity & Modernization Study Update – *Grant Sparks*
4. Commonwealth Rail Fund: Benefit-Cost-Analysis – *Michael Todd*
5. Public Comment



HJ 542 Virginia Transit Equity & Modernization Study

June 21, 2022

Grant Sparks, AICP

Acting Chief of Public Transportation, DRPT

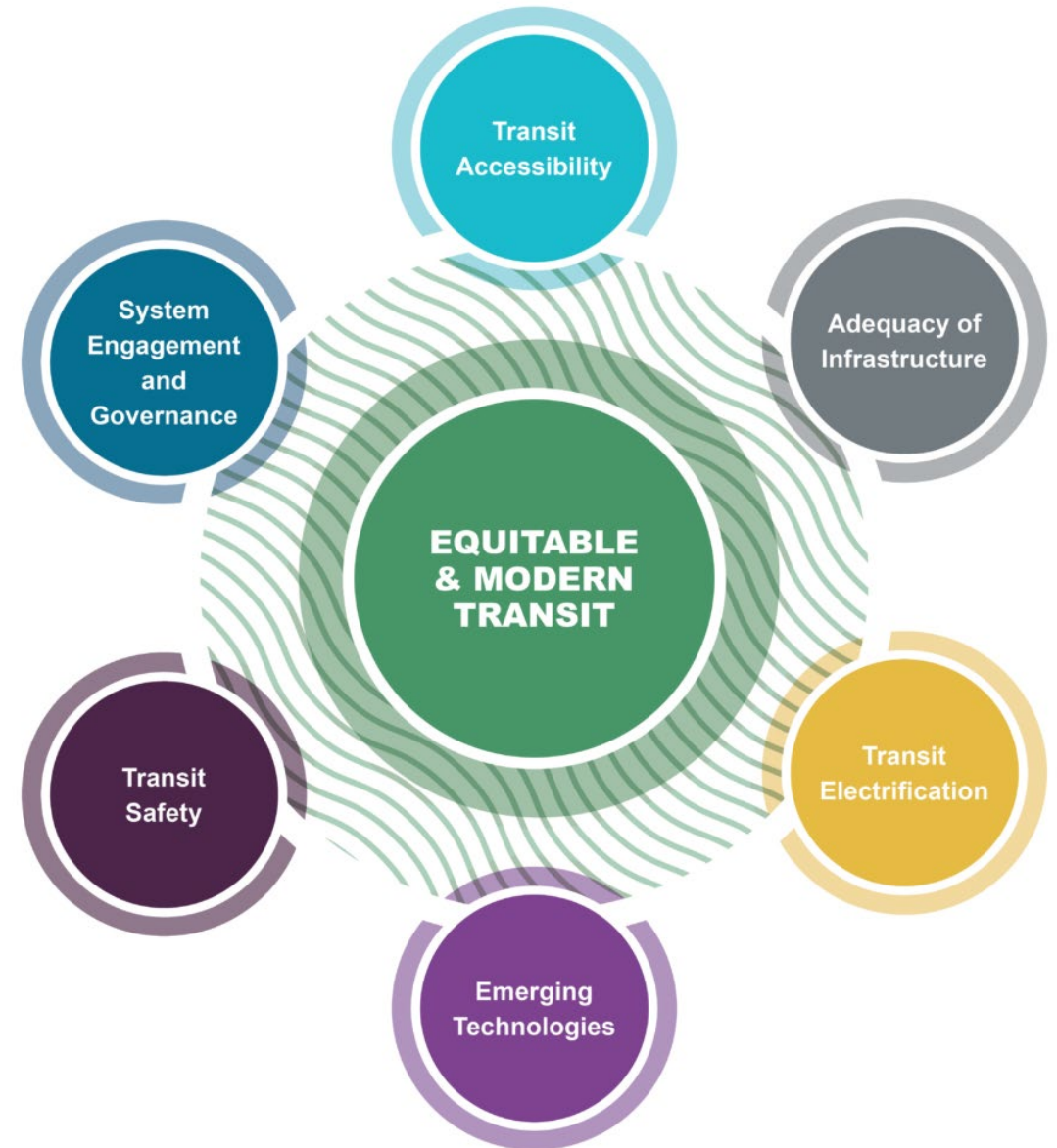
Outline

- Study Background
- Key Study Activities
- Interim Study Report Summary
- Action Plan Summary
- Next Steps

