

# STARS

STRATEGICALLY TARGETED AND  
AFFORDABLE ROADWAY SOLUTIONS

## *HARRISONBURG 10 PSI INTERSECTIONS IMPROVEMENT STUDY*

*Kickoff Meeting – November 18<sup>th</sup>, 2020*




# AGENDA/STUDY INFORMATION



**INTRODUCTIONS**

**STARS PROGRAM GOALS**




**STUDY AREA AND OBJECTIVES**

Study Locations and Characteristics  
Crash Data

**STUDY DISCUSSION**

Framework Document  
Schedule Discussion



## Points of Contact:

**Bill Guiher** (STARS Program Manager)

[william.guiher@vdot.virginia.gov](mailto:william.guiher@vdot.virginia.gov)

**Brad Reed** (VDOT Project Manager)

[brad.reed@vdot.virginia.gov](mailto:brad.reed@vdot.virginia.gov)

**Nathan Umberger** (ATCS Team Manager)

[numberger@atcsplc.com](mailto:numberger@atcsplc.com)



# ATCS

# STARS PROGRAM

# STARS PROGRAM GOALS

- ❖ Strategically Targeted and Affordable Roadway Solutions
- ❖ Develop alternatives to relieve congestion and solve critical safety challenges for SYIP funding requests
- ❖ Data driven approach
- ❖ Involve planners, traffic engineers, safety engineers, roadway designers, and local stakeholders



## STARS Project Stakeholders



# THE STARS TEAM

## VDOT Districts and Residencies

- Coordinate with localities, MPOs, and PDCs
- Submit STARS applications
- Lead STARS projects
- Coordinate with consultant team

## VDOT Central Office

- Provides program oversight, data analysis, and application review

## Consultants

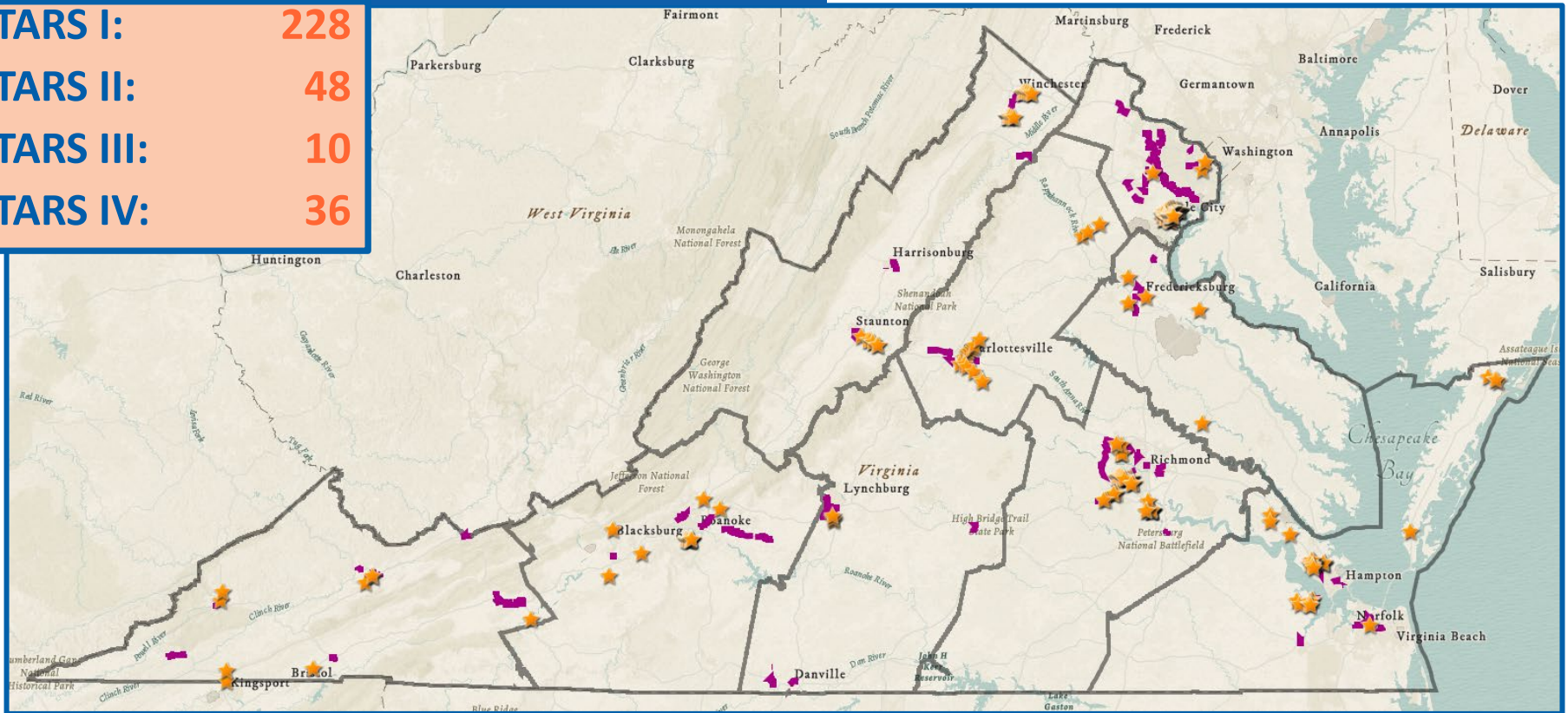
- Project delivery
- Technical support

ATCS

# STARS PROGRAMMED PROJECTS

## 2007 to Today – 286 Studies

STARS I:	228
STARS II:	48
STARS III:	10
STARS IV:	36



# SAMPLE STARS DELIVERABLES

## Improvement Summary Sheet - Preferred Alternative

### # 1 - Vine Street: Reconfiguration of Left-Turn Lanes and Incorporation of RIRO Configuration Replacing Traffic Signal at Country Club Road

#### Project Description

This project on Vine Street at the US Route 33 and Country Club Road intersections includes multiple improvements at the two closely-spaced signalized intersections.

1. Remove the traffic signal at the intersection of Vine Street and Country Club Road near the Sheetz service station and extend the left-turn restriction on Vine Street from US Route 33 to the Chamber of Commerce entrance. The current queue from the US Route 33 intersection backs up to the curve near Honeysuckle Lane. Designating two lanes for left-turning and combining the right-most left-turn lane to share through movements and right turns reduces the queue distance necessary for accommodating the PM peak hour traffic.
2. With the removal of the traffic signal at Country Club Road, convert the intersection to a right-in/right-out (RIRO) configuration and add raised delineators on the centerline of Vine Street from US Route 33 to the Chamber of Commerce entrance.

