

Prince William County Comprehensive Traffic SAFETY ACTION PLAN

DRAFT - May 2025



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CTSAP Project Team

- Richard Weinmann Project Manager
- Salah Salem
- Bryce Barrett

Steering Committee

Prince William County

- Nicole P. Brown Communications and Engagement
- Matt Smolsky Community Safety
- Wesley Dawson Community Safety
- Tauheeda Yasin Community Safety
- Maria D. Burgos Equity and Inclusion
- Brian Cook Equity and Inclusion
- Tom LaBelle Fire and Rescue
- Kim Stewart Fire and Rescue
- Brian Ferguson Fire and Rescue
- Kimberly Sparkes Human Rights Commission
- David McGettigan Long Range Planning
- Tony Alston Long Range Planning
- Ahmad Behzad Planning
- Shawn Peak Police Department
- Jaime M. Pavol Police Department
- Michele A. Surdam Public Safety Communications
- Justin LeValley *Public Safey Communications*
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Executive Summary

In 2024, Prince William County had the second highest number of roadway crashes in the state of Virginia including 28 fatalities.

Over the past decade, there has been an increase in the number of severe injuries and fatal crashes within the County. This growing safety concern has prompted targeted investment in improved safety on roadways through the development of this Comprehensive Traffic Safety Action Plan (CTSAP).

Prince William County was awarded a Safe Streets and Roads for All (SS4A) Planning Grant in February 2023 by the U.S. Department of Transportation (USDOT) to develop a Comprehensive Traffic Safety Action Plan (CTSAP). This was the result of the County's desire to develop and pursue transportation safety projects and initiatives to address roadway safety concerns and identify possible actions to mitigate and reduce severe injury and fatal crashes.

The CTSAP includes the following components:

- Goals and Objectives
- Public Engagement
- Safety Analysis
- Prioritized Project Lists
- Safety Strategies and Countermeasures
- Policy, Progress, and Performance

Additionally, the CTSAP works in tandem with the following efforts:

- High Injury Network Analysis
- High Injury Network Project Screening Tool
- High Risk Network Tool
- Pedestrian and Bicycle Mobility Gap and Needs Analysis
- Safety Countermeasures Toolbox
- Safety Strategies Guide
- Updated Residential Traffic Management Guide
- Manassas Park Vision Zero Action Plan *Partnership with Prince William County*

CTSAP Approach

The CTSAP applies a two-pronged approach towards reducing traffic fatalities and serious injuries: Towards Zero and Vision Zero.

Vision Zero

• Aspires towards the complete elimination of all traffic fatalities and serious injuries

Towards Zero

- Shares the understanding that even one traffic fatality or serious injury is unacceptable but recognizes that a complete elimination of all traffic fatalities or serious injuries may not be immediately achievable.
- Builds a culture of transportation safety across behaviors, policies, and infrastructure design to achieve the greatest possible reduction in serious injuries and fatalities.

Under the Prince William County CTSAP, Vision Zero is applied to cities, towns, school zones, and small area plans while Towards Zero is applied to non-urbanized areas (suburban and rural).

Key Themes

The following transportation safety themes represent pillars on which the CTSAP was developed:

- Recognizing that true "accidents" are rare and are more likely to result from human mistakes or system failures that can be mitigated through safe design and increased awareness
- Identifying key factors contributing to crashes
- Proactively preventing incidents in advance rather than reacting as they occur
- Prioritizing safety for the County's most vulnerable users and communities
- Focusing on preventing deaths and serious injuries rather than eliminating crashes
- Recognizing that any investment that contributes to saving human lives is invaluable and limited resources must be used in an optimal way
- Shared responsibility of individual and community safety across stakeholders at all levels
- Combining safety initiatives with diversification of travel options to achieve a continuous multimodal network

Safe System Approach

Prince William County follows the Safe System Approach towards reducing the number of traffic fatalities and serious injuries. This program is officially adopted by the U.S. Department of Transportation (USDOT) and VDOT as the guiding paradigm to address roadway safety. The Approach includes redundant layers of protection which place the lives and safety of humans as the central priority of road network design. **Figure 1** illustrates the five principles which constitute the Safe Systems Approach:



Figure 1: Safe System Approach Principles

Engagement

The project team was committed to a public engagement strategy that ensured community members and stakeholders across the County were informed and involved throughout the CTSAP planning process. Engagement strategies for the CTSAP included a planning committee of multidisciplinary stakeholders in and around the County, a series of public meetings to solicit feedback from community members, and a project webpage to gather additional feedback through an interactive map and survey. Through engagement efforts, the project team was able to reach over 1,500 community members, with 116 location identified comments and nearly 200 survey responses



Figure 2: Public meeting mapping activity

Safety Analysis

The safety analysis for the CTSAP applied a multi-pronged approach to identify where Fatal and Serious Injury (FSI) crashes are occurring, which facilities are contributing most to these outcomes, and what roadway characteristics are associated with higher crash risk. This included three complementary analyses: the Equivalent Property Damage Only (EPDO) network screening, the development of a High Injury Network (HIN), and a risk ratio analysis resulting in the development of a High Risk Network (HRN). Crash data was gathered from the Virginia Department of Transportation's (VDOT) Pathways for Planning for a 5-year period from 2018-2022. This accounted for both pre-COVID-19 and post-COVID-19 data.

Table 1: Safety Analysis Summary

Network	High Injury	High Risk Network
Screening	Network (HIN)	(HRN)
Methodology Used the EPDO method which assigns weighting factors to crashes by severity relative to property damage only (PDO) crashes, with greater weights for more severe outcomes.	Methodology Based on the EPDO severity rankings, integrating crash history from both intersection and corridor analyses to build a comprehensive picture of network- wide safety and highlight the most critical roadways for safety investment.	Methodology A risk ratio analysis examined roadway and intersection characteristics including posted speed limit, urban versus rural land use contexts, functional classification, intersection control, and intersection configuration. Considered roadway segments and intersections separately, comparing the proportion of FSI crashes across key characteristics relative to their exposure (e.g., roadway miles or number of intersections).
Outcome	Outcome	Outcome
Identified	A two-tiered HIN (Tier	A HRN that identifies
intersections and	I = highest severity;	roadway segments and
corridor segments	Tier II = lower	intersections as high-
that have	severity) that	priority locations for
experienced higher	represents locations	proactive safety
crash frequencies	that will be targeted	improvement strategies
and severities (i.e.,	for reactive safety	to mitigate safety risk

Project Prioritization

Project locations were prioritized separately in three groupings: HIN, HRN segments, and HRN intersections. As mentioned above, HIN locations represent targets for reactive safety projects while HRN locations represent opportunities for proactive safety strategies. Project locations were scored based on their alignment with specific CTSAP project criteria within themes of: Equity, Safety and Vulnerable Users, Connectivity, Accessibility, and Public Input. The resulting prioritized list of projects allows the County to have a better understanding of which corridor infrastructure projects may have the greatest impact toward addressing roadway safety concerns while making Prince William a more connected, convenient, and comfortable place to live, work, and visit across all modes of travel.

Safety Strategies and Countermeasures

By implementing effective engineering and non-engineering countermeasures, we can address various risk factors such as road infrastructure deficiencies, driver behavior, vehicle safety standards, and environmental conditions. Infrastructure countermeasures focus on physical roadway improvements at targeted locations, while systemic strategies take a proactive approach to reducing risks across the transportation network.

Recommendations

As part of the CTSAP process approximately 30 countermeasures were recommended for inclusion in the CTSAP in key areas such as:

- Speed Management
- Pedestrian and Bicycle Safety
- Intersection Safety

- Multimodal Improvements
- Roadway Design

To accompany the physical infrastructure countermeasure recommendations, the CTSAP recommends systemic safety strategies that include safety initiatives, programs, and policies that aim at improving roadway safety. These recommendations were identified and refined through the engagement of stakeholders in and around Prince William County.

Policy, Process, and Performance

In addition to the prioritized list of projects for targeted safety improvement, this CTSAP includes a list of recommended strategies that the County should implement to achieve the overall goal of reducing severe injuries and fatalities in the roadways. Each strategy is coupled with associated actions that offer specific direction, along with key performance metrics for each action. The strategies and actions were structured around the elements of the **Safe System Approach**.