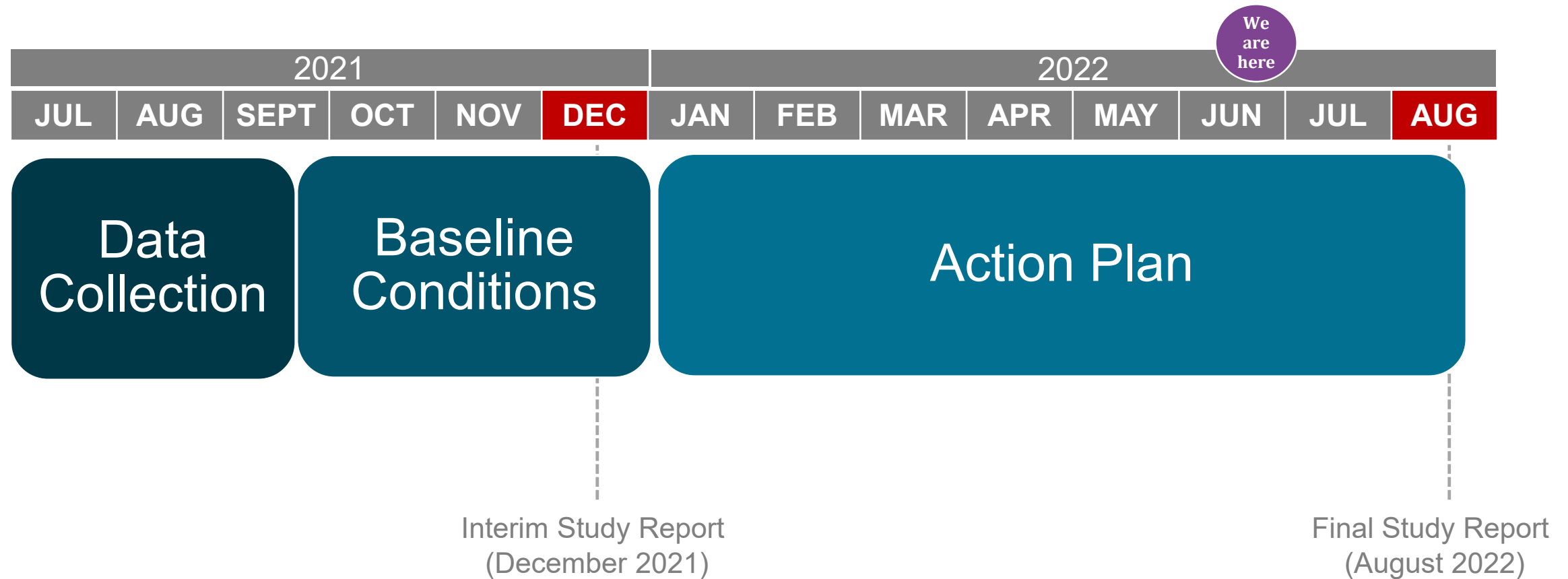
Study Background

HJ 542 (2021)

- DRPT to complete a needs assessment focusing on the equitable delivery of transit services and modernization of transit in the Commonwealth
- In addition to “equity” and “modernization” the resolution requires DRPT to explore a wide variety of topics
- Emphasis on transit services and engagement opportunities for underserved and underrepresented communities



