



PROJECT PIPELINE

Northern Virginia Joint Meeting
Chad Tucker - OIPI

December 15, 2021



Project Pipeline - Background

Program Goals:

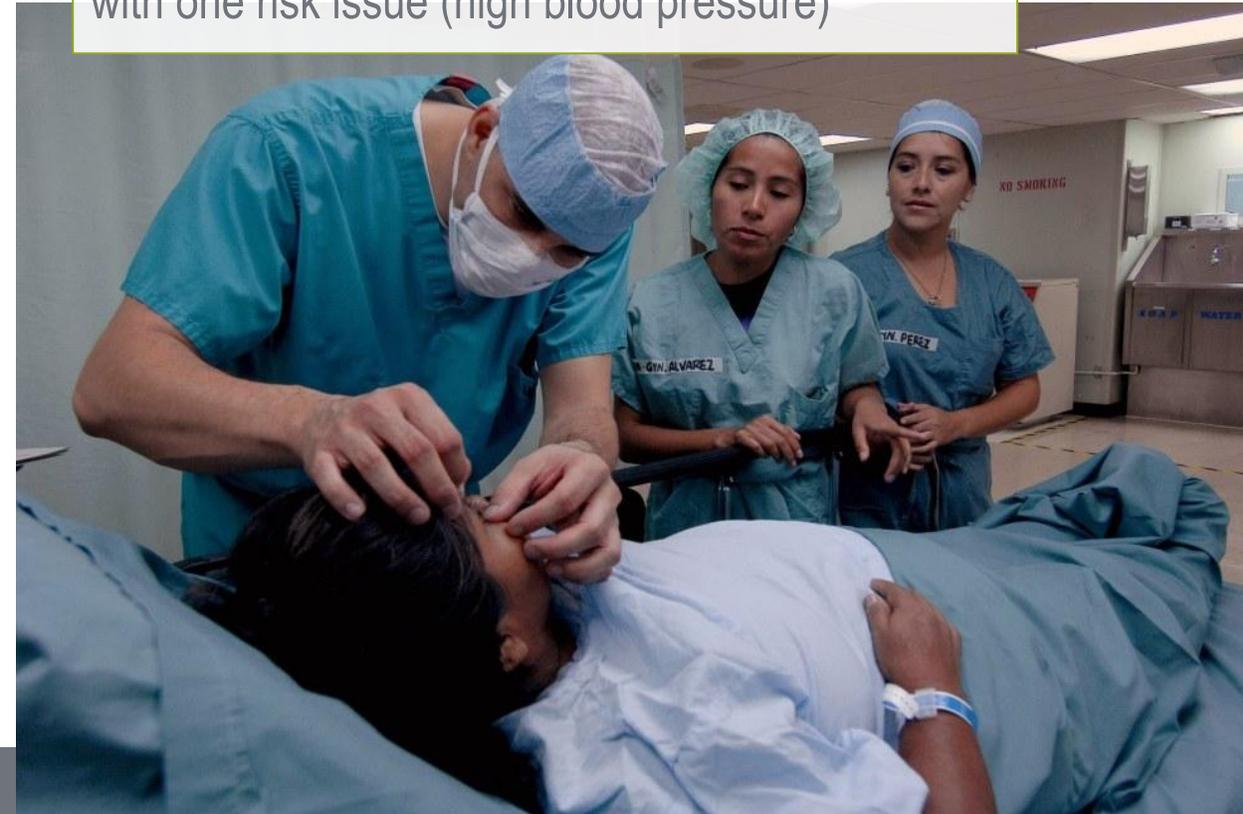
- Focus planning/project development on CTB VTrans priorities
- Streamline project planning and improve project readiness
- Improve and ***develop tools make use of powerful data*** and improve collaboration
- Solve more problems with limited transportation dollars

Project Pipeline – Focus on Board Priorities



VTrans **PRIORITY LOCATIONS** are identified based on overlap and intensity of *multiple need categories* that are affecting transportation system health and performance.

Doctor's will focus on a patient with overlapping risk factors (obese, high blood pressure, diabetes, high cholesterol, etc) before a patient with one risk issue (high blood pressure)



Project Pipeline – Selecting Study Locations

- Used the following guidelines:
 - Five locations per District
 - Start with VTrans priority 1 needs
 - Remove locations to be addressed by funded projects – Six Year Plan, NVTA, CIPs, etc.
 - Remove locations with previous and current STARS/AMPS/Corridor Studies
 - Look for high benefit Round 4 SMART SCALE that were not funded
- Potential study locations reviewed with District Board member and 5 locations finalized