#### Planning Level Cost Estimate

Phase	Six-Year Improvement Program
Preliminary Engineering	\$ 95,000
ROW and Utility Relocation	\$ 0
Construction	\$ 475,000
<b>Total Cost =</b>	<b>\$ 570,500</b>

Note 1: Cost estimates reported in 2018 dollars  
Note 2: Could necessitate funding for construction easements

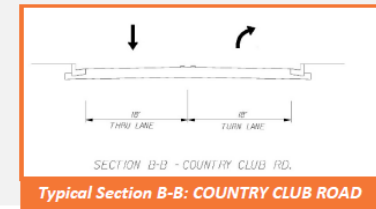
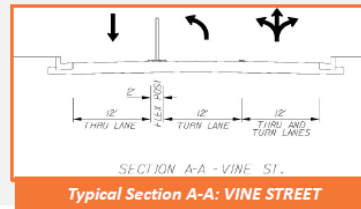
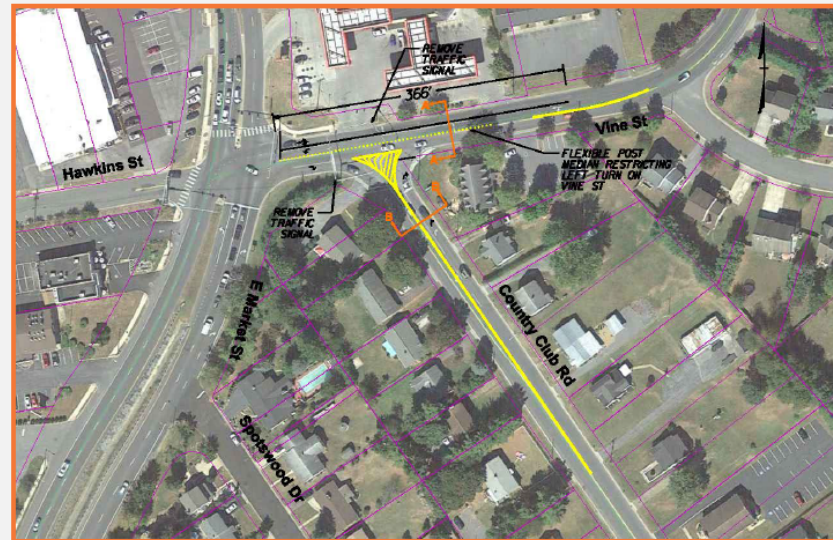
#### Project Benefits

- Consolidates left-turn traffic and corresponding queuing into two lanes, reducing queues to 300 feet
- Improves LOS along Route 33 at Hawkins Street/Vine Street (13 % reduction in intersection delay)
- Reduces delays at the Vine Street/Country Club Road intersection via right-in/right-out (RIRO) with a 94 % reduction in intersection delay; LOS E to LOS A
- Removes one of two closely-spaced traffic signals on Vine Street

#### Project Schedule

Months				Total	Preliminary Engineering ROW and Utility Relocation Construction
0	12	8	26		
■	■	■	■		Preliminary Engineering
■	■	■	■		ROW and Utility Relocation
■	■	■	■		Construction

#### Vine Street Improvements: US Route 33 and Country Club Road Intersection



The City recommended improvements along Vine Street for Project #1 should not be implemented until after the implementation of Project #2, extending Martin Luther King Jr. Way and connecting it with Country Club Road.

# SAMPLE STARS DELIVERABLES

### DETAILED SCOPE/DESCRIPTION

Road Diet along Greenville Avenue in Staunton between Ritchie Boulevard and Richmond Avenue

- Reduce 5 lane section to 3 lane section
- Install protected bike lanes along both sides of Greenville Avenue
- Install median closures at intermittent locations along Greenville Avenue to improve access management, reduce angle crashes and improve pedestrian safety (see sketch for locations)
- Install median refuge for pedestrians at E. Gay Street crossing
- Install a southbound right turn lane on Greenville Avenue onto Hampton Street (maintain bike lane between thru land and right turn lane)

### ASSUMPTIONS AND RISKS

Assumptions:

- Assume all work within existing roadway and there are no right of way or utility impacts
- Assume no SWM or water quality structures needed on the project.
- Assume some resurfacing of Greenville Avenue due to median construction and new lane assignments

APPLICATION INFORMATION		PROPOSED SCHEDULE		PROPOSED ESTIMATE		
T1 or T2 & Phases	Tier 1, PE & CN Phases	Task Description	Target End Date	Phase	Base	% Total
District App ID #	1	PE Authorization (12):	8/1/2025	PE:	\$205,000	12% \$229,600
Applicant	CSPDC	Scoping (22):	6/5/2026	RW&UT:	\$0	0% \$0
Associated Study	STARS 2018-2019	Right of Way Auth. (52):	NA	CN (CEI):	\$1,535,000	20% \$2,578,800
Readiness Req. Met	N/A	CN Start Advertisement (80):	10/12/2027	CN (Cont):		48%
NEPA Determination	PCE	CN End (91):	11/30/2028	<b>Total 2020 Estimate:</b>		<b>\$2,808,400</b>

**L&D POC** Ron Tabor

**RW POC** N/A

**Rec. for Approval**

John-Allen L Ennis  
2020.09.16 12:53:47-04'00'

**DPDE Approval**

Stevens, Todd tm48356

Digitally signed by Stevens Todd  
DN: cn=Stevens, o=City of Staunton,  
ou=City of Staunton, email=tm48356@cityofstaunton.com, c=VA

**PIM Approval**

Matthew P. Dana, P.E.