Study Background



Key Study Activities

Completed

- ✓ Data Collection
- ✓ Transit Agency Survey
- ✓ Rider Focus Groups
- ✓ Baseline Conditions Assessment
- ✓ Interim Study Report
- ✓ Action Plan
- ✓ Transit Equity & Modernization Committee (TEMC)
- ✓ Technical Working Groups (TWGs)
- ✓ Stakeholder Meetings
- ✓ Agency Briefings
- ✓ Share Your Transit Story Campaign
- ✓ Virtual Forum

Upcoming

- Final Study Report

Interim Study Report Summary

- Basic transit infrastructure (shelters, benches, lighting, etc.) is insufficient
- Many bus stops are poorly placed and not well-connected to sidewalks
- Availability of transit in Virginia is high, but gaps do exist
- There is increasing interest in piloting zero-fare services to overcome barriers to transit accessibility
- More and better data is needed to make well-informed decisions



Interim Study Report Summary

- There is a significant interest from Virginia's transit agencies to electrify fleets and adopt newer transit technologies, but additional resources are required (funding, skilled workforce, training, technical assistance, etc.)
- Transit is among the safest ways to travel, but there is room to improve both perceived and actual safety for transit riders, operators, and employees.
- Some transit riders have limited opportunities to be part of the decision-making process
- Most transit agencies do not have rider advisory boards or committees



Interim Study Report Summary

Introduction | People and Communities | **Transit Today – Findings** | Next Steps