Project Pipeline - Northern Virginia District

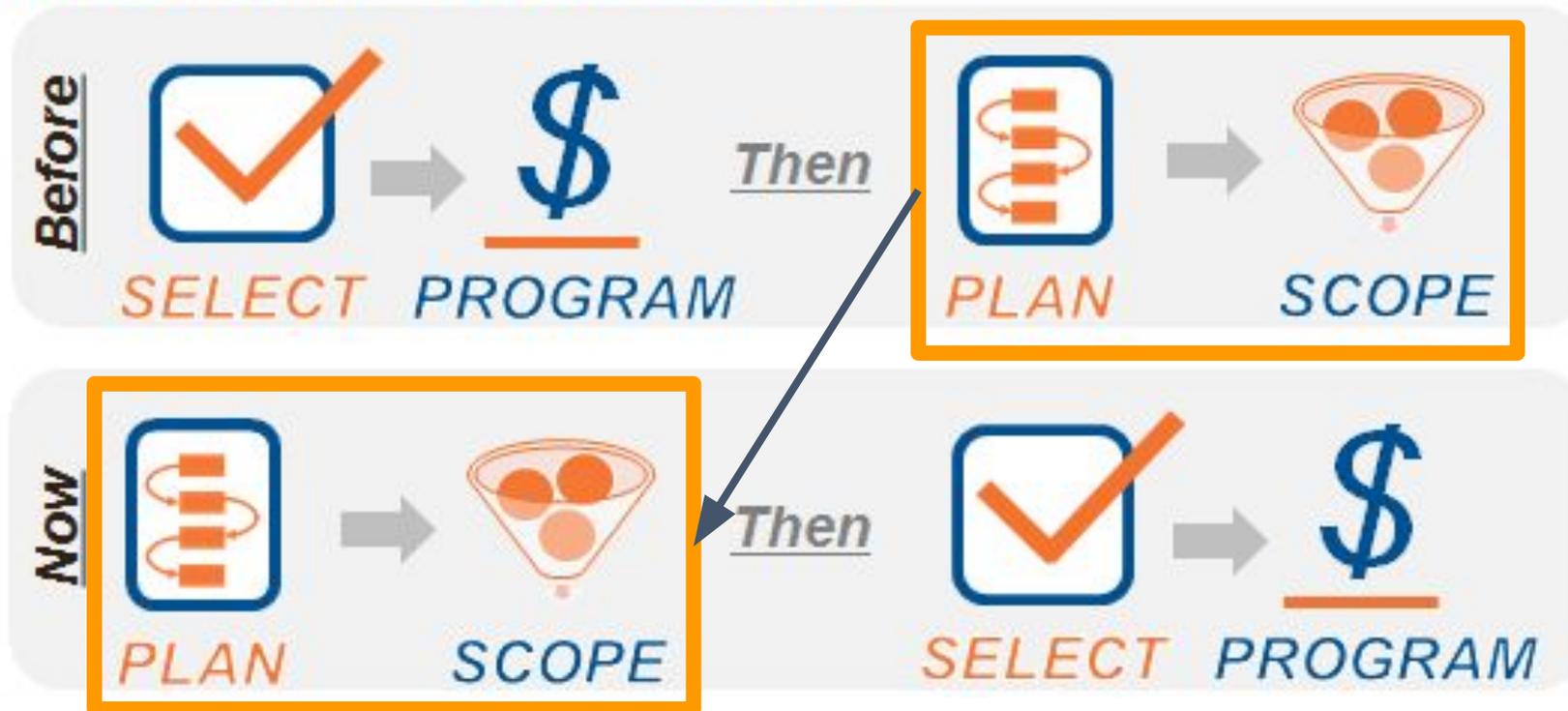
- Rt 236 from Prosperity Ave. to Wakefield Chapel Dr. - Fairfax County
- Rt 7 from Rt 123 to I-495 (Tysons)- Fairfax County
- Rt 29 from Rt 15 to Linton Hall Rd - Prince William County
- Prince William PW from Smoketown Rd to Caton Hill Rd - Prince William County
- Rt 7 from Rt 9 to Dulles Greenway in Loudoun County

What is the Multimodal Project Pipeline is and isn't?

- Multimodal Project Pipeline has no impact on a project's SMART SCALE score or project eligibility
- It has no impact on whether a project can be considered for construction funding in any program
- It focuses state planning funds and resources on top VTrans needs to support project planning and development - think state version of PL work program.
- Projects developed using performance-based planning principles have had greater success in receiving funding in past rounds of SMART SCALE and present less scope/schedule/budget risk across all programs - **STARS project have 80% success rate**

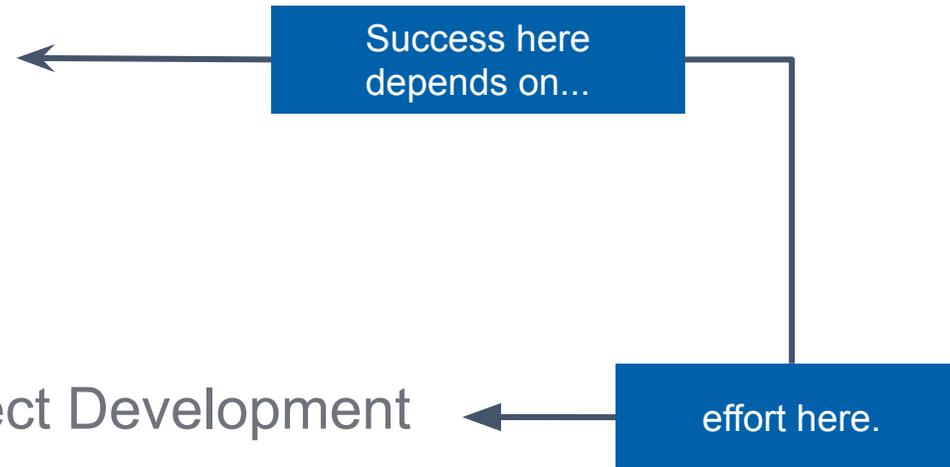
Project Pipeline - Improving Planning and Readiness

Paradigm Shift – Project Selection



Performance Based Planning

- Performance based programming
 - SMART SCALE
 - SGR
 - HSIP
- Performance Based Planning/Project Development
 - Deliberate, process oriented approach to project development
 - Using data to identify needs and evaluate solutions
 - Rethinking how to solve transportation problems



Project Pipeline - Performance Based Planning

Does this decision tree make sense?