**STAUNTON DISTRICT  
SMART SCALE ROUND 4**

GREENVILLE AVENUE ROAD DIET
CITY OF STAUNTON




# HARRISONBURG 10 PSI INTERSECTIONS SAFETY AND OPERATIONAL ANALYSIS


# IMPORTANCE OF LOCATION IDENTIFICATION

Factor	Congestion Mitigation	Economic Development	Accessibility	Safety	Environmental Quality	Land Use
Category A	45%	5%	15%	5%	10%	20%
Category B	15%	20%	25%	20%	10%	10%
Category C	15%	25%	25%	25%	10%	-
Category D	10%	35%	15%	30%	10%	-

## Legend

 VDOT District Boundaries

 MPO/PDC Boundaries

 Counties and Cities

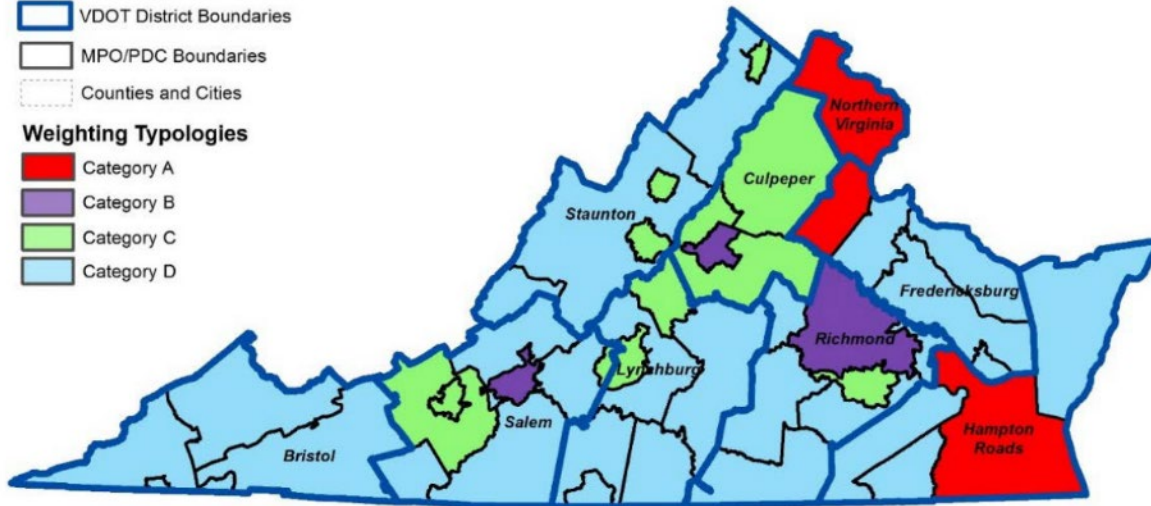
### Weighting Typologies

 Category A

 Category B

 Category C

 Category D



**70% funded rate in SMART SCALE**

- 4 STARS projects submitted
- 10 STARS projects funded

# IMPORTANCE OF LOCATION IDENTIFICATION

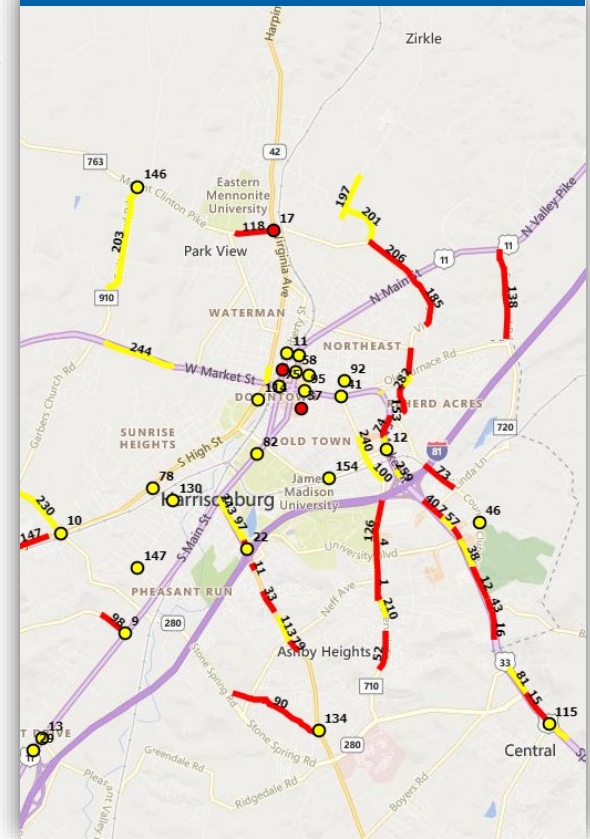
## Safety Performance Functions (SPF)

- VDOT has developed Virginia specific highway Safety Performance Functions (SPF)
- Based on Highway Safety Manual (HSM) methods. AASHTO's Safety Analyst.
- Using number of crashes, traffic volumes and type of facility.

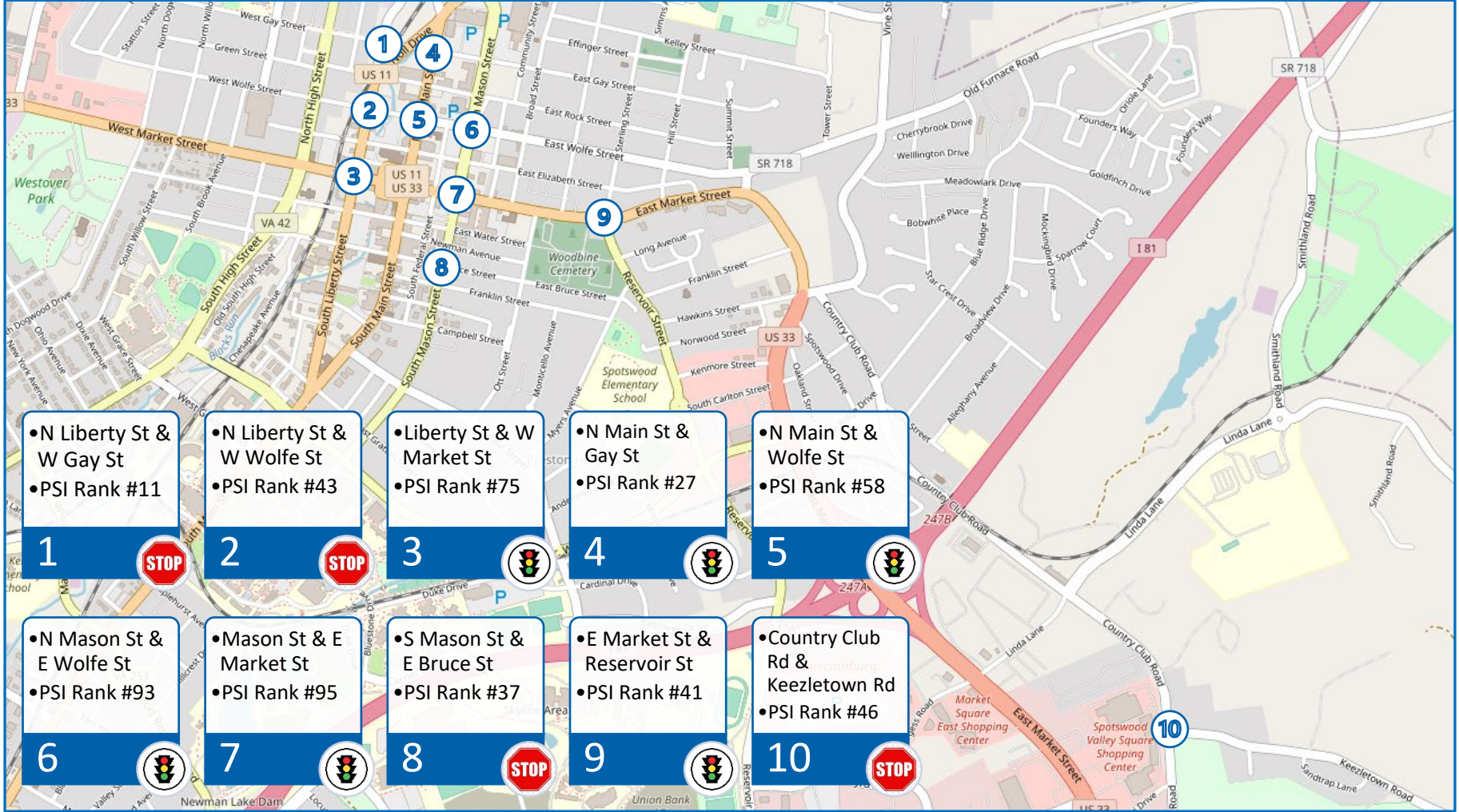
## Potential for Safety Improvement (PSI)