Vehicle Propulsion and Control

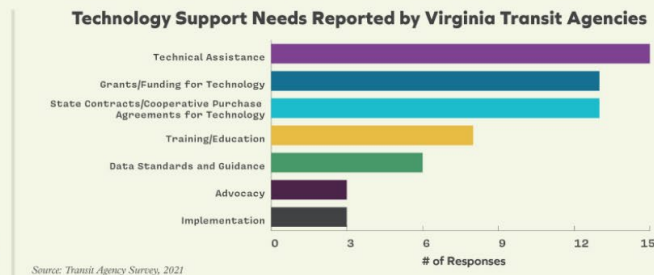
Transit Operations Technology

Technology Categories

Customer-Facing Information

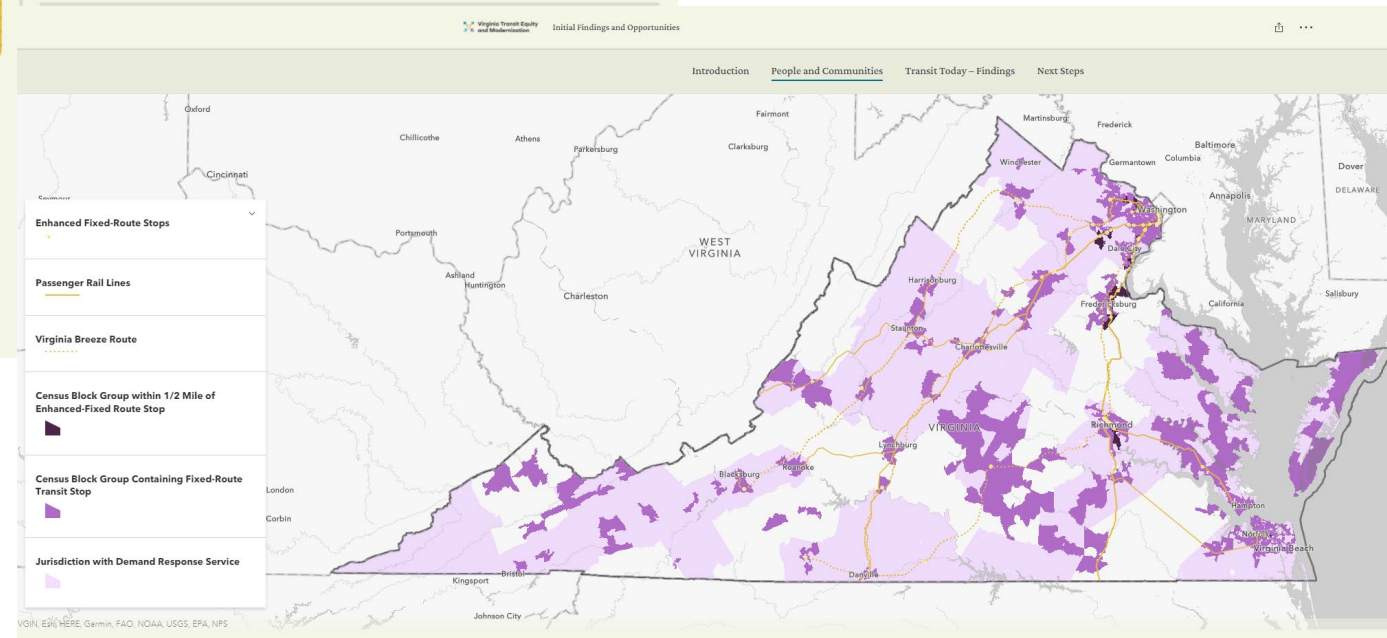
Payment

Shared Mobility



An Interactive Story Map of the Interim Study Report can be found on the study website at:

www.vatransitmodernization.com



Action Plan Summary

Highlights

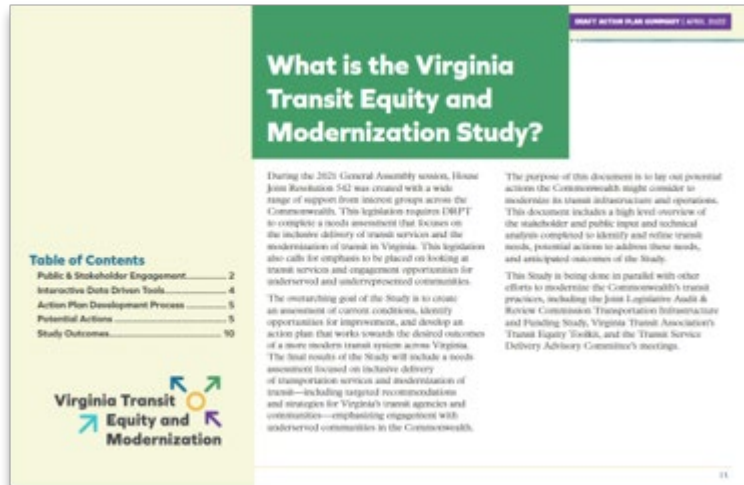
- Develop technical guidance or policy on bus stop design elements and installation
- Develop guidance or best practices to help streamline stakeholder coordination and prioritize improvements around bus stops
- Update MERIT Capital scoring criteria to incentivize improvements to bus stop infrastructure
- Develop technical guidance or industry best practices for monitoring and reporting on infrastructure performance and condition
- Develop qualitative and quantitative metrics to measure reliable and effective transit service that promotes access to opportunity
- Update and enhance DRPT's Transit Strategic Plan (TSP) guidelines to provide strategies for enhanced public engagement

Action Plan Summary

Highlights

- Identify a statewide transit electrification goal and develop a statewide transit electrification transition plan
- Develop recurring assessments of transit technologies used in the Commonwealth
- Develop guidance for establishing and negotiating transit technology contracts
- Expanded use of transit data standards such as GTFS Real-time and GTFS Flex
- Provide research and best practices for transit agencies to coordinate with local public safety and law enforcement
- Promote and encourage the creation of rider advisory council/committees with local transit agencies
- Promote the availability of DRPT technical assistance and funding programs and create a guide for agencies that outlines available assistance sources (federal, state and regional funding).