New Engine



New Car



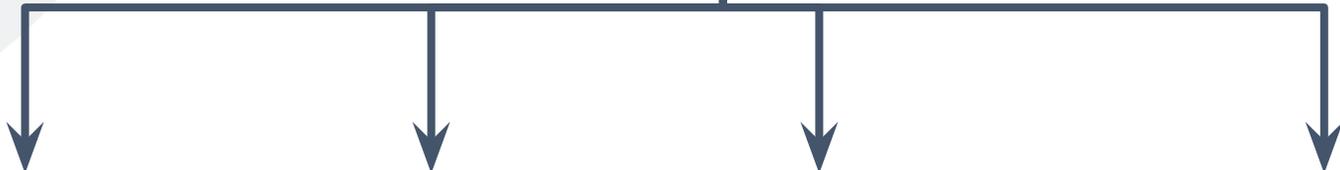
Project Pipeline - Performance Based Planning

Or is this more logical...

Understand the problem



Develop/Test Solutions

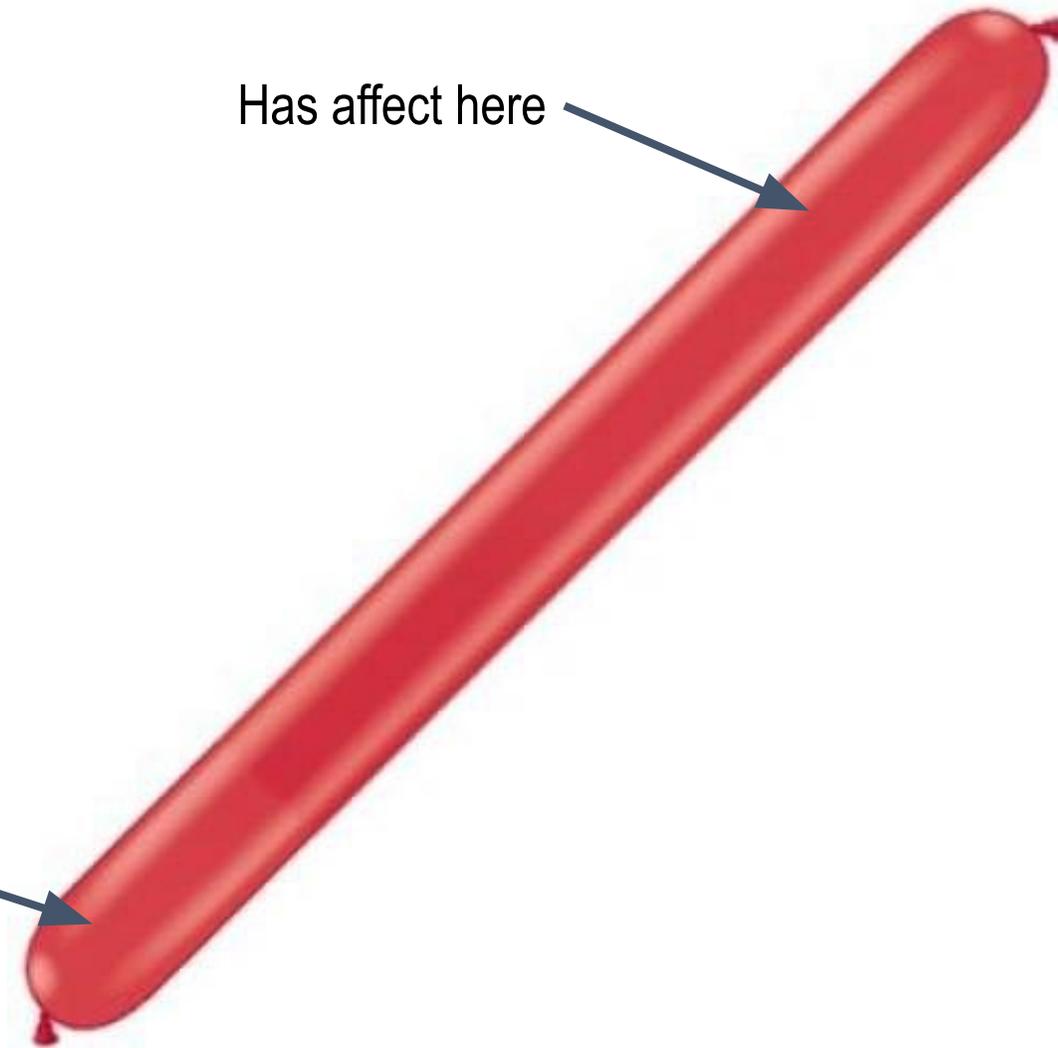


NOVA: Saturated System

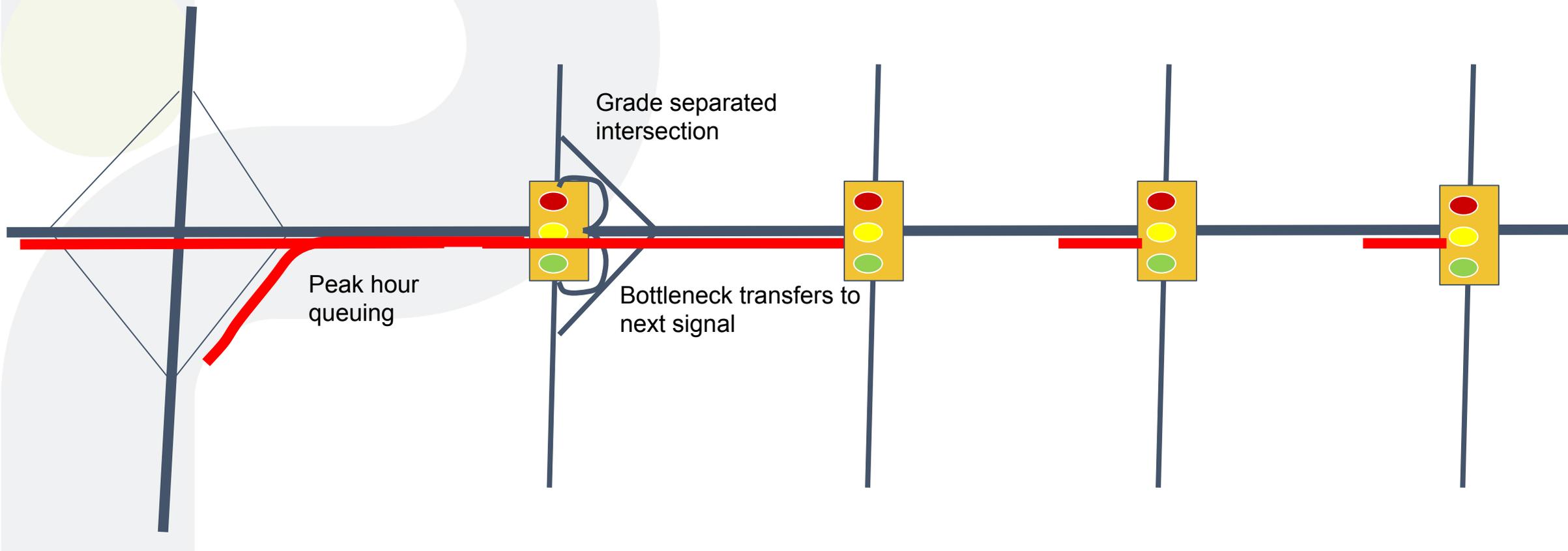
Reducing Delay in a Saturated System

Has affect here

Squeezing here

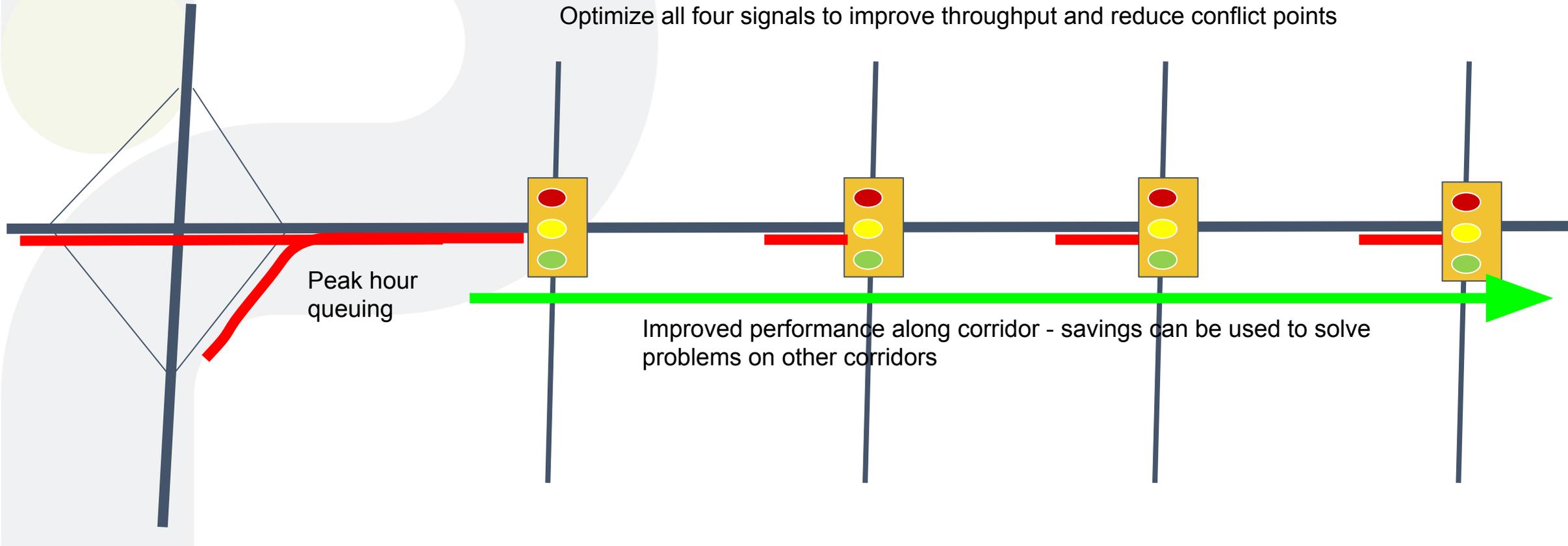


Transportation as a System



Transportation as a System

Optimize all four signals to improve throughput and reduce conflict points



Peak hour
queuing

Improved performance along corridor - savings can be used to solve
problems on other corridors

Project Pipeline - Improve Data Tools and Collaboration

Centralize data collection and leverage DASHBOARDS to streamline problem diagnosis

Main Template

VDOT Crash Tool	LOTTR	HTS Travel Patterns
Crash	Speeds TMC - Hourly Avg	MWCOG Forecast
Travel Time Index	Speeds TMC - 15min Avg	
Planning Time Index	Speeds XD - Hourly Avg	
Pavement	Streetlight	