Introduction



Introduction

Prince William County envisions a comfortable, accessible, and comprehensive multimodal transportation network that allows for the safe and efficient movement of people throughout the County and into the surrounding region. However, over the past decade, there has been an increase in the number of severe injuries and fatal crashes within the County. **IN 2024, PRINCE WILLIAM COUNTY HAD THE SECOND HIGHEST NUMBER OF ROADWAY CRASHES IN THE STATE OF VIRGINIA INCLUDING 28 FATALITIES.** This number has remained high over recent years and has become a significant concern for the County, which has prompted targeted investment in improved safety on roadways through the development of this Comprehensive Traffic Safety Action Plan (CTSAP).



Figure 3: Prince William County base map

Regional Context

Prince William County is located within the greater Washington, DC metropolitan area, roughly 35 miles southwest of the Nation's Capital. Two major interstate highways run through the County: eastwest corridor I-66 that connects to Washington DC and I-81, and north-south corridor I-95 that also connects to Washington, DC and to Richmond, VA. Passenger rail service provides another travel option for the County with Amtrak service connecting to destinations along the east coast through stations in the Town of Quantico and the City of Manassas. The Virginia Railway Express (VRE) connects to and from Washington, DC through the City of Manassas and along the southeast border of the County. OmniRide operates bus routes providing local service and transit connections as well as regional routes to key destinations in Northern Virginia and Downtown Washington, DC. Figure 3 shows the County base map with transportation context. In addition, **Figure 4** provides a statistical snapshot of demographics and transportation in the County.

Jurisdictions

Prince William shares borders with the Counties of Fairfax, Loudoun, Fauquier, Stafford, and Charles. There are two independent cities within Prince William County, the City of Manassas and the City of Manassas Park. While the cities are their own jurisdictions with governing bodies, Prince William County works closely with them, partnering on many planning initiatives due to their important context within the County, especially for transportation. In addition, there are four incorporated towns within the County that operate under the Prince William County government. These include Dumfries, Haymarket, Occoquan, and Quantico. There are also several large Homeowners' Associations (HOAs) with networks of private roads. Additionally, the County is home to significant federal lands including the Quantico Marine Corps Base, Manassas Historic Battlefield, and Prince William Forest Park.

Total Popula 499,8	^{tion}				PWC GTS	Estimates
Race					201	9-2023 ACS
White 46.6%			Black 20.5%		Multi- Race 13.3%	Asian 9.8%
American Indian or	Alaska Nat	tive: 0.6% Nat	ive Hawaiian o	r Other I	Pacific Island	der: 0.1% —
Age					201	9-2023 ACS
Under 18 26.6%	18 - 24 8.9%	25 - 44 34.3%		45 - 25.6	64 %	65+ 10.9%
Modal Share o	of Com	nute			201	9-2023 ACS
Drive Alone 68.6%				WI 15	-H p .6% 1	Car- bool 0.0%
	Public Tra	ansportation: 2	.7% Other: 1.7	7% Wal	k: 1.3% Bik	e: 0.2% ┛
Land Area 348 mi ²	Popu 1,4	ulation Dei	nsity So p/mi ²	chools 13	Trai	ils)+ mi
Bus Stops 439	Rail St	tations	Prin	CE \ Cou	NILL NTY	IAM

Figure 4: Statistical Snapshot of Prince William County

CTSAP Context

Prince William County was awarded a Safe Streets and Roads for All (SS4A) Planning Grant in February 2023 by the U.S. Department of Transportation (USDOT) to develop a Comprehensive Traffic Safety Action Plan (CTSAP). This was the result of the County's desire to develop and pursue transportation safety projects and initiatives to address roadway safety concerns and identify possible actions to mitigate and reduce severe injury and fatal crashes.

This CTSAP supports Goal #4 of the County's Strategic Plan to "Foster an inter-connected and accessible transportation network that advances the County's mobility infrastructure, broadens transportation choices, and enhances safety", as well as the following goals and objectives in the County's Comprehensive Plan:

- Mobility Policy 1 "Ensure that the County's transportation network prioritizes safety for all mode users, including motorists, transit riders, pedestrians, including students, and bicyclists"
- Action Strategy G1.1 "Utilize improved infrastructure design, enhanced enforcement, and public education to provide increased safety for all transportation modes"
- Action Strategy G1.7 "Identify programs or initiatives to reduce roadway and pedestrian related fatalities and injuries in the County"

The CTSAP includes the following elements:

- Goals and Objectives
- Public Engagement
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Additionally, the CTSAP works in tandem with the following efforts:

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- Safety Countermeasures Toolbox
- Safety Strategies Guide
- Updated Residential Traffic Management Guide
- Manassas Park Vision Zero Action Plan *Partnership with Prince William County*

Goals and Objectives



Goals and Objectives

The goals and objectives for the CTSAP follow the structure of two industry-standard roadway safety strategies, Vision Zero and Towards Zero. These strategies are tailored to Prince William County through the formal adoption of a Toward Zero Vision Statement and supported by key traffic safety principles.

Vision Zero and Towards Zero

The CTSAP applies a two-pronged approach towards reducing traffic fatalities and serious injuries: Towards Zero and Vision Zero. The application of each strategy differs across the County's localities according to the varying distribution of land uses and development densities.

Vision Zero is a multinational roadway safety approach which aspires towards the complete elimination of all traffic fatalities and serious injuries. In Prince William County, Vision Zero is applied to the cities, towns, school zones, and small area plans. Small area plans were developed through the Comprehensive Plan to direct growth to key locations throughout the County and provide opportunities for detailed planning and multi-modal transportation. Vision Zero target areas can be seen in **Figure 5**.

Towards Zero, officially Toward Zero Deaths (TZD), is a national strategy for roadway safety. Like Vision Zero, Towards Zero shares the understanding that even one traffic fatality or serious injury is unacceptable. However, Towards Zero also recognizes that a complete elimination of all traffic fatalities or serious injuries may not be immediately achievable. Instead, the primary objective of Towards Zero is the establishment of a culture which promotes traffic safety across all transportation behaviors, policies, and infrastructure designs. While this culture of roadway safety may not entirely eliminate all traffic fatalities or serious injuries, it seeks to achieve the greatest reduction of these incidents as possible. In Prince William County, Towards Zero is applied to non-urbanized Vision Zeron Focus areas, including both suburban and rural areas.

The County's Toward Zero Vision Statement is as follows:

This Comprehensive Traffic Safety Action Plan serves as a guide for the County with goals, objectives, and principles to create improved safety across the transportation network. This plan recognizes human mistakes will happen but seeks to mitigate risk by minimizing the consequences of those mistakes, thereby reducing and preventing deaths and serious injuries in the roadway. The County's proactive, data-driven approach seeks to prevent incidents in advance by targeting key risk factors in the network, engaging stakeholders at all levels, creating an increased awareness and culture of road safety, protecting all users, and diversifying and growing safe transportation options in the County.

Along with these Vision Zero vs. Towards Zero distinctions, it is important to acknowledge that public roads in Prince William County are state maintained under the responsibility of the Virginia Department of Transportation (VDOT). VDOT's Strategic Highway Safety Plan (SHSP) operates under a Toward Zero Deaths initiative. Roads within the Cities of Manassas and Manassas Park are maintained by the Cities and private roads are maintained by the property owners.



Figure 5: CTSAP Vision Zero target areas

Engagement

1

What is SS4A? A to Da

Key Themes and Principles

The Vision Statement for this CTSAP is supported by key themes widely applied by other jurisdiction's roadway safety initiatives. Based upon a review of national and regional peer examples of traffic safety principles and several rounds of public and key stakeholder engagement, the following key themes emerged as most appropriate for the County's context.

Key Themes

The following roadway safety themes emerged as consistent pillars of each of the Towards Zero and Vision Zero initiatives reviewed:

Recognize Human Mistakes

True traffic "accidents" are rare and are more likely to result from human mistakes or system failures. Safe design can eliminate system failures and increased safety awareness can reduce the frequency of mistakes. Recognizing this, we can work to improve design and user behavior to better accommodate a wider extent of human errors.

Identify Key Factors

Data-driven analyses can identify where and why traffic incidents occur. This identification of likely incident locations and factors that increase crash risk allows for better and more targeted mitigation efforts.

Focus on Prevention

As a result of human error, traffic incidents are inevitable. Rather than eliminating any possibility of crashes, preventative efforts should instead focus on mitigating and reducing the frequency and impact of these incidents (i.e., preventing deaths and serious injuries when incidents occur).

Responsibility is Shared

Improving safety across the County's transportation network requires the engagement and involvement of stakeholders at all levels across County departments, partner agencies, and the communities that use these facilities.