Action Plan Summary



Virginia Transit Equity and Modernization

DRAFT ACTION PLAN SUMMARY | APRIL 2022

Near-Term Actions (1-3 years)

Action	Anticipated Level of Effort	Agency Benefits	Rider Benefits	Technical Area
Provide transit agency staff, local decision-makers, and the public with information about trade-offs to make decisions that provide the greatest economic and societal benefits	Low	<ul style="list-style-type: none"> More informed decision-making More efficient allocation of resources 	<ul style="list-style-type: none"> Higher quality transit infrastructure New or enhanced transit service 	Transit Accessibility
Develop resources to assist agencies with improving their fare collection policy and practices	Low	<ul style="list-style-type: none"> More informed decision-making More efficient allocation of resources 	<ul style="list-style-type: none"> Improved customer experience 	Transit Accessibility
Develop suggested best practices for coordination between land use planning and transit planning	Medium	<ul style="list-style-type: none"> Increased coordination with partner agencies Shared knowledge of industry best practices 	<ul style="list-style-type: none"> Improved processes that center rider needs 	Transit Accessibility
Provide guidance or best practices for more effective stakeholder coordination when prioritizing improvements around bus stops	Medium	<ul style="list-style-type: none"> Increased coordination with partner agencies 	<ul style="list-style-type: none"> Improved processes that center rider needs Higher quality transit infrastructure 	Adequacy of Infrastructure
Develop technical guidance or policy on bus stop design elements and development	Low	<ul style="list-style-type: none"> More efficient allocation of resources 	<ul style="list-style-type: none"> Higher quality transit infrastructure Improved processes that center rider needs 	Adequacy of Infrastructure
Provide technical guidance or industry best practices for monitoring and reporting infrastructure performance	Low	<ul style="list-style-type: none"> New or improved metrics and measures to track performance 	<ul style="list-style-type: none"> Improved processes that center rider needs 	Adequacy of Infrastructure
Establish statewide goals for electrifying transit vehicles and a transition plan to convert transit agency fleets	Medium	<ul style="list-style-type: none"> New or improved metrics and measures to track performance 	<ul style="list-style-type: none"> Increased use of state-of-the-art technologies 	Electrification
Conduct recurring assessment of innovations in the electric transit vehicle industry	High (ongoing)	<ul style="list-style-type: none"> More informed decision-making More efficient allocation of resources 	<ul style="list-style-type: none"> Increased use of state-of-the-art technologies 	Electrification
Develop implementation resources for agencies to assist with fleet transition planning	Medium	<ul style="list-style-type: none"> More informed decision-making More efficient allocation of resources 	<ul style="list-style-type: none"> Increased use of state-of-the-art technologies 	Electrification

■ *Unless otherwise indicated, DRPT is leading implementation of the actions outlined in this table

Potential Actions

Next Steps

- The Draft Action Plan was available for Public Comment in May 2022
- DRPT will submit a Final Study Report to the General Assembly in August 2022
- DRPT will develop policies, procedures, and/or scopes of work for items listed in the Study Action Plan

Questions?

Grant Sparks

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Commonwealth Rail Fund: Benefit-Cost-Analysis

CTB Subcommittee – June 21, 2022

Michael Todd, Rail Programs Director
Department of Rail and Public Transportation