Dashboards are password protected and only accessible to staff with VDOT network access and consultant team members who have signed data use agreements

TTI Dashboard



PROJECT PIPELINE

File Export Share

Project_ID: NV01

NV01 Project Pipeline #1 - Route 236 from Prosperity Avenue to Wakefield Chapel Road

TTI by TOD Weekday

Location Search: ANNANDALE RD/..., BACKLICK RD, BRADDOCK RD, BRADDOCK RD/E..., HERITAGE DR/HU..., I-495/CAPITAL BE..., I-495/WOODBUR..., PROSPERITY AVE, US-50/ARLINGTO..., VA-123/CHAIN B..., VA-236/LITTLE RI..., VA-236/MAIN ST

TTI by TOD Weekend

INRIX TMCs and Project Pipeline 2-mile Buffers Areas

Daily average number of hours with TTI value greater than thresholds

8.97 TTI >= 1.3	5.05 TTI >= 1.5	1.13 TTI >= 2.0
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Year: 2019 Day: All Period Group: All

Data is related to each Study Location

Interactive with ability to filter to better understand issues

Crash Dashboard



PROJECT PIPELINE

Project Name: NV01 Project Pipeline #1 - Route 236 from Prosperity Avenue to Wakefield Chapel Road

Project ID: NV01

Crash Severity

Crash Severity	Count	% Count
Property Damage Only	2594	66%
Rear End		33%
Angle		15%
Sideswipe - Same Direction		9%
Fixed Object - Off Road		6%
Head On		1%
Other		1%
Sideswipe - Opposite Direction		1%
Deer		0%
Fixed Object In Road		0%
Non-Collision		0%
Backed Into		0%
Other Animal		0%
Visible Injury	802	20%
Rear End		11%
Angle		4%
Fixed Object - Off Road		2%
Sideswipe - Same Direction		1%
Pedestrian		1%
Head On		1%
Other		0%
Non-Collision		0%
Fixed Object In Road		0%
Deer		0%
Other Animal		0%
Nonvisible Injury	414	11%
Rear End		6%
Angle		3%
Fixed Object - Off Road		0%
Pedestrian		0%
Total	3935	100%

Crash by Collision Type

Buffer Distance in miles: 0.00 to 1.99

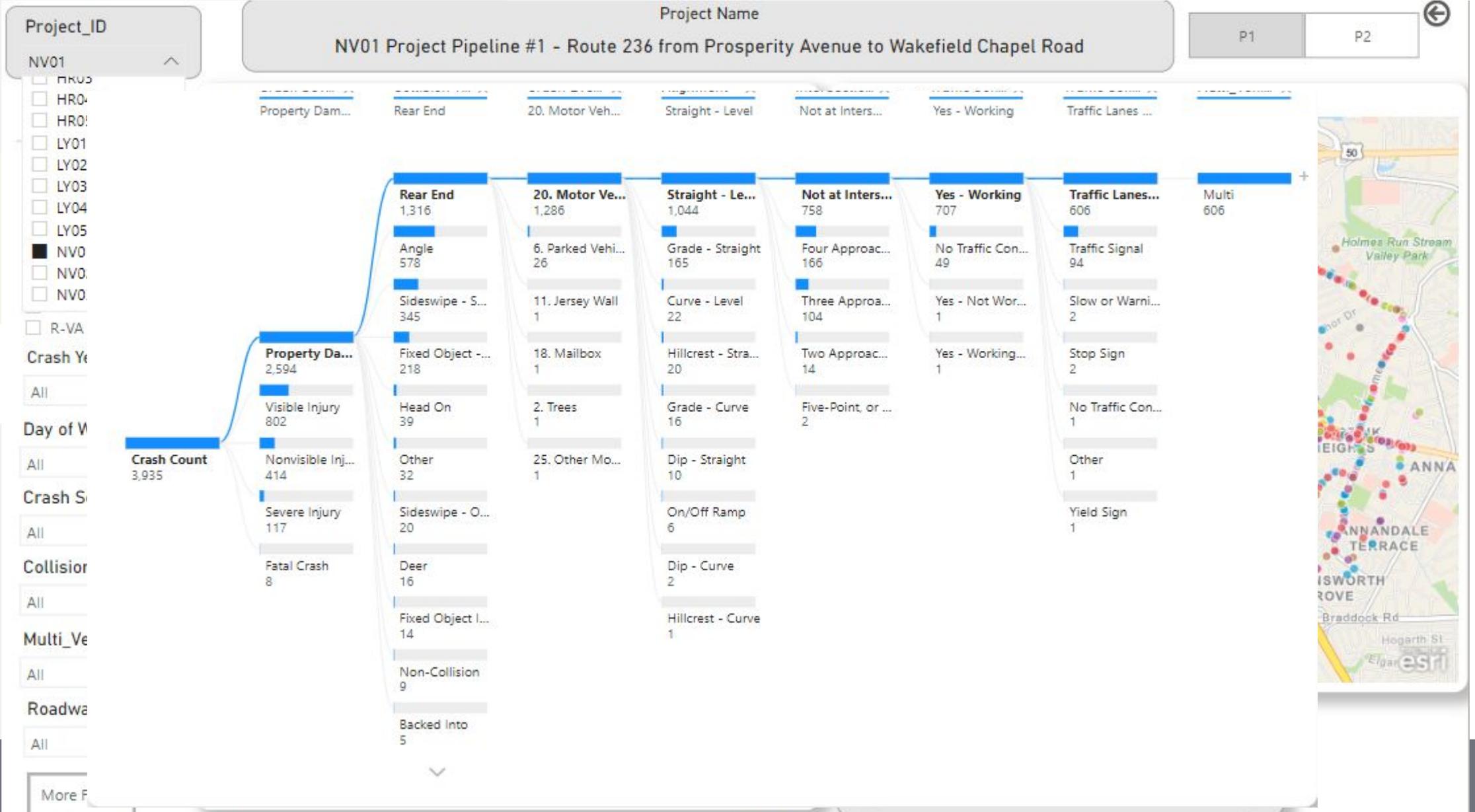
Provides ability to more quickly understand the problems