- Locations that have more crashes than expected based on the SPF have a PSI value greater than zero
- PSIs indicate engineering review is recommended for possible mitigating countermeasures.

## 2014-18 TOP POTENTIAL SAFETY IMPROVEMENT SEGMENTS AND INTERSECTIONS

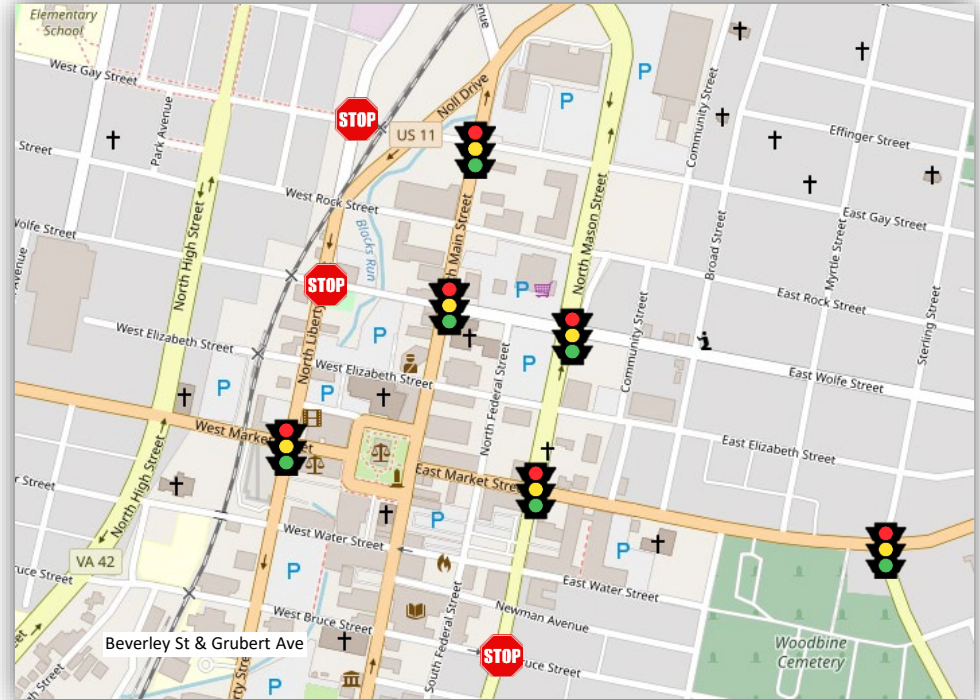


# STUDY INTERSECTIONS



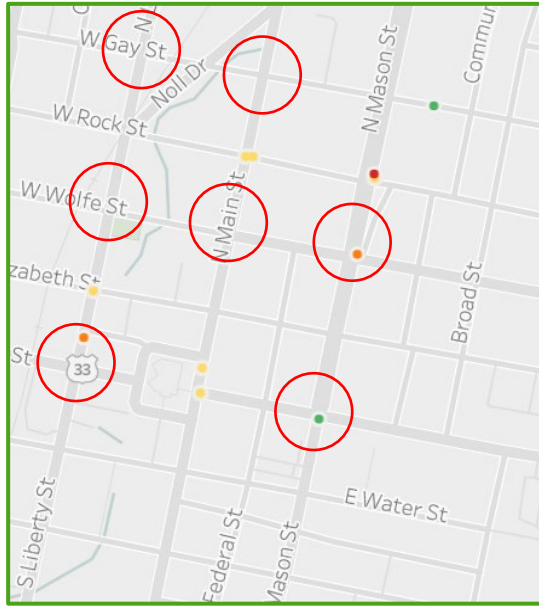
# STUDY LOCATIONS OVERVIEW

- ✓ Six signalized intersection and four unsignalized intersections
- ✓ Each intersection will be studied individually
- ✓ High Pedestrian Activity Area
- ✓ Restricted right-of-way areas
- ✓ One-way streets
- ✓ Downtown area recently been studied for lane reconfiguration

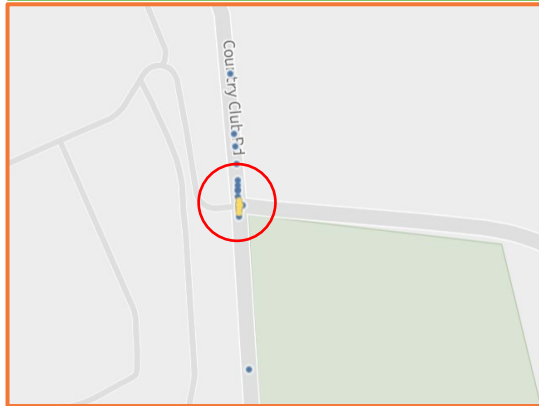


# CRASH ACTIVITY

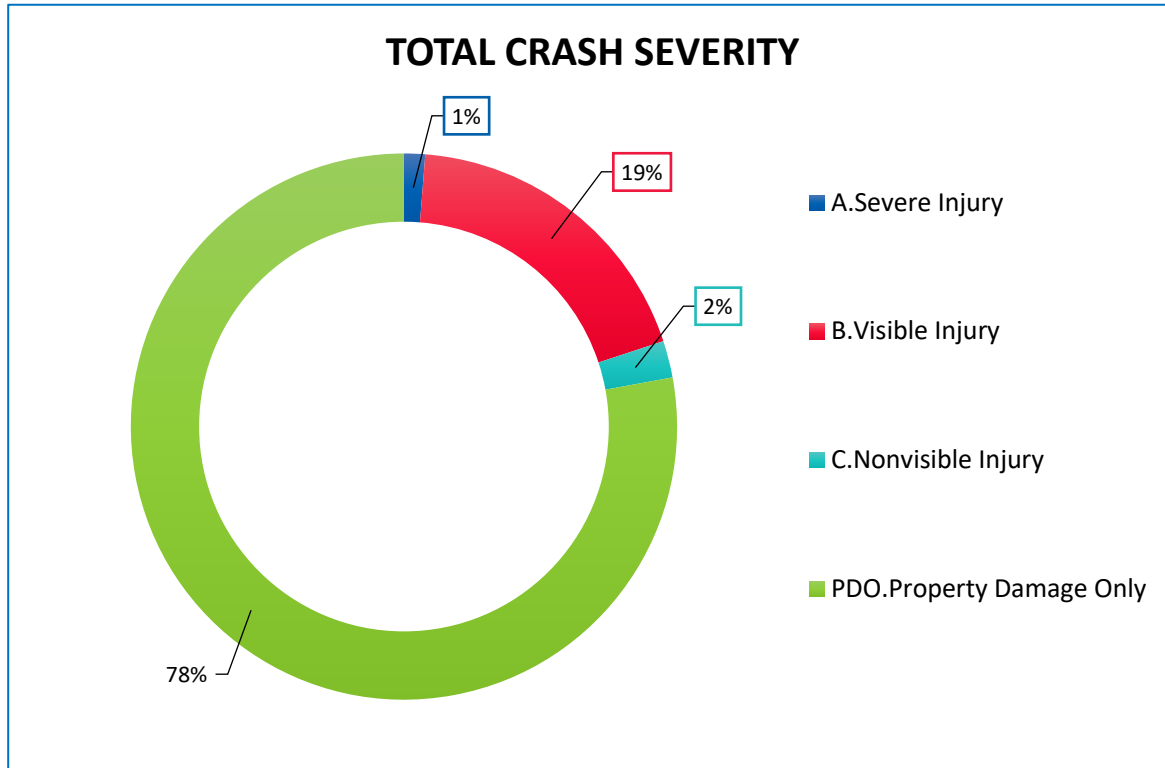
# CRASH ACTIVITY – JANUARY 2013 TO JULY 2020



Ped



# CRASH ACTIVITY – JANUARY 2013 TO JULY 2020



	2013	2014	2015	2016	2017	2018	2019	2020	Total
A. Severe Injury			1	1			1	1	4
B. Visible Injury	10	14	7	4	4	5	15	1	60
C. Nonvisible Injury	1	1		3		1		1	7
PDO. Property Damage Only	16	33	30	41	35	46	36	13	250
<b>Total</b>	<b>27</b>	<b>48</b>	<b>38</b>	<b>49</b>	<b>39</b>	<b>52</b>	<b>52</b>	<b>16</b>	<b>321</b>

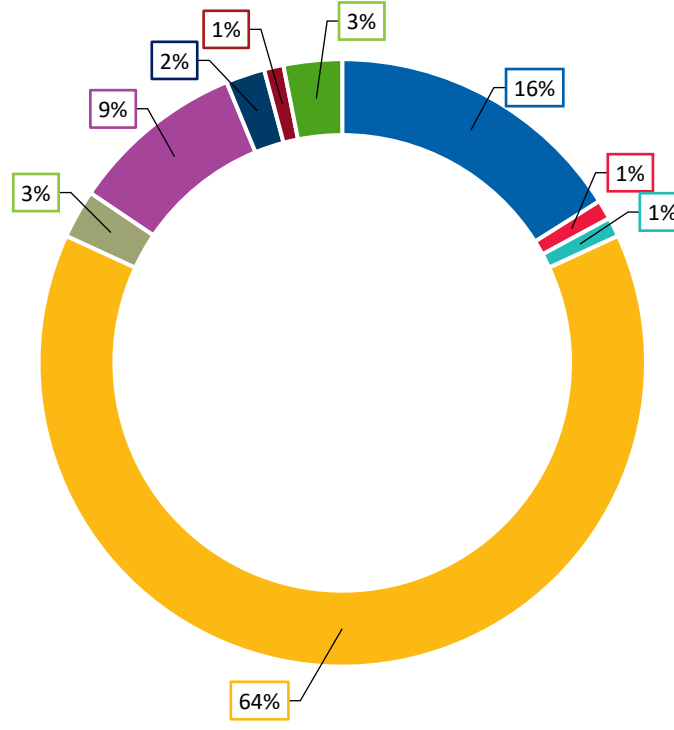
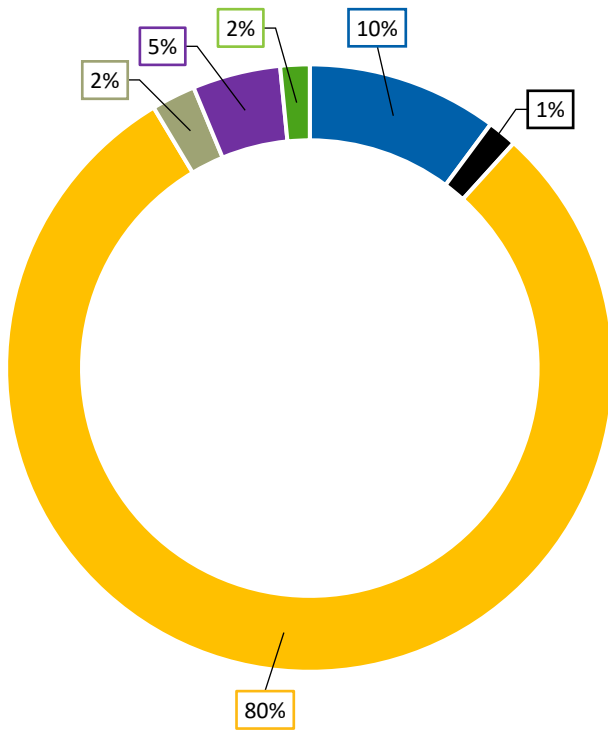


# CRASH ACTIVITY – JANUARY 2013 TO JULY 2020



## COLLISION TYPE UNSIGNALIZED INTERSECTION

## COLLISION TYPE SIGNALIZED INTERSECTION

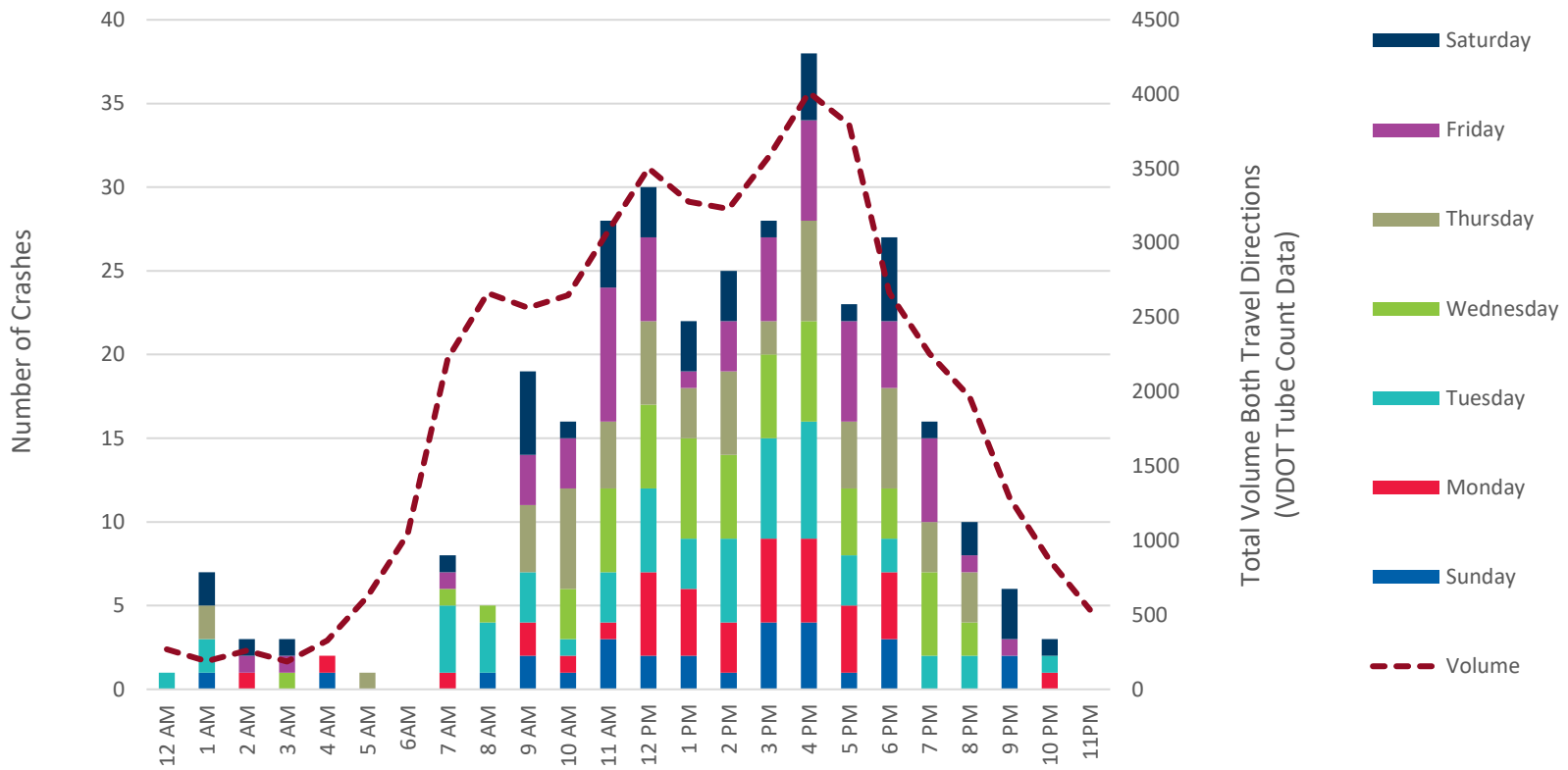


- 1. Rear End
- 12. Ped
- 15. Backed Into
- 2. Angle
- 3. Head On
- 4. Sideswipe - Same Direction
- 5. Sideswipe - Opposite Direction
- 6. Fixed Object in Road
- 9. Fixed Object - Off Road

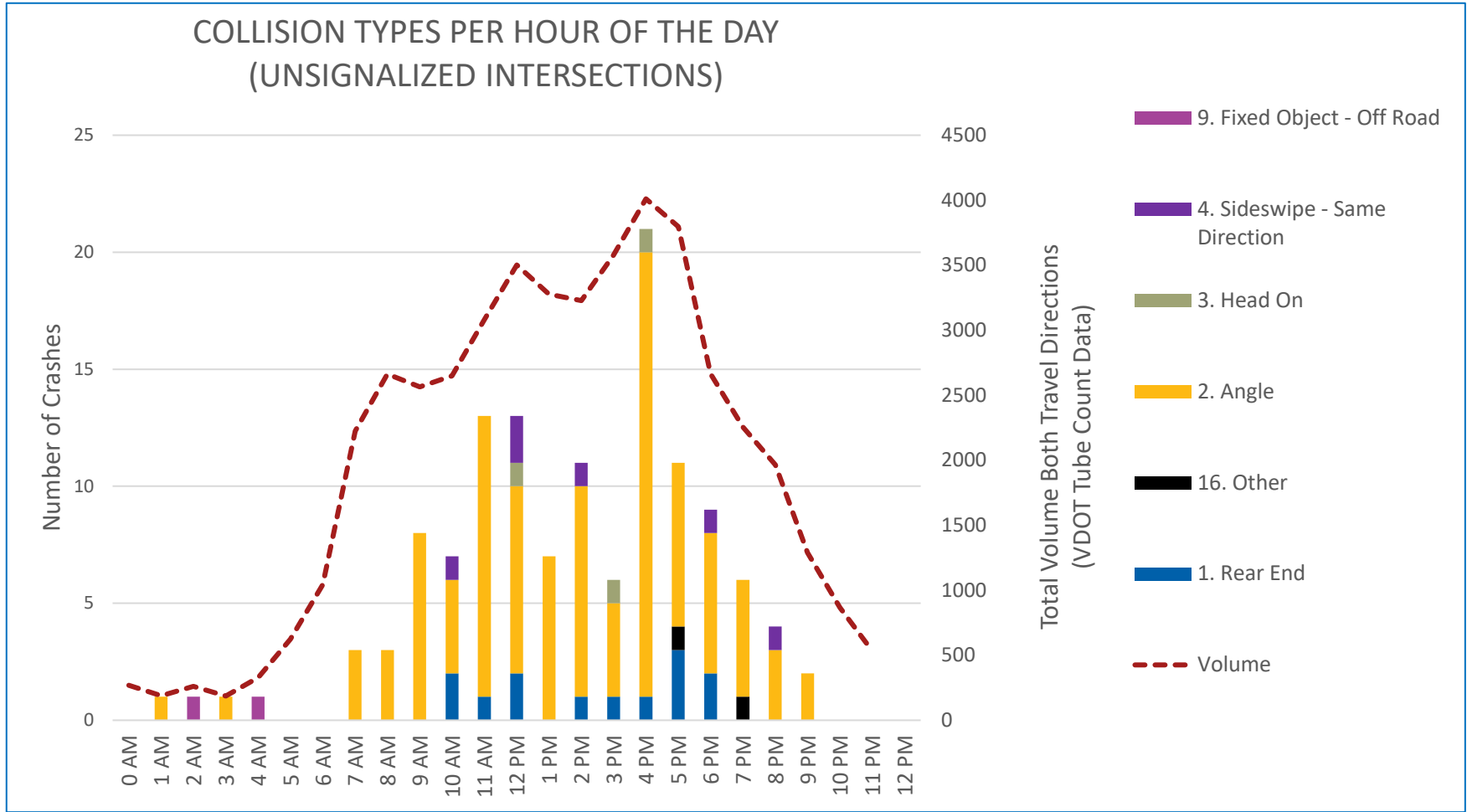
# CRASH ACTIVITY – JANUARY 2013 TO JULY 2020