AGENDA

- Purpose / Overview
- Major Inputs
- Recent Updates



Purpose & Overview

Purpose / Use

REF Application Criteria

- Code included need for any project's benefit to exceed the cost

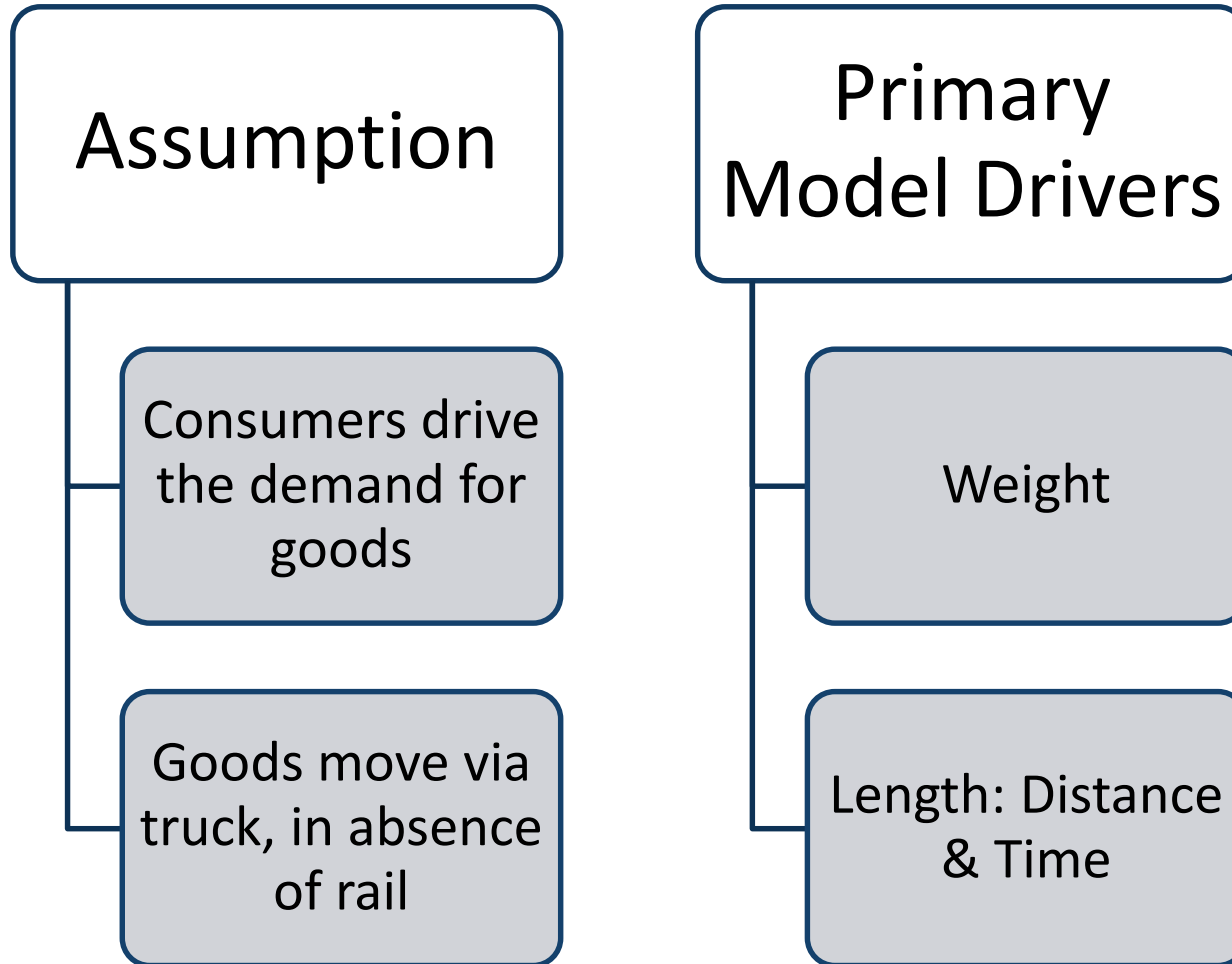
Monetize benefits of truck to rail diversion

- Project cost vs monetized benefits of rail travel

Current Uses

- FREIGHT Application Scoring Criteria
- State Rail Plan
- RIA (non-application criteria)
- Project prioritization
- Federal Applications

Primary Drivers



Major inputs

BCA INPUTS: Timeline

	Applicant Entry Field Name	Information Entry	Units or Accepted Values	Description/Definition
Project Timeline	Current Year		4-Digit Year	The current year, the year in which projects are scored.
	Project Start		4-Digit Year	The year in which project construction is slated to begin.
	Project Finish		4-Digit Year	The first full year in which project construction will be finished, project benefits will start to be realized in this year.