Interactive map with ability to change buffer

Crash Dashboard



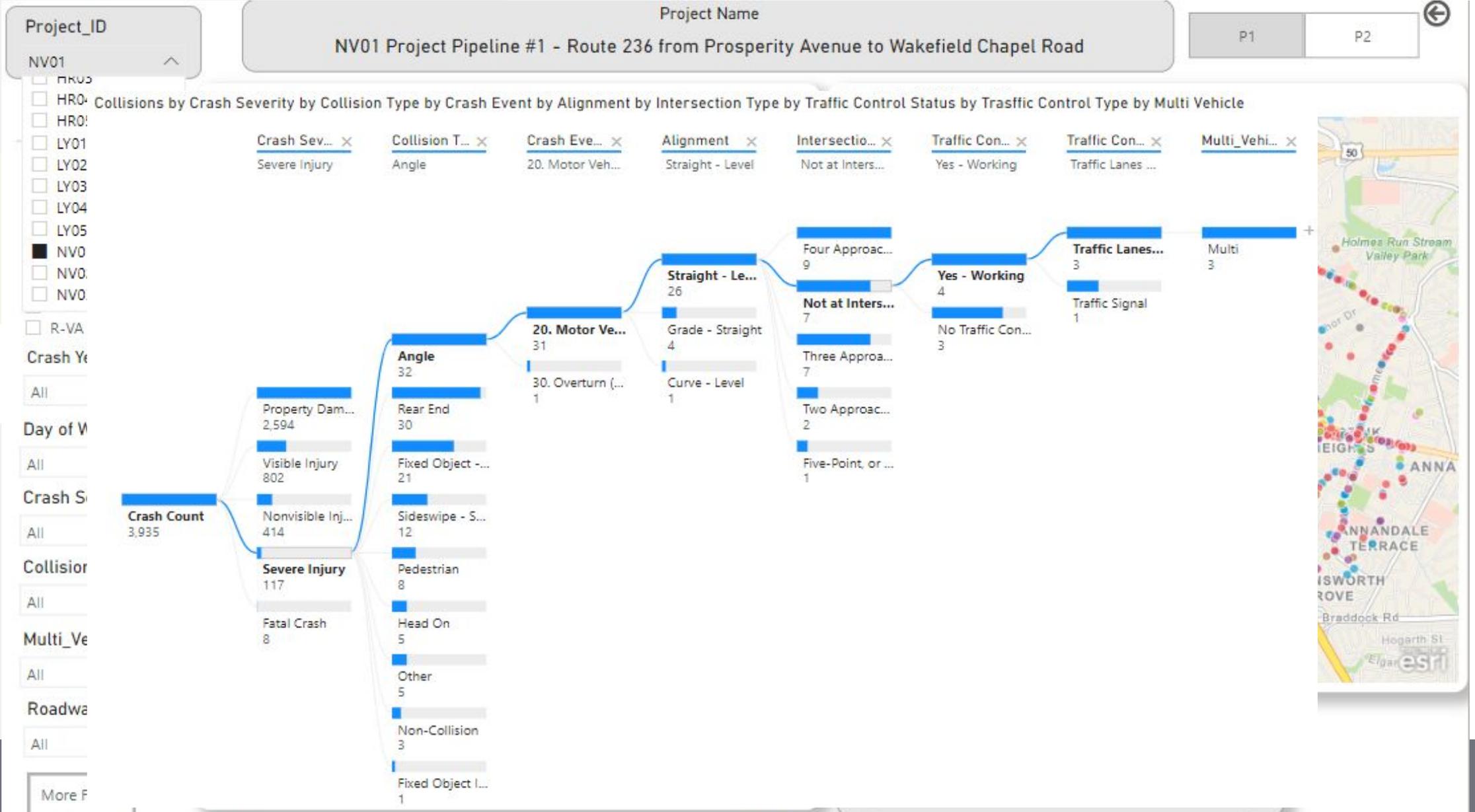
PROJECT PIPELINE



Crash Dashboard



PROJECT PIPELINE



Streetlight Data

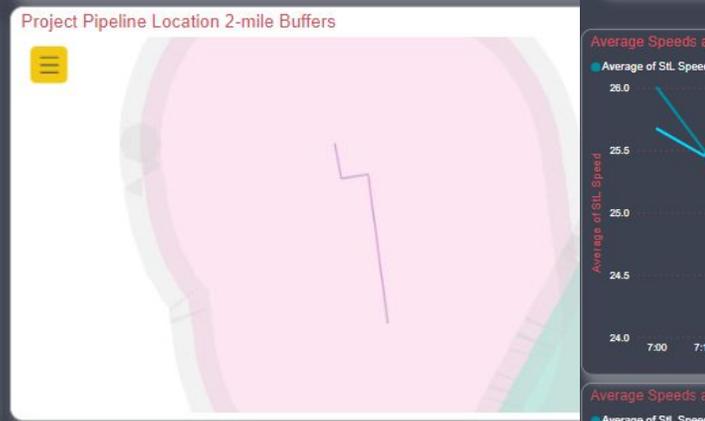
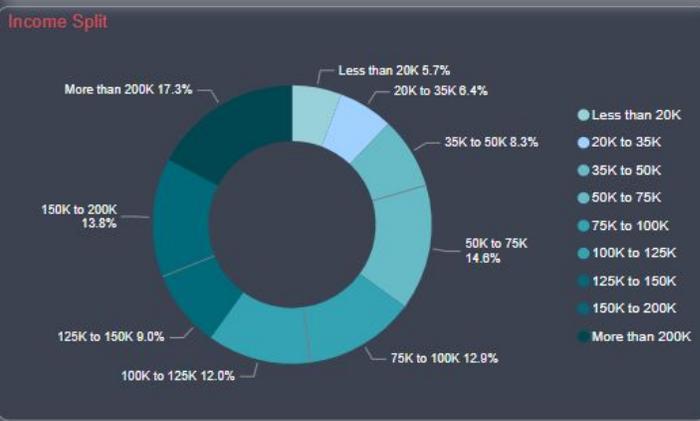
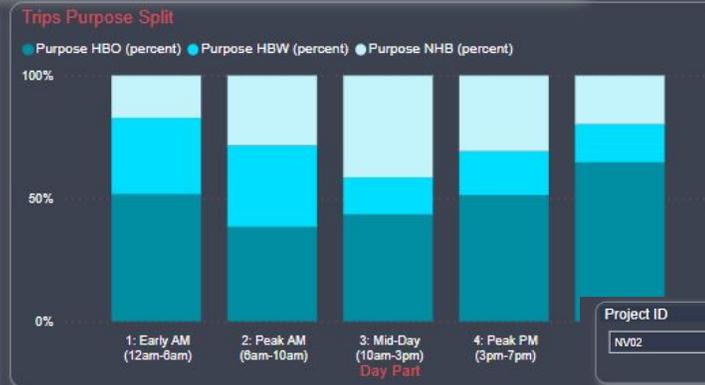


PROJECT PIPELINE

Project ID: NV01

Zone Activity Analysis based on 2-mile Buffers of Candidate LRS Lines

NV01 Project Pipeline #1 - Route 236 from Prosperity Avenue to Wakefield Chapel Road

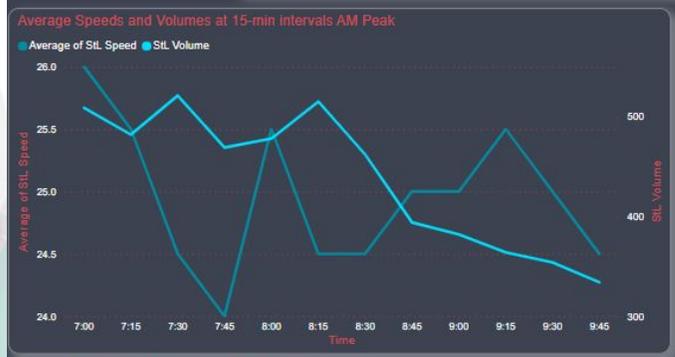


Understand time of day dynamics

Project ID: NV02

Segment Analysis based on Candidate Location LRS Lines

NV02 Project Pipeline #2 - Route 29 from Machen Road to Centerwood Drive



Total Volumes - AM Peak (7-9am)	Average Speed - AM Peak (7-9am)
6,858	25.16
Total Volumes - PM Peak (4-6pm)	Average Speed - PM Peak (4-6pm)
7,526	17.19

Regional Data Sources



PROJECT PIPELINE

Project_ID: NV01

Trips From Project Location

NV01 Project Pipeline #1 - Route 236 from Prosperity Avenue to Wakefiel...

Mode	%GT Weights	Weights