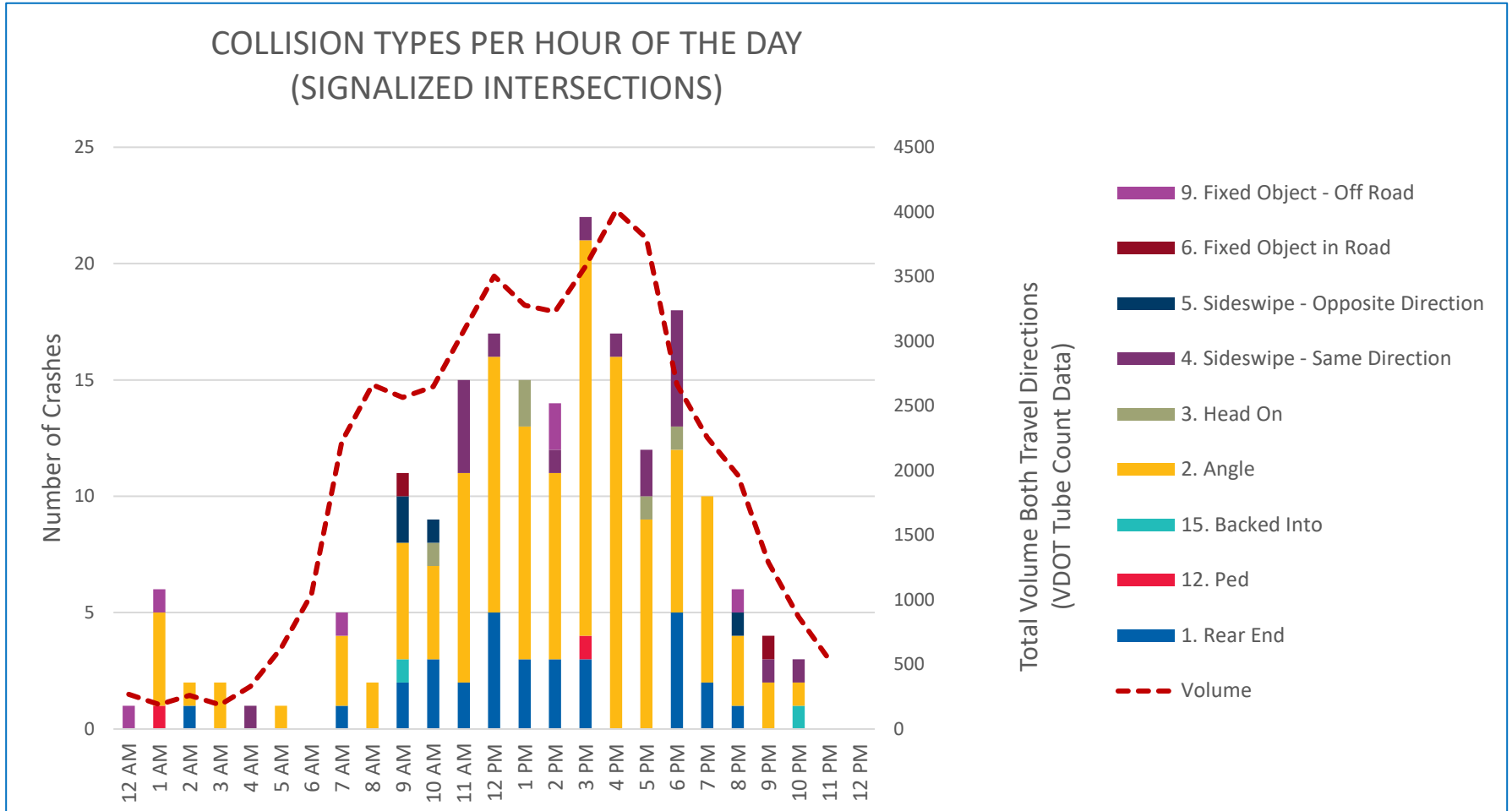
CRASHES PER HOUR OF THE DAY  
(SIGNALIZED AND UNSIGNALIZED)



# CRASH ACTIVITY – JANUARY 2013 TO JULY 2020



# CRASH ACTIVITY – JANUARY 2013 TO JULY 2020



# PRELIMINARY DATA COLLECTION PLAN



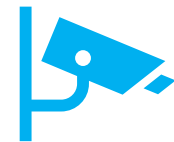
- Data available/collected at the following locations
- Data collection in week of November 16<sup>th</sup> to capture normal Pedestrian and Cycling activity.

Locations	Type	Duration (hrs)	Counting Window	TMC/Classification	Bike & Ped Counts	Speed
N Liberty St & W Gay St	Unsignalized	12	7am - 7pm	Yes	Yes	No
N Liberty St & W Wolfe St	Unsignalized	Data Available 3-7pm 9/2019				
Liberty St & W Market St	Signalized	4	3pm - 7pm	Yes	Yes	No
N Main St & Wolfe St	Signalized	Data Available 3-7pm 9/2019				
N Main St & Gay St	Signalized	Data Available 4:30-6:30pm 10/2019				
S Mason St & E Bruce St	Unsignalized	12	7am - 7pm	Yes	Yes	No
Mason St & E Market St	Signalized	4	3pm - 7pm	Yes	Yes	No
N Mason St & W Wolfe St	Signalized	Data Available 4:30-6:30pm 10/2019				
E Market St & Reservoir St	Signalized	4	3pm - 7pm	Yes	Yes	No
Country Club Rd & Kezletown Rd	Unsignalized	12	7am - 7pm	Yes	Yes	No

# PRELIMINARY DATA COLLECTION PLAN



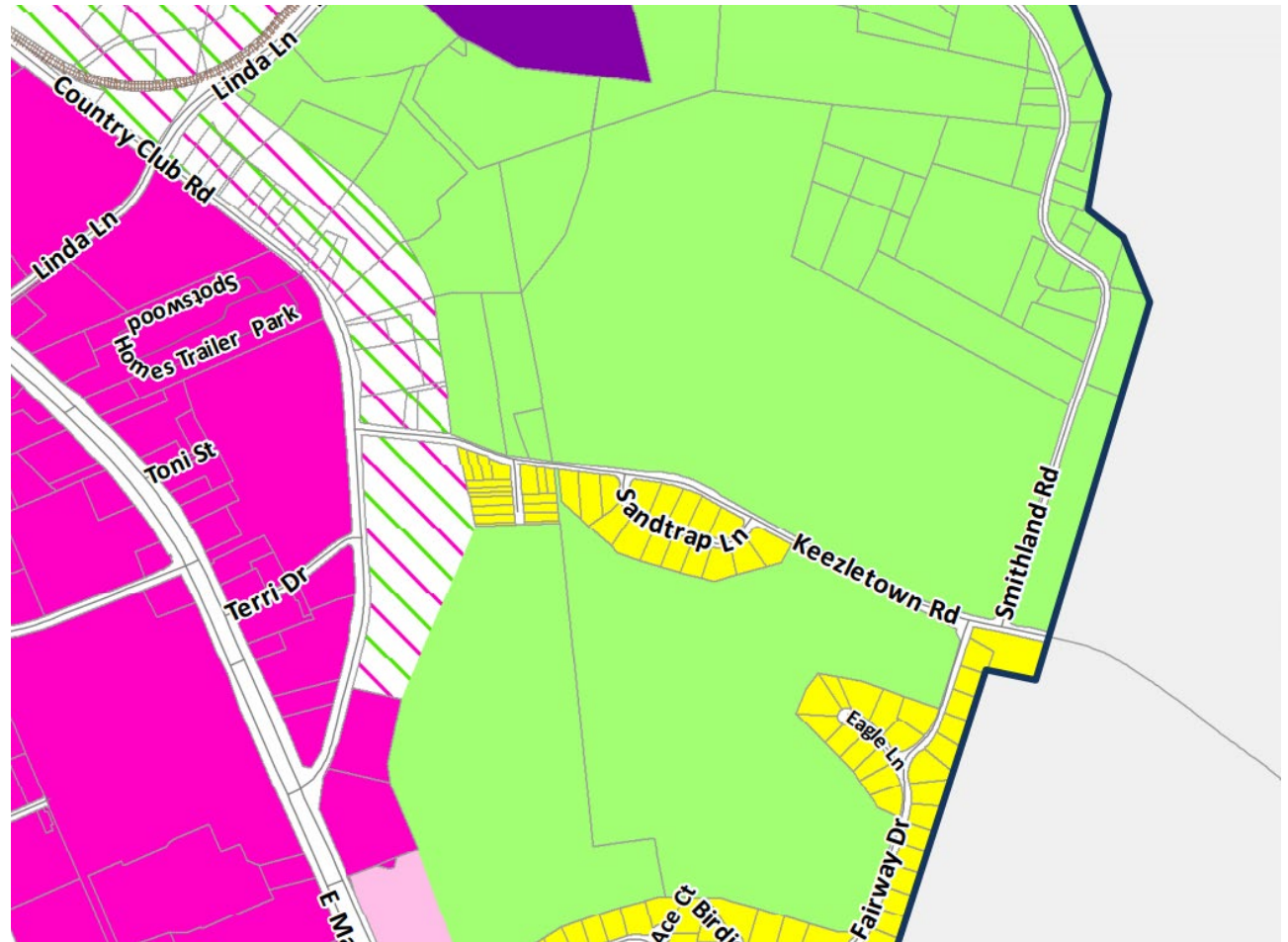
- ATCS will collect traffic data and obtain previous years mid-block counts from VDOT for comparison of pre-COVID patterns
- Synchro models provided by the City
- Safety measures based on Virginia Specific Factors where appropriate
- Discuss horizon/design year for study and analysis time periods
- Projects or developments that may impact traffic patterns
- Site observation



# COMPREHENSIVE PLAN –LAND USE GUIDE

## Land Use Designations

- Conservation, Recreation, and Open Space
- Low Density Residential
- Low Density Mixed Residential
- Neighborhood Residential
- Medium Density Residential
- Medium Density Mixed Residential
- High Density Residential
- Mixed Use
- Limited Commercial
- Commercial
- General Industrial
- Governmental/Quasi-Governmental
- Institutional



# DIALOGUE ON STUDY

- **What are key local concerns?**
- **Are there other long-term development plans and goals for the area?**
- **What is the vision that we want to achieve for various user types?**
- **Analysis parameters: Measures of Effectiveness, future year, growth rate**





# PUBLIC INVOLVEMENT

- **What are perceived issues from the public and business communities?**
- **What is the plan for public engagement?**



# TENTATIVE SCHEDULE AND MAJOR MILESTONES



# NEXT STEPS



**Finalize Framework Document**



**Approve Scope of Work**



**Data Collection (Week of November 16th)**



**Schedule Meeting #2**

# STARS

STRATEGICALLY TARGETED AND  
AFFORDABLE ROADWAY SOLUTIONS

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## QUESTIONS/COMMENTS?

THANK YOU