BCA INPUTS: Location

Project Location	Associated Highway	<div style="border: 1px solid black; padding: 2px;"> I-64 I-66 I-81 I-95 US29 US58 US460 </div>		(I-64, I-66, I-81, I-95, US29, US58, US460, and/or Select Counties)	The highway(s) that new rail freight or passenger service is diverting from when switching from highway use. Click to select one or more highways from the list at left. For state average, select all highways. To select or remove individual counties from selected highways go to Detailed Location worksheet (Make Highway Selection First).
	Rural and Urban Breakdown	Rural	Urban	Rural Percentage, Urban Percentage	Percentages of Rural and Urban along the selected routes.
		76.81%	23.19%		

BCA INPUTS: Rail Data

Rail Freight Data	Annual tons of rail shipments (current)	0	tons/year	The current tonnage of rail shipments being made that can be associated with the project that start in, finish in, travel within or go through Virginia.
	Current Railcar Demand		# of railcars/year	Number of rail cars hauled on the line or branch serving the project (previous year).
	Additional Annual Railcar Demand	Please See Railcar/Passenger Demand Worksheet	# of railcars/year	Projected number, in addition to the current railcar demand, of railcars needed for service, by year, after project completion.
	Rail tons per railcar	70.20	tons/railcar	The average number of tons carried by one railcar on the project route. This value can be changed if detailed information about the shipments made on this route are available and will override the default value listed for trucks per railcar. The default value is 70.2 tons/railcar.
	Railcars per train		railcars/train	Average number of railcars in a train for the freight service associated with this project.
	Freight Rail Route Length, current		mi	Length of the current route.
	Freight Rail Route length, after project completion		mi	Length of the new route after project construction.
	Reduced Freight Mileage	0.00	mi	Distance the track in VA has been shortened, in miles, due to the construction of the project. (current-after project completion).
	Rail Average Travel Speed		mph	The average speed of freight trains using the projected route per year.
	Standard Deviation of Freight Travel Times, current		units	Current standard deviation of travel times.
	Standard Deviation of Freight Travel Times, after project completion		units	Post-project standard deviation of travel times.
	Percent Increase in Reliability	0.00%	percent	Percent increase in reliability, scaled from the percent change in standard deviations.
	Reliability Payoff	\$2,200.00	dollars/million ton miles	Benefit per 1% increase in reliability per million ton miles.
	Number of Rail Crossings Removed		number	Number of rail crossings removed due to the construction of the project.
Inventory Cost of Freight	0.0034	dollars/ton/hour	Cost of inventory per ton, per hour in transit. Virginia freight average if \$0.0034. Change if necessary.	

BCA INPUTS: Truck Data

Truck Freight Data	Truck Trip Length, Current (VA)		miles	Average distance traveled per trip by freight trucks, that will switch to rail after project completion. The mileage reflects highway miles driven in Virginia.
	Trucks per railcar	3.41	#	The average number of trucks required to replace one railcar. The default value is based on freight movements starting in, ending in, travelling through or travelling within the State of Virginia. This value will be overwritten if rail tons per railcar and/or tons per truck load are overwritten.
	Truck Average Travel Speed	55.00	mph	Average speed of trucks on routes competing with rail lines.
	Trucks per Year	0.00	# of Trucks	Number of trucks per year assuming all railcar demand is diverted to trucks.
	Tons per Truck Load	20.59	tons/truckload	The average number of tons carried by one truck related to the the project route. This value can be changed if detailed information about the shipments made on this route are available and will override the default value listed for trucks per railcar. The default value is 20.59 tons/truck.

BCA INPUTS: Cost

1) Fill in Project Costs	Capital Costs (All Costs Assoc			
	Capital Costs (All Costs Associated, DRPT + Other sources of funding)	Environmental Evaluation/ Permitting	Public Involvement	Design Engineering
2022	\$ 20,000.00			
2023		\$ 40,000.00		
2024				
2025				
2026				
2027				
2028				
2029				

BCA INPUTS: Carloads

Freight	Projected number of railcars needed for service (total, in Virginia), by year, after project completion.	Number of Railcars needed in addition to current service demand. (Total Needed - Current Used)
0	0	
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