Auto (driver)	65%	57,801
Auto (passenger)	25%	22,707
Walk	3%	2,418
School Bus	3%	2,259
Bus	2%	1,881
Rail	2%	1,402
Uber/Lyft/Rideshare	1%	477
Bike	0%	138
Total	100%	89,083

Origin Purpose	%GT Weights	Weights
Home	60%	53,258
Other	9%	8,396
Drop Off/Pick U	9%	7,819
School	8%	7,182
Work	6%	5,785
Shop	6%	5,546
Gas/EV Charging Station	1%	619
Work-related	0%	370
Daycare	0%	108
Total	100%	89,083

Dest Purpose	%GT Weights	Weights
Home	23%	20,131
Work	9%	16,520
Other	8%	15,894
School	14%	12,518
Shop	13%	11,643
Drop Off/Pick U	11%	10,240
Work-related	2%	1,671
Gas/EV Charging Station	0%	359
Daycare	0%	107
Total	100%	89,083

Understand mode splits and trip purposes

Access Mode	%GT Weights	Weights
Walking	83%	4,026
Park and ride	17%	916
Total	100%	5,542

Rail Boarding Station	%GT Weights	Weights
Dunn Loring	42%	489
Pentagon	42%	486
West Falls Church	16%	184
Total	100%	1,159

Rail Exit Station	%GT Weights	Weights
L'Enfant Plaza	21%	244
Crystal City	21%	243
Foggy Bottom - GWU	21%	243
Federal Triangle	16%	184
McPherson Square	12%	138
Metro Center	9%	107
Total	100%	1,159