Safety is Proactive

Safety research, analysis, planning, and policy are needed to identify areas where traffic incidents can be reduced or prevented before they occur, rather than reactively responding after crashes have occurred. To achieve this, it is imperative that proactive, continuous re-evaluation of roadway conditions and transportation safety activities are being done as safety risks change and new risks arise.

Value of Investment

It is impossible to place a value on human life. In turn, any investment that contributes to the saving of a human life is valuable and brings unquantifiable benefits to the community. It is also critical to acknowledge that resources are limited and that committed resources must be optimized and used in the most efficient and effective way to create safer transportation.

Safety for All

Safety improvements should impact all of the County's geographies, with an emphasis on the most vulnerable communities and user types. Vulnerable communities are those with limited safe mobility alternatives, and may include low-income, minority, and historically disadvantaged and underserved populations. Vulnerable user types include children, the elderly, bicyclists, pedestrians and other high risk road users.

Multimodal Vision

Safety improvement strategies should also consider ways to promote safer and more diverse modal choices and improved access to these safe alternatives. Increasing the number of trips taken on foot, by bike, or using transit limits the number of vehicles on the road while promoting a safer, healthier, and more sustainable community.

Safe System Approach

Prince William County follows the Safe System Approach towards reducing the number of traffic fatalities and serious injuries. This program is officially adopted by the U.S. Department of Transportation (USDOT) and VDOT as the guiding paradigm to address roadway safety. The Approach includes redundant layers of protection which place the lives and safety of humans as the central priority of road network design.

Figure 6 illustrates the five principles which constitute the Safe Systems Approach: safer people, safer speeds, safer roads, safer vehicles, and post-crash care. This systems approach acknowledges close interactions between the factors which most directly influence safety risk. Due to these interrelations, addressing just one factor is unlikely to achieve a significant reduction in safety risk. Instead, a successful safe systems approach must consider all the following elements holistically.

The driving principles of the Safe System Approach recognize that:

• People make mistakes which can lead to crashes; however, no one should die or be seriously injured on the road as a result of these mistakes.

- The human body has a limited physical ability to tolerate crash forces—any impact greater than 30 mph significantly increases the risk of dying.
- Road safety is a shared responsibility amongst everyone, including those that design, build, operate, and use the road system.
- All parts of the road system must be strengthened in combination to multiply the protective effects and if one part fails, the others will still protect people.



Figure 6: Elements of the Safe System Approach

Guiding Principles

The success of the initiatives, goals, and objectives in this CTSAP will be facilitated by a commitment to several essential guiding principles that will provide context, structure, and direction for the outcomes of this plan.

Creating and enhancing **a culture of road and transportation safety is critical** in reducing the number of severe and fatal crashes in the County. To achieve this cross-agency collaboration, education and outreach is needed to create a develop a community focused mindset that starts with acknowledging that individual behavior and responsibility is needed to promote and achieve individual and collective safety.

The majority of **roads in Prince William County are state maintained** and are operated by the Virginia Department of Transportation (VDOT) with a focus on the State's interest. Many of the remaining roads are privately owned and maintained and operated in the private owner's interest. The County acknowledges this and aspires to continue to work in partnership with the State and private road owners to enhance the transportation infrastructure to better meet the local transportation and safety needs while recognizing the roles, responsibilities and interests of the State and private entities.

Mobility networks are continuous and are not limited by jurisdictional boundaries. These networks must therefore be uniform and consistent across neighboring jurisdictions for the users traveling across this network. To achieve this, partnerships with other regional and neighboring transportation entities are critical to achieve a unified and comprehensive approach to safe mobility throughout the region.

Resources are limited and any action or improvements implemented must be justified and linked to direct safety improvements. County money, time, staff, and equipment should be strategically deployed, duplicate efforts should be eliminated, and safety activities should be optimized to maximize cost-benefit in the interest of the County's residents.

Enforcement, education, and community outreach are local functions that play an integral part in transportation safety. The County must continue to champion and lead these functions on a local community level to achieve safety goals and objectives, while also continuing to develop the infrastructure and network with its state and regional partners.

A **transportation network must be connected, reliable, robust, and resilient** to meet each community's diverse mobility needs. Expanding and diversifying mobility alternatives with connected, safe, and reliable infrastructure and services is critical to ensuring that all members of the community can safely move around the County in their chosen mode of transportation.

Feeling safe is often as important as being safe. If users feel unsafe using a facility they will stop using it. For all travel modes, a safe and comfortable environment must be prioritized alongside direct safety measures to develop and optimize a multimodal mobility network.

Any **plan must be a dynamic, agile, and living document** that is continually monitored, reviewed and updated to meet the County's rapidly and constantly changing transportation safety needs. The plan must be developed to provide guidance over the next decade but also be able to adapt to the continually changing immediate transportation safety needs of the County.

Any **action or strategy must be continually justified** and show direct transportation safety benefits. Any activity that becomes unachievable, impractical, or loses effectiveness in producing safety benefit should be deprioritized or abandoned in favor of more effective strategies. This will require continued monitoring and reassessment as the activities are implemented.

The County **must be ambitious in exploring and developing new technologies** and methods to advance transportation safety and the County should stive to be a leader in all its transportation safety initiatives.

The County should **aim to achieve continuous improvement** in transportation safety. It must be acknowledged that reducing severe and fatal crashes is a challenging and multifaceted problem that has no single solution. As such it will take a concerted and multi-agency approach to achieve this goal, focusing on small frequent improvements that continually enhance transportation safety.

Engagement

The project team was committed to a public engagement strategy that ensured that community members and stakeholders across the County were informed and involved throughout the CTSAP planning process. The following goals were developed for the engagement process:

- Communicate CTSAP vision and goals
- Identify community safety concerns
- Prioritize a multidisciplinary approach
- Identify and equitably prioritize projects and associated countermeasures

Engagement strategies for the CTSAP included a planning committee of multidisciplinary stakeholders in the County, a series of public meetings to solicit feedback from community members, and a project webpage to gather additional feedback through an interactive map and survey.

Planning Committee

A multidisciplinary approach is a key component of USDOT SS4A Action Plans and was a primary focus of the CTSAP. In fulfillment of this priority, a CTSAP Planning Committee was assembled and consulted throughout the planning process to gather input at key project milestones. The target audience for the planning committee was implementors, including County staff, and agency partners such as OmniRide, Prince William County Schools, and Virginia Department of Transportation (VDOT). As many of these stakeholders will ultimately be involved in the implementation of projects and strategies identified in this plan, providing them with opportunities to provide insight was essential to the success of this plan. The Planning Committee was given the following responsibilities:

- Attending and participating in virtual planning committee meetings
- Providing feedback on project approach and sharing new perspectives
- Acting as champions of the plan to spread awareness, build excitement, and increase public participation among communities and constituencies
- Synthesizing the efforts of the CTSAP with other planning efforts and programs in and around the County to ensure consistency and avoid duplicate efforts

Stakeholders Included

The following Prince William County offices and departments were included in the Planning Committee:

- Communications and Engagement
- Community Safety
- Equity and Inclusion
- Fire and Rescue
- Human Rights Commission
- Long Range and Current Planning
- Police Department
- Public Safety Communications
- Risk and Wellness Services
- Trails and Blueways Council

The following partner agencies and entities were also included in the Planning Committee:

- Prince William County Public Schools
- Virginia Department of Transportation (VDOT)
- OmniRlde

Input Received

Three virtual Planning Committee meetings were held at key points in the CTSAP process:

Meeting #1 – January 13th, 2025

This Planning Committee kickoff meeting introduced the CTSAP context and planning process to the stakeholders and reviewed the roles and responsibilities of the Planning Committee. Additionally, the attending stakeholders participated in an interactive survey to provide input on CTSAP vision and goals, safety themes and risk factors, project prioritization criteria, and public engagement approaches.

Through this exercise, the Committee emphasized the importance of:

- Focusing on key factors contributing to crashes in the County, particularly reckless or improper driver behavior
- Being proactive in addressing safety concerns in advance to prevent incidents rather than reacting as they occur
- Emphasizing safety for the County's most vulnerable users and communities
- Assessing cost and feasibility of projects in prioritization
- Providing greater network connectivity for all modes and user types

As this meeting was held prior to public engagement, the Committee provided direction in effective strategies to reach community members such as utilizing social media and news media to advertise the project and public meetings.

Meeting #2 - March 12th, 2025

This meeting was held following the project's public engagement phase and included highlights from public meetings. In addition, the CTSAP team took the opportunity to communicate and gather feedback on project prioritization criteria, types of safety countermeasures, and progress and performance monitoring strategies.

In response to the presented prioritization criteria, the Committee emphasized the importance of the following:

- Mitigating safety risk in areas of concern, ultimately reducing crashes, serious injuries, and fatalities
- Prioritizing safety in areas where vulnerable users are concentrated such as areas of higher bicycle/pedestrian activity and school zones

The Committee also communicated a need for investment in countermeasures such as:

- Intersection improvements
- Speed management and traffic-calming infrastructure
- Roadway safety infrastructure
- Enforcement of roadway laws
- Impaired driving education and enforcement

Additionally, the Planning Committee contributed examples of achievable performance measures to allow the County to monitor progress toward CTSAP goals.

Meeting #3 – May 20th, 2025

At this final Planning Committee meeting, the results of the CTSAP planning process were shared with the attending stakeholders. The CTSAP team shared full results from the online comment period and public engagement as well as an overview of key content to be published in the CTSAP. In addition, the County team shared a list of projects identified for prioritized implementation to begin working toward safety goals following the adoption of the CTSAP. The attending stakeholders had the opportunity to voice feedback and ask questions following the presentation of these results.

Public Engagement

The CTSAP utilized various public engagement strategies to communicate project information and gather input from community members that was ultimately considered and incorporated into the strategies of this plan. A combination of in-person public meetings and online content and surveys were employed to provide a variety of outlets for public comment.

Advertisements

Public meetings and online engagement opportunities were advertised with posters and fliers distributed across the County, as well as multiple press releases through local media outlets. These advertisements included details of public meetings as well as a QR code directing users to the online webpage with project information and other virtual engagement opportunities. The CTSAP project team hosted two in-person public meetings with the intent of communicating project information and gathering input from community members on:

- Locations of safety concern
- Types of safety countermeasures
- Prioritization methods for project locations

We want to hear from you! Join us at either discussion to share your mobility experience and provide feedback on road safety in the County.

Meeting Option 1	Meeting Option 2		
Date: Thursday, February 20th	Date: Thursday, February 27th		
ime: 6:00PM to 8:00PM	Time: 6:00PM to 8:00PM		
ocation: A.J. Ferlazzo Building	Location: Unity Reed High School		
15941 Donald Curtis Drive	8820 Rixlew Lane		
Woodbridge, VA 22191	Manasssas, VA 20109		

PRINCE WILLIAM

Figure 7: Public meeting flier

Activities

At each public meeting, participants were able to view a series of boards displaying key project context, goals, components, and progress. Additionally, they had the opportunity to participate in a series of activities to provide feedback, identify locations of safety concern, or contribute general comments.

Priority Pyramid

This activity focused on criteria for prioritizing project locations, allowing participants to rank options on a pyramid to reflect the criteria that they consider most important in prioritizing projects, as seen in **Figure 8**. The available criteria included safety, connectivity, accessibility, equity, vulnerable users, and public input.



Figure 8: Priority Pyramid

Countermeasure Budgeting

This activity presented participants with bins representing several categories of safety countermeasures and allowed them to "invest" their budget of 5 tokens into the bins of their choice, as seen in **Figure 9**. The intent of this activity was to gather input on countermeasures from the public, while also allowing them to

experience the dilemma of deciding how to allocate limited resources.



Figure 9: Countermeasure budget activity

Interactive Map

In addition to the activities, large, printed maps of the full County and specific magisterial districts were laid out for participants to provide location-specific feedback, as seen in **Figure 10**. This allowed community members to highlight areas in which they have experienced safety concerns or areas that should be addressed by the plan.



Figure 10: Interactive mapping activity

Online Engagement

An additional piece of the CTSAP public engagement strategy was a project webpage posted to the PWC Works public platform. The webpage communicated the context and intent of the CTSAP, details on public meetings, and a project timeline. The online webpage also hosted an online survey and an interactive map, which allowed the public opportunities to provide location specific comments for those who may not have been able to attend one of the public meetings.

Summary of Feedback

Through the engagement efforts, the project team was able to reach more than 1,500 community members, with 116 comments (seen in **Figure 12**) on maps and nearly 200 survey responses. The most prevalent takeaways from public comments include:

- Educational campaigns to promote safer driving
- Greater enforcement of speeding and distracted and impaired driving
- Gaps in the County's bicycle and pedestrian network
- Dangerous intersections and curves where safety measures are needed
- Additional lighting and visible signage on rural roads
- Calls for road diets to improve bicycle and pedestrian facilities and comfort

Some key quotes of community members' safety vision can be seen in **Figure 11**, and results from public engagement efforts in full detail can be found in **Appendix A**. "Pedestrians feel safe because there are plenty of sidewalks and safe ways to cross busy intersections"

"Increased enforcement and presence"

"Improved driver's education program for new drivers"

"Drivers are not using their phones or running red lights"

"No reckless or aggressive drivers"

"Plan for the *future of transportation*, not today's traffic"

"Creating **accessibility** to transportation for the most vulnerable and disadvantaged populations in the County"

How would **you** describe your vision for **improved traffic safety** in the County?

Figure 11: Community members' safety vision



Figure 12: Public comment location

Safety Analysis



Safety Analysis

The safety analysis for Prince William County (PWC) applied a multipronged approach to identify where Fatal and Serious Injury (FSI) crashes are occurring, which facilities are contributing most to these outcomes, and what roadway characteristics are associated with higher crash risk. This included three complementary analyses: the Equivalent Property Damage Only (EPDO) network screening, the development of a High Injury Network (HIN), and a risk ratio analysis resulting in the development of a High Risk Network (HRN). While this section includes a summary of the process and results of these analyses, a detailed technical report for the Safety Analysis can be found in **Appendix B**.

For the purposes of this safety analysis, the project team obtained and analyzed five years of crash data from January 1, 2018 to December 31, 2022 for Prince William County, the City of Manassas, and the City of Manassas Park from the Virginia Department of Transportation's (VDOT) Pathways for Planning. Data from 2018-2022 was used rather than the most recent five-year period to include two years of both pre-COVID 19 and post-COVID-19 pandemic data, to understand the pandemic's impact on safety. It is important to note that the analysis did not include all crashes in the City of Manassas, though the County identified crashes along key corridors in the City for inclusion. In addition, crashes occurring on access-controlled facilities (i.e., I-66, I-95) and ramps, rest areas, private roads, and the Quantico Marine Corps Base were excluded from the analysis as those fall beyond the County's jurisdiction.

Network Screening

The network screening focused on analyzing historical crash data to identify intersections and corridors with the highest frequency and severity of crashes, particularly those resulting in FSI. This data-driven process used the EPDO method to assess safety performance across the network and identify locations with elevated crash history. The EPDO method assigns weighting factors to crashes by severity relative to property damage only (PDO) crashes, with greater weights for more severe outcomes.

Key Takeaways:

- Identified intersections and corridor segments that have experienced higher crash frequencies and severities (i.e., high Equivalent Property Damage Only (EPDO) scores)
- Intersections with high EPDO scores are typically located in urban areas where principal arterials intersect with minor arterials or major collectors
- Corridor segments with high EPDO scores are typically located on high volume roads in urban areas, and high-volume roads with horizontal curves in rural areas

High Injury Network (HIN)

The High Injury Network (HIN) analysis builds on the network screening results by highlighting the most critical roadways for safety investment. The analysis was based on the EPDO severity rankings, integrating crash history from both intersection and corridor analyses to build a comprehensive picture of network-wide safety. The product of this analysis was a two-tiered HIN (Tier I = highest severity; Tier II = lower severity) which can be viewed on the following page in **Figure 13**. The HIN communicates the most critical roadways for safety investment in the County, and represents locations that will be targeted for reactive safety projects

Key Takeaways:

- The results of the HIN network screening were ranked based on weighted crash severity and grouped into two tiers, collectively accounting for 50 percent of reported FSI crashes from 2018-2022.
- Tier I and Tier II HIN roads collectively account for only 4.4 percent of the County's total roadway miles but represent 50 percent of all FSI crashes.
- Despite making up just 1.8 percent of the County's roadway mileage, Tier I roads account for 25 percent of all FSI crashes.



Figure 13: High Injury Network (HIN) results

High Risk Network (HRN)

The High Risk Network (HRN) is the product of the risk ratio analysis, which shifts the focus from where crashes have occurred to why they may be happening. The analysis examines roadway and intersection characteristics including posted speed limit, urban versus rural land use contexts, functional classification, intersection control, and intersection configuration. This offers insight into roadway and intersection intersection

characteristics that are more likely to contribute to FSI crashes. The analysis considered roadway segments and intersections separately, comparing the proportion of FSI crashes across key characteristics relative to their exposure (e.g., roadway miles or number of intersections). The resulting HRN (shown in **Figure 14** and **Figure 15**) identifies roadway segments and intersections as high-priority locations for proactive safety improvement strategies to mitigate safety risk across the network.



Figure 14: High Risk Network (HRN) segment results

Key Takeaways:

- The corridor analysis highlighted speed as a key factor in severe crash overrepresentation, with both urban and rural roads experiencing elevated risk at higher speeds (> 45 mph)
- The intersection analysis emphasized signalized intersections and higher-order functional classifications as key factors in severe

crash overrepresentation. The following intersection characteristics were disproportionately represented:

- Urban settings: Other Freeways and Expressways, Other Principal Arterial Roads, and Minor Arterial Roads
- Rural settings: Other Principal Arterial Roads and Minor Arterial Roads
- Urban and rural settings: signalized intersection



Figure 15: High Risk Network (HRN) intersection results

Crash Trends

While crashes involving impaired driving, speeding, or people walking and biking represent a relatively small share of all reported crashes, they account for a disproportionate number of fatal and serious injury (FSI) outcomes in Prince William County.

Impaired Driving

Most crashes (92%) involved non-impaired drivers. Although only 8% of all crashes involved impaired drivers, these crashes accounted for a disproportionate 24.2% of all fatal and serious injury (FSI) crashes. Crashes involving impaired drivers were nearly four times more likely to result in an FSI (10.5%) compared to crashes involving non-impaired crashes (2.8%).

Pedestrian and Bicycle

Crashes involving pedestrians and bicyclists make up a small share of total crashes (2.1%), but they accounted for a disproportionate 18.7% of all FSI crashes. Pedestrians are especially vulnerable, with 37.3% of pedestrian-involved crashes resulting in FSI. Crossing at an intersection accounted for the highest number of pedestrian crashes (42.8%), with the remainder involving non-intersection crossings, walking along the roadway, or other circumstances. Bicycle crashes also had elevated severity, with nearly 1 in 5 resulting in FSI, and 95.1% resulting in some level of injury. In contrast, only 33.1% of vehicle-only crashes resulted in any injury, underscoring the heightened risk of pedestrians and bicyclists.

Speeding

The majority of crashes (84.8%), including most FSI crashes (70.3%), involved non-speeding vehicles. While speeding is a factor in only 15.2% of total crashes, these crashes were disproportionately severe, accounting for 29.7% of all FSI crashes. Crashes involving speeding were more than twice as likely to result in an FSI (6.7%) compared to non-speeding crashes (2.9%).

Driver Age

Drivers aged 25 and under account for 40.6% of all crashes and 38% of all FSI crashes. Drivers 65 and older account for the smallest share of total crashes (12.7%) as well as 12.5% of all FSI crashes. Drivers aged 26 to 64 account for 46.8% of all crashes and 49.5% of all FSI crashes.

Prioritization of Projects



Prioritization of Projects

As detailed in the Safety Analysis section, High Injury Network (HIN) segments represent targeted locations for reactive safety projects, while High Risk Network (HRN) segments and intersections represent areas to target proactive safety strategies. Project locations were prioritized separately in three groupings: HIN, HRN segments, and HRN intersections.

Project locations were scored based on their alignment with specific CTSAP project criteria within themes of: Equity, Safety and Vulnerable Users, Connectivity, Accessibility, and Public Input. **Appendix C** shows the matrix of prioritization criteria. This list of criteria is a result of a process which included identifying a draft set of criteria based on County priorities, and adjusting and refining the criteria based on feedback and input from community members and the CTSAP Planning Committee.

The CTSAP team also recognizes that the County has limited resources (money, time, personnel, equipment) to fulfill the recommendations for safety improvement in this plan. With that in mind, project prioritization is an essential component of a thorough plan of action. For this CTSAP, the prioritization process allowed the County to assess the identified HIN and HRN through a lens designed around County values. The resulting prioritized list of projects allows the County to have a better understanding of which corridor infrastructure projects may have the greatest impact toward addressing roadway safety concerns while making Prince William a more connected, convenient, and comfortable place to live, work, and visit across all modes of travel.

Equity

In consideration of equity for the prioritization process, the project locations were overlayed with three equity-focused geographies (seen in **Figure 16**):

Metropolitan Washington Council of Governments (MWCOG) Equity Emphasis Areas

 Census tracts identified with high concentrations of low-income individuals and/or traditionally disadvantaged racial and ethnic population groups (Equity Emphasis Areas for TPB's Enhanced Environmental Justice Analysis - Environmental Justice | Metropolitan Washington Council of Governments)

Justice40 Climate and Economic Justice Screening Tool (CEJST) Disadvantaged Census Tracts

• Identifying communities with significant environmental, social, and/or economic burdens (Need source)

U.S. Department of Transportation (USDOT) Areas of Persistent Poverty

Identifying census tracts with at least 20 percent poverty rate according to the American Community Survey (MPDG - Areas of Persistent Poverty and Historically Disadvantaged Communities | US Department of Transportation)

A project was allocated 1 point for each type of equity geography that it fell within or adjacent to (within a 100-foot buffer of equity area).



Figure 16: Equity Areas for Prioritization
Safety and Vulnerable Users

Criteria under the theme of Safety and Vulnerable Users included proximity to schools, concentration of crashes involving bicyclists and pedestrians in the project area, and the severity tier of HIN/HRN project locations.

School Zones Catchment Areas

Projects were also given a point if any part of the segment/intersection fell within a ½ mile buffer of a Prince William County School, as seen in **Figure 17**. This included elementary, middle, and high schools as well as learning centers and alternative schools, but did not include private day schools, preschools, or colleges/universities. In addition, the County completed a Safer Schools Analysis as a component of the CTSAP effort. Through this analysis, high priority schools for improved roadway safety were identified, including:

- River Oaks Elementary School
- Westridge Elementary School
- McAuliffe Elementary School
- Enterprise Elementary School
- King Elementary School
- Henderson Elementary School
- Dale City Elementary School
- Kerrydale Elementary School
- Minnieville Elementary School
- Neabsco Elementary School
- Kilby Elementary School
- Potomac View Elementary School

- Yorkshire Elementary School
- Loch Lomond Elementary School
- Sudley Elementary School
- West Gate Elementary School
- Lake Ridge Elementary School
- Coles Elementary School
- Vaughan Elementary School
- Haymarket Elementary School
- Bel Air Elementary School
- Benton Middle School
- Marsteller Middle School
- Potomac Shores Middle School
- Colgan High School
- Gainesville High School

Data Source: Prince William County

To honor the results of the Safer Schools Analysis, an additional point was allocated to project locations within a ½ mile buffer of any school included in the above list.



Figure 17: School Zones for Prioritization

Bicycle/Pedestrian Crashes

Additionally, because bicycle and pedestrian crashes were not factored into the identification of the HIN and HRN, each project was allocated 1 point for each bicycle/pedestrian crash (seen in **Figure 18**) within a 100-foot buffer of the project corridor.

Data Source: VDOT Pathways for Planning

HIN/HRN Severity Tier

As discussed in the safety analysis section of this plan, the HIN and HRN were each broken into two tiers of differing severity. These tiers are visualized in **Figure 13**. For prioritization, the higher tier severity projects were allocated 2 points, and the lower tier projects were allocated 1 point.

Data Source: CTSAP Safety Analysis



Figure 18: Bicycle/Pedestrian Crashes for Prioritization

Connectivity

Multimodal connectivity was also factored into the prioritization of project locations by assessing existing bicycle and pedestrian facility gaps and transit accessibility in the project area.

Bicycle/Pedestrian Gaps

In anticipation of the development of this CTSAP, the project team conducted a bicycle and pedestrian network analysis in 2024 to

identify gaps in the network that are missing multimodal infrastructure for countywide connectivity and accessibility (**Appendix D**). A result of that analysis included an inventory of roadway segments throughout the County that have no existing bicycle or pedestrian infrastructure, seen in **Figure 19**. Using this data, CTSAP project locations were given 1 point if a bicycle or pedestrian gap exists within a 100-foot buffer of the project.

Data Source: Prince William County



Figure 19: Bicycle/Pedestrian Gaps for Prioritization

Transit

In addition, prioritization focused on safety improvements in transit accessible locations to improve the comfortability of first and last mile connections for transit trips. Project locations were given 1 point if a bus or rail stop (seen in **Figure 20**) fell within a ¼ mile buffer of the project.

Data Source: OmniRide, Prince William County



Figure 20: Transit Stops for Prioritization

Accessibility

To prioritize accessibility to key locations and areas in the County, projects were prioritized if they were within or adjacent to a designated town or city, a County-identified activity center or Small Area Plan, or an area of future population or employment growth.

Activity Centers and Small Area Plans

In the County's Comprehensive Plan, small area plans were developed to direct growth to key locations throughout the County. In addition, the County identified several activity centers throughout the County for consideration in the CTSAP process. Project locations were allocated 1 point if they were within a 100-foot buffer of a County-identified activity center or small area plan (seen in **Figure 21**).

Data Source: Prince William County

Towns and Cities

As previously mentioned, Prince William County contains the Independent Cities of Manassas and Manassas Park, as well as the incorporated towns of Dumfries, Haymarket, Occoquan, and Quantico. These represent higher density, higher activity areas within the County. Projects were given 1 point for being within a 100-foot buffer of these designated towns or cities (seen in **Figure 21**).

Data Source: Prince William County



Figure 21: Towns, Cities, Small Area Plans, and Activity Centers for Prioritization

Future Growth

To highlight areas of future growth, MWCOG Cooperative Forecast data was used for projections in population and employment by Traffic Analysis Zone (TAZ). With this data, the project team calculated the percentage change in population and employment density over the next decade (2025-2035). For prioritization scoring, a project location received 1 point if it was within a 100-foot buffer of a TAZ in the top 20 percent of the County for this percent change in density (seen in **Figure 22).** Points were awarded separately for both population and employment density.

Data Source: MWCOG Cooperative Forecast, Round 10.0



Figure 22: Future Growth Areas for Prioritization

Public Input

The project team received 116 location-specific comments and concerns from community members through the engagement efforts for this CTSAP (seen in **Figure 23**). To factor this important public feedback into the project prioritization process, the project team

converted the comment points from the online map into spatial data and awarded 1 point to any project that was within a ½ mile buffer of a public comment point.

Data Source: CTSAP Public Engagement



Figure 23: Public Comment Points for Prioritization

Prioritization Results

Prioritization points were tallied across all criteria to obtain an overall Priority Score for each project location. Based on natural breaks in point totals, the HIN segments, HRN segments, and HRN intersections were each divided into 3 tiers, with Tier 1 representing projects with the highest priority and Tier 3 representing the lowest. The remainder of this section details and visualizes Tier 1 (highest priority) projects for HIN segments (**Table 2, Figure 26, Figure 27**) and HRN segments (**Table 3, Figure 28, Figure 29**). Prioritization results in full detail can be found in **Appendix E**.

Projects Already Endorsed for Funding

As previously mentioned, the Safety Analysis for this CTSAP used crash data from 2018-2022. As a result of this, several of the segments identified in the High Injury and High Risk Networks have had infrastructure projects or safety studies endorsed for funding in the 3 years between the window of data and the adoption of this plan. These HIN and HRN segments with projects already endorsed for funding can be seen in **Figure 24** and **Figure 25**. In addition, the Tier 1 HIN and HRN results tables in the remainder of this section include any projects already endorsed for funding along each segment. A more detailed table of information about each project already endorsed for funding can be found in **Appendix J**.



Figure 24: HIN segments with projects already endorsed for funding



Figure 25: HRN segments with projects already endorsed for funding

High Injury Network – Priority Tier 1

Project Locations

Road Name	Map Reference ID	Priority Score	Equity	Safety & Vulnerable Users	Connectivity	Accessibility	Public Input	Projects Already Endorsed for Funding
Richmond Highway	42	17	2	11	1	2	1	Route 1 Widening
Richmond Highway	3	16	2	11	1	1	1	Route 1 Widening
Sudley Road	48	16	2	9	1	3	1	Sudley 234B STARS Study
Sudley Road	2	15	2	9	1	2	1	Sudley 234B STARS Study
Sudley Road	18	15	2	8	1	3	1	Sudley 234B STARS Study
Richmond Highway	22	15	2	9	1	2	1	Route 1 Widening
Prince William Parkway	110	14	3	7	1	3	0	
Minnieville Road	131	14	3	7	1	3	0	Minnieville SPUI
Old Centreville Road	133	14	3	6	1	3	1	
Coverstone Drive	158	14	2	7	1	3	1	Sudley 234B STARS Study
Sudley Road	12	13	2	7	1	2	1	Sudley 234B STARS Study
Sudley Road	27	13	2	5	2	3	1	Sudley 234B STARS Study
Richmond Highway	33	13	2	7	1	2	1	
Rugby Road	58	13	3	5	1	3	1	
Liberia Avenue	70	13	1	9	1	2	0	City of Manassas Projects
Richmond Highway	80	13	2	8	1	2	0	
Old Centreville Road	93	13	3	5	1	3	1	
Centreville Road	96	13	2	6	1	3	1	Route 28 Innovative Intersections
Fraley Boulevard	123	13	3	5	2	3	0	Fraley Blvd Improvments
Center Street	124	13	2	6	1	3	1	City of Manassas Projects
Centreville Road	143	13	3	5	1	3	1	
Sudley Road	7	12	2	4	2	3	1	Sudley 234B STARS Study
Old Bridge Road	17	12	1	9	2	0	0	OBR - Minnieville Study
Richmond Highway	28	12	2	7	1	1	1	Route 1 Widening
Old Bridge Road	37	12	1	9	2	0	0	OBR - Minnieville Study
Sudley Road	45	12	2	6	1	2	1	Sudley 234B STARS Study
Sudley Road	55	12	2	3	2	4	1	Sudley 234B STARS Study
Graham Park Road	71	12	3	6	2	1	0	Fraley Blvd Improvments
Minnieville Road	75	12	3	5	1	3	0	
Old Centreville Road	95	12	2	4	2	3	1	
Richmond Highway	116	12	2	7	1	2	0	Route 1 Widening
Prince William Parkway	5	11	2	4	2	3	0	
Centreville Road	38	11	2	5	1	2	1	Route 28 Innovative Intersections
Prince William Parkway	41	11	1	6	1	3	0	Prince William Pkwy STARS Study
Dale Boulevard	57	11	1	7	1	2	0	
Liberia Avenue	65	11	1	7	1	2	0	City of Manassas Projects
Liberia Avenue	69	11	1	7	1	2	0	City of Manassas Projects
Horner Road	89	11	1	5	1	3	1	
Old Centreville Road	91	11	2	4	1	3	1	
Rugby Road	145	11	3	3	1	3	1	

Table 2: High Injury Network (HIN) Tier 1 Priority Scores



Figure 26: High Injury Network (HIN) Priority Tier 1 Locations (Inset #1)



Figure 27: High Injury Network (HIN) Priority Tier 1 Locations (Inset #2)

High Risk Network – Priority Tier 1

Segments

Road Name	Map Reference ID	Priority Score	Equity	Safety & Vulnerable Users	Connectivity	Accessibility	Public Input	Projects Already Endorsed for Funding
Prince William Parkway	139	18	3	10	1	3	1	Quartz Minnieville SPUI
Richmond Highway	151	18	2	13	1	1	1	Route 1 Widening
Prince William Parkway	73	16	3	9	1	3	0	Prince William Pkwy STARS Study
Prince William Parkway	112	15	1	11	1	2	0	Prince William Pkwy STARS Study
Richmond Highway	171	15	2	10	1	2	0	Route 1 Widening
Richmond Highway	97	14	2	9	1	1	1	Route 1 Widening
Prince William Parkway	195	14	2	10	1	1	0	Route 1 Widening
Richmond Highway	14	12	2	7	1	2	0	
Richmond Highway	54	12	0	8	1	2	1	Neabsco Mills Road Widening
Centreville Road	60	12	1	6	1	3	1	Route 28 Innovative Intersections
Richmond Highway	75	12	2	5	1	3	1	Route 1 Widening
Richmond Highway	102	12	3	6	2	1	0	Fraley Blvd Improvments
Richmond Highway	114	12	3	4	2	3	0	Fraley Blvd Improvments
Richmond Highway	126	12	3	5	1	2	1	Route 1 - 234 Intersection Improvements
Richmond Highway	10	11	3	2	2	3	1	Fraley Blvd Improvments
Prince William Parkway	25	11	1	3	2	4	1	Liberia Development
Richmond Highway	26	11	3	2	2	3	1	
Centreville Road	48	11	2	4	1	3	1	Route 28 Innovative Intersections
Centreville Road	68	11	2	5	0	3	1	
Prince William Parkway	166	11	2	7	2	0	0	
Prince William Parkway	167	11	2	4	2	3	0	Prince William Pkwy - 195 Ped Crossing
Centreville Road	21	10	1	5	1	2	1	Route 28 Innovative Intersections
Richmond Highway	24	10	3	2	2	2	1	Fuller Heights Intersection Improvements
Prince William Parkway	82	10	1	4	2	2	1	Hoadly STARS Study
Hoadly Road	85	10	0	5	2	2	1	Hoadly STARS Study
Centreville Road	88	10	2	5	0	2	1	Route 28 Innovative Intersections
Richmond Highway	103	10	2	5	1	2	0	
Dumfries Road	113	10	0	5	1	3	1	
Prince William Parkway	147	10	1	3	2	4	0	Brentsville Interchange
Dumfries Road	159	10	3	3	2	2	0	Route 1 - 234 Intersection Improvements
Dumfries Road	186	10	1	4	1	3	1	234- Sudley Interchange
Main Street	187	10	3	2	1	3	1	Fraley Blvd Improvments

Table 3: High Risk Network (HRN) Segments Tier 1 Priority Scores



Figure 28: High Risk Network (HRN) Segments Priority Tier 1 Locations (Inset #1)



Figure 29: High Risk Network (HRN) Segments Priority Tier 1 Locations (Inset #2)

Safety Strategies and Countermeasures



Safety Strategies and Countermeasures

Developing transportation countermeasures and safety strategies is crucial in minimizing roadway fatalities and serious injuries in Prince William County. These measures are designed to enhance the safety of all road users, including drivers, pedestrians, cyclists, motorcyclists, and transit users. By implementing effective engineering and non-engineering countermeasures, we can address and mitigate various risk factors such as road infrastructure deficiencies, driver behavior, vehicle safety standards, and environmental conditions. These efforts not only save lives but also reduce the economic burden associated with traffic crashes, including medical costs, legal expenses, and lost productivity. Ultimately, a focused approach on transportation safety fosters a safer, more efficient, and reliable transportation system, contributing to the overall well-being of communities.

Countermeasures

Infrastructure Countermeasures

The Comprehensive Traffic Safety Action Plan is intended to provide candidate safety improvements that are recommended by the County to address safety challenges for a variety of road types and road users. This effort focuses on physical countermeasures including information related to where it is recommended to be used, the types of road users it is anticipated to benefit, how it is predicted to reduce crashes (Crash Modification Factors [CMF]), cost, timeline for implementation, implementation history, and whether the Countermeasure is VDOT approved.

As part of the CTSAP, 75+ countermeasures were identified for review by County staff, and following review approximately 30 countermeasures were recommended for inclusion in the CTSAP. The following countermeasures in **Table 4** are recommended for the County to implement as part of the CTSAP and are shown in more detail in **Appendix F**.

Table 4: Infrastructure Countermeasure Recommendations

Countermeasure Strategy	Description
High Visibility Crosswalks	Enhance safety with wide longitudinal lines or bar pair patterns to increase pedestrian awareness.
Rectangular Rapid Flashing Beacon (RRFB)	Uses alternating high-frequency flashing beacons to enhance pedestrian conspicuity at uncontrolled crossings.
Pedestrian Hybrid Beacon (PHB)	Traffic control device to help pedestrians safely cross higher-speed roadways at midblock crossings and uncontrolled intersections.
Pedestrian Median Refuge	Provides a protected refuge area in the median for pedestrians crossing multilane roads.
Curb Extensions	Extend the sidewalk or curb line into the parking lane to reduce the effective street width.
Speed Table	Raised area across the roadway to limit vehicle speed.
Raised Median Island	Constructed in the middle of a roadway to narrow travel lanes and reduce driving speeds.
Raised Intersection	Slows traffic through intersections and improves pedestrian safety.
High Friction Surface Treatment	Pavement treatments to reduce crashes associated with friction issues, especially in wet conditions.
Enhanced Delineation for Horizontal Curves	Various strategies to improve safety at horizontal curves, implemented individually or in combination.
Longitudinal Rumble Strips and Stripes	Increase pavement marking visibility and durability during wet or nighttime conditions.
Wider Edge Lines	Improve visibility of travel lane boundaries compared to traditional edge lines.
Variable Speed Limits	Allow speed limits to adapt to changing circumstances to reduce crash frequency and severity.
Speed Limit Optimization	Studies initiated for speed limit review due to public request, crash-prone locations, or other reasons.

Leading Pedestrian Interval (LPI)	Allows pedestrians to enter a crosswalk before vehicles receive a green indication, enhancing pedestrian visibility.				
Roundabouts	Circular intersections that reduce vehicle speeds and conflict points, leading to lower crash risks.				
Intersection Lighting	Improves visibility and safety for all roadway users with adequate illuminance levels.				
Automatic Gates at Railroad Crossings	Barriers that activate upon train approach to prevent vehicles from crossing railroad tracks.				
Road Diet	Reconfigures roadways to improve safety, calm traffic, and enhance mobility for all users.				
Shared Use Paths	Extend multimodal networks for pedestrians and bicyclists.				
Left-Turn Signal Type Changes	Modify left-turn operations at signalized intersections to improve safety and efficiency.				
Systemic Low-Cost Countermeasures	Implement multiple low-cost safety measures at numerous stop-controlled intersections within a jurisdiction.				
Automated Speed Enforcement	Uses speed cameras to enforce legal speed limits.				
Plastic Inlaid Markers	Pavement markers to enhance lane visibility, especially at night or in inclement weather.				
Double Solid White Lines	Indicate a no-passing zone approaching marked crosswalks on multi-lane roads.				
Advanced Intersection Warning Signs	Alert drivers to upcoming intersections with street name plaques.				
Median and Edge Fences	Prohibit pedestrians from crossing outside crosswalks to improve safety.				
Pole Mounted Speed Display (PMSD)	Displays real-time vehicular speed to drivers dynamically.				
Widen Shoulder Width	Improves safety, efficiency, and capacity by widening roadway shoulders.				
Restricted Crossing U-Turn (RCUT)	Modifies left-turn and through movements to enhance corridor safety and reduce delays.				

Safety Strategies

To accompany the physical infrastructure countermeasure recommendations, the CTSAP recommends systemic safety strategies that include safety initiatives, programs, and policies that aim at improving roadway safety. As part of this effort, stakeholders who play a role in roadway safety outside of the Prince William County Department of Transportation were consulted to discuss ongoing strategies and safety initiatives, current and predicted future challenges, and already identified needs and desires. These discussions helped the CTSAP team understand how resources can be leveraged for the long-term achievement of the significant improvements in roadway safety in Prince William County. Stakeholders that participated in the development of the safety strategies included:

- PWC Police Department
- PWC Emergency Communications
- PWC Fire and Rescue
- PWC Community Safety Office
- PWC Government Communications
- OmniRide
- PWC Public Schools
- PWC Trail Advocacy Groups and Parks and Recreation

The initial draft list of Safety Strategies included more than 25 strategies in which the County reviewed and reduced to approximately 15 strategies for inclusion in the CTSAP and can be found in detail in **Appendix G**.

Residential Traffic Management Guide

Another safety improvement initiative included in the CTSAP effort was reviewing and updating the Residential Traffic Management Guide (RTMG) for the County. Residential traffic calming focuses on slowing traffic in communities where cut-through traffic is not a problem. When most of the traffic volumes and speeding are generated from within the neighborhood, residential traffic calming aims to implement measures to reduce speeds.

This guide utilizes the recommendations identified in this plan to propose key infrastructure countermeasures and systemic safety strategies aimed at improving traffic safety on residential and local roads with speeds of 25 mph or less. Infrastructure countermeasures focus on physical roadway improvements at high-risk locations, while systemic strategies take a proactive approach to reducing risks across the transportation network. The RTMG is available in full detail in **Appendix H** and includes the following types of strategies and countermeasures.

Infrastructure Countermeasures

- Speed management countermeasures
- Pedestrian safety improvements
- Intersection safety enhancements
- Bicycle and multimodal facilities
- Roadway reconfiguration projects

Systemic Countermeasures/Safety Strategies

- Community engagement and education programs
- Data-driven planning strategies
- Neighborhood traffic management programs
- School and youth safety initiatives
- Vision Zero and proactive safety policies

Policy, Progress, and Performance Measures



Policy, Progress, and Performance Measures

Recommendations

In addition to the prioritized list of projects for targeted safety improvement, the CTSAP includes a list of recommended strategies that are essential for the County to implement to achieve the overall goal of reducing severe injuries and fatalities in the roadways. Each strategy is coupled with associated actions that offer specific direction, along with key performance metrics for each action.

The policy and process recommendations included in this plan were developed through a process that included:

- A review of relevant plans from peer communities
- Input from the Planning Committee
- Input from community members through public engagement

It is important to acknowledge that the County has limited resources (money, time, personnel, equipment) to fulfill the goals of this plan. However, the intent of these strategies, actions, and performance metrics is to allow the County to efficiently allocate resources to track and maintain progress toward overall plan goals.

The strategies and actions were built around the five elements of the **Safe System Approach:**



The following section details each recommended strategy and associated actions. A detailed table that includes performance metrics, reporting period, and partner departments or organizations can be found in **Appendix I.**

Create a Culture of Transportation Safety in the County



Collaboration, education, and outreach can create a community mindset toward safety and a shared responsibility to reduce dangerous roadway behavior.

- 1. CREATE A TRANSPORTATION SAFETY WORKING GROUP
- 2. INCREASE EDUCATION AND OUTREACH FOCUSED ON TRANSPORTATION SAFETY
- 3. FOCUS OUTREACH AND EDUCATION ON YOUNG OR INEXPERIENCED USERS
- 4. FOCUS OUTREACH AND EDUCATION ON OLDER OR AGING USERS
- 5. FOCUS OUTREACH AND EDUCATION ON BICYCLISTS AND PEDESTRIANS

Maintain and Monitor Progress, Transparency, Accountability, and Accessibility of Transportation Safety Initiatives in the County



1. ROUTINELY UPDATE THE CTSAP, ASSESS PROGRESS, AND MAKE RESULTS PUBLICLY AVAILABLE

- 2. INTEGRATE CTSAP WITH OTHER SUPPORTING PLANS FOR THE COUNTY
- 3. CREATE A CONSISTENT CRASH REPORTING TOOL AND SYSTEM
- 4. OPTIMIZE AND MAXIMIZE EFFICIENCY OF COUNTY RESOURCES

Improve Infrastructure for Safer Transportation Across the County



- 1. IMPROVE INFRASTRUCTURE TO PREVENT ROADWAY DEPARTURES
- 2. IMPLEMENT MEASURES THAT INCREASE DRIVER AWARENESS TO SURROUNDINGS
- 3. IMPROVE INTERSECTIONS TO PREVENT INTERSECTION CRASHES
- 4. PROMOTE SEPARATION OF ROAD USERS IN AND ALONG THE RIGHT-OF-WAY

Promote Safer Speeds on County Roads



- **1.** IMPROVE ENFORCEMENT OF SPEEDING
- 2. IMPLEMENT TRAFFIC-CALMING INFRASTRUCTURE (NON-RESIDENTIAL)
- 3. INCREASE MONITORING OF SPEED ON COUNTY CORRIDORS
- 4. IMPLEMENT TRAFFIC-CALMING INFRASTRUCTURE ON RESIDENTIAL ROADS (25MPH)

Increase Outreach, Education and Enforcement to Promote Safer Behavior on Roads



- 1. MONITOR NUMBER OF FATAL AND SEVERE INJURY (FSI) CRASHES INVOLVING: IMPAIRED DRIVING, DISTRACTED DRIVING, SPEEDING, SEATBELTS, PEDESTRIANS, BICYCLISTS
- 2. INCREASE ENFORCEMENT OF IMPAIRED AND DISTRACTED DRIVING
- 3. INCREASE EDUCATION AND OUTREACH FOCUSED ON IMPAIRED AND DISTRACTED DRIVING

Focus on Safer School Zones



- **1.** Assess safety needs for school zones
- 2. IMPLEMENT INFRASTRUCTURE FOR SAFETY IN SCHOOL ZONES
- **3. PROMOTE SAFE BEHAVIOR IN SCHOOL ZONES**

Encourage Safer, More Comfortable, and Better-Connected Mobility within the County



- **1. PROMOTE AND FACILITATE TRANSPORTATION ALTERNATIVES**
- 2. MONITOR NUMBER OF CRASHES INVOLVING BICYCLISTS AND PEDESTRIANS

- 3. INCREASE DEDICATED INFRASTRUCTURE FOR BICYCLISTS AND PEDESTRIANS
- 4. INCREASE COMFORTABILITY OF WALKING AND BIKING IN THE COUNTY
- 5. IMPROVE ACCESSIBILITY FOR BICYCLISTS AND PEDESTRIANS TO KEY DESTINATIONS
- 6. IMPROVE ACCESSIBILITY FOR BUS AND TRANSIT ALTERNATIVES
- 7. DEVELOP SAFETY GUIDELINES FOR ELECTRIC SCOOTERS AND BICYCLES

Become a Leader in Implementing Innovative Solutions and Emerging Technologies to Create Safer Transportation



- **1.** INCREASE AUTOMATED ENFORCEMENT ACROSS THE COUNTY
- 2. IMPLEMENT VEHICLE-TO-EVERYTHING (V2X) TECHNOLOGY
- **3.** APPLY INNOVATIVE SOLUTIONS TO IMPROVE SAFETY AT INTERSECTIONS AND ON ROADWAYS

Promote Safer Vehicles on County Roads



- 1. PROMOTE SAFER COMMERCIAL MOTOR VEHICLES
- 2. PROMOTE SAFER PASSENGERS
- 3. PROMOTE SAFER VEHICLES ON THE ROAD
- 4. PROMOTE SAFER BICYCLES AND CYCLISTS
- 5. PROMOTE CONNECTED AND SMART VEHICLES

Ongoing Local Jurisdictional Efforts

City of Manassas

While the City of Manassas has yet to develop a plan focused specifically on roadway safety, they are in the process of an update to their Mobility Master Plan. The plan identifies how existing roadways, transit access, bike and pedestrian facilities are serving the community, recommends improvements, and provides a guide for future transportation investments to improve mobility in the city. The recommended improvements and facilities from this plan will undoubtedly improve safety on roadways in the City, especially for bicyclists and pedestrians.

City of Manassas Park

The City of Manassas Park is currently in the process of developing a Vision Zero Action Plan with the goal of eliminating deaths and serious injuries on the City's transportation network. This plan is being developed in partnership with Prince William County under the same grant funding that the County has received from the FHWA SS4A for this CTSAP.

Incorporated Towns

Prince William's 4 incorporated Towns of Haymarket, Dumfries, Occoquan, and Quantico each conduct their own safety initiatives in addition to County-wide efforts. The County supports and seeks to partner with the towns in their localized safety initiatives.

Recommendations

Prince William County Comprehensive Traffic Safety Action Plan

CLEANERS

8

Recommendations

Through the safety analysis, input from stakeholders and community members, and prioritization process, Prince William County has identified a list of initial prioritized projects, shown in **Table 5**. These projects will be the focus in the County's initial implementation efforts following the adoption of this CTSAP, and will allow the County to begin working effectively toward the safety goals identified in this plan.

Table 5: Initial Prioritized Projects

Initial Prioritized Projects	Total Cost	Description			
	\$11,250,000	Implementation timeline is 24-36 months for all activities			
Streetlights	\$500,000	Install and upgrade streetlights at intersections to express way lights on high speed multilane roadway intersections as identified by the HIN/HRN. Includes but not limited to intersections on PW Parkway, Rt 1, Rt 234, Rt 15, Rt 28, Rt 15, and Rt 29			
Crash Data Pool and HIN/HRN Tools	\$500,000	Continue to develop the existing crash screening and visualization tools to create a centralized roadway crash data pool and site inventory to include Fire and Rescue and 911 call center data integration and streamlining of Police Crash data. Data from the CTSAP screening and gap analyses will be integrated with other local data sets (bus routes, schools, developments, etc) and big data travel volume and