BCA OUTPUTS: Summary

	Monetary Totals	Definition
Congestion Reduction Benefit	\$ -	Improvement in the levels of highway congestion realized by shifting freight from truck to rail, reducing the number of trucks on major highways.
Environmental Improvement - (Shift from trucks to trains)	\$ -	Benefit associated with the reduction in the level of Carbon Dioxide, Volatile Organic Compounds, Nitrogen Oxides and Particulate Matter due do truck traffic moving to rail.
Environmental Improvement - (Distance Reduction)		Benefit associated with the reduction in the level of Carbon Dioxide, Volatile Organic Compounds, Nitrogen Oxides and Particulate Matter due the freight network being reduced in length.
Shipping Cost Reduction - (Distance Reduction)		When an existing route is reduced in length, the cost to ship freight will be reduced resulting in a shipping cost reduction.
Shipping Cost Reduction - (Mode Switch)	\$ -	As the shipping costs per mile vary between truck and trains, a shift to rail from truck will result in a lower shipping cost per ton mile for long haul shippers. This is the benefit realized by reducing switching shipping modes.
Savings in Pavement Maintenance	\$ -	When trucks shift from truck freight to rail, the maintenance cost for the highway routes will decrease. This calculates the reduction in road pavement maintenance costs due to the shift.
Accident Reduction Benefit	\$ -	Reduction in the probability of having an accident on the highway due to reduction of truck mileage.

BCA OUTPUTS: BCA

	BC Ratio (NPV 3%)	BC Ratio (NPV 7%)
DRPT Funds Only	2.993	2.334
Total (All Funds)	1.496	1.167

RECENT UPDATES

Additional Benefits

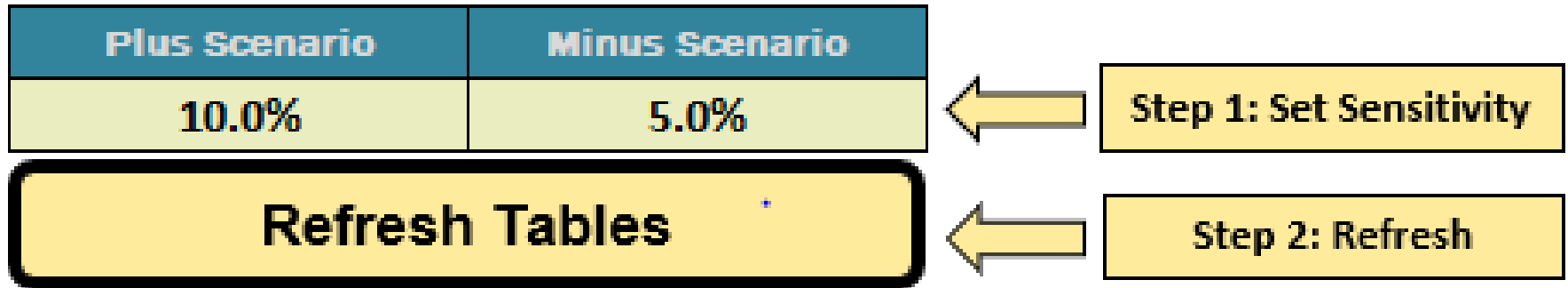
Inventory Carrying Cost

- value of time for goods movement
- average travel time
- average value per ton of freight
- model includes a Virginia average or grantee can update

Reliability

- monetizes increased predictability in travel times
- uses standard deviations (provided by the user) to measure the decrease in uncertainty

Additional Functionality



- Sensitivity Analysis
 - Vary key inputs and see the relative impact on the BCA results given a change to one parameter.

Additional Functionality

		Non-Monetary Benefit Totals
Freight Benefits	Total reduction in truck VMT	
	Number of trucks replaced by rail	
	Kilograms of NOx reduced from truck diversion	
	Kilograms of Co2 reduced from truck diversion	
	Kilograms of other pollutants reduced from truck diversion (THC, CO, PM, VOC)	

Thank You

•DRPT•