Transit Egress Mode	%GT Weights	Weights
Walking	100%	5,542
Total	100%	5,542

Destination Jurisdiction	%GT Weights	Weights
Fairfax	77%	68,894
Fairfax City	7%	6,057
Arlington	1%	5,503
Total	85%	79,454



2018 Household Travel Survey



Regional Data Sources



PROJECT PIPELINE

NV01 Project Pipeline #1 - Route 236 from Prosperity Avenue to Wakefield Chapel Road

MWCOG Travel Demand Model

Understand current and projected travel demand and behaviors

Project_ID

NV01

- CU01
- CU04
- CU05
- FR01
- FR03
- FR04
- FR05
- NV01
- NV02
- NV03

Total Employment	
2019	50,839
2045	56,552
% EMP Growth 11.2%	

2019 Trip Productions by Mode		
Mode	Trips	% Share
Drive Alone	16,941	74.3%
Shared Ride	2,349	10.3%
Drive Transit	2,069	9.1%
Walk Transit	1,429	6.3%
Total	22,788	100.0%

2045 Trip Productions by Mode		
Mode	Trips	% Share
Drive Alone	17,061	72.1%
Shared Ride	2,429	10.3%
Drive Transit	2,316	9.8%
Walk Transit	1,842	7.8%
Total	23,648	100.0%

2019 Trip Attractions by Mode		
Mode	Trips	% Share
Drive Alone	5,289	85.9%
Shared Ride	670	10.9%
Walk Transit	192	3.1%
Drive Transit	3	0.0%
Total	6,154	100.0%

2045 Trip Attractions by Mode		
Mode	Trips	% Share
Drive Alone	5,171	82.6%
Shared Ride	848	13.5%
Walk Transit	238	3.8%
Drive Transit	6	0.1%
Total	6,263	100.0%

Total Employment	
2019	50,839
2045	56,552
% EMP Growth 11.2%	

PM Peak Total Volumes	
2019	1,771,218
2045	1,995,016
% PM Vol Growth 12.6%	

AM Peak Vehicle Miles (VMT)	
2019	347,230
2045	395,164
% AM VMT Growth 13.8%	

AM Peak Vehicle Hours (VHT)	
2019	13,396
2045	15,616
% AM VHT Growth 16.6%	

AM Peak Vehicle Hours of Delay (VHD)	
2019	6,073
2045	7,262
% AM VHD Growth 19.6%	

Lane Miles	
2019	175

AM VC Ratios	
2019	0.00
2045	2.29

PM VC Ratios	
2019	0.00

Source Data: MWCOG CGV2_3_78_2020_Travel_Forecast_Model

Timeline/Approach



PROJECT PIPELINE

Phase 1

(Jul – Sep)

- **Broad analysis** to understand problems (VTrans needs) and the causes
- Develop range of possible alternatives to improve performance

Phase 2

(Oct – Dec)

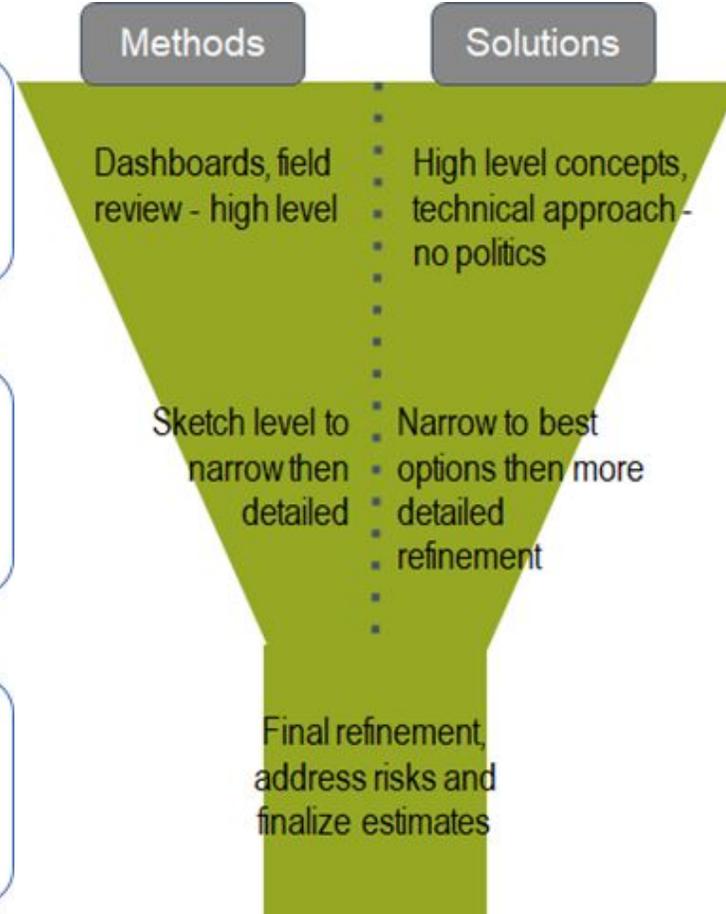
- Stakeholder/Public engagement and feedback
- Sketch level analysis to narrow options then detailed analysis
- Planning level estimates and identify preferred alternatives

We Are Here

Phase 3

(Jan- Mar)

- Investment strategy cost estimation and refinement
- Finalize multimodal investment strategy/deliverables



Project Pipeline

QUESTIONS?

vaprojectpipeline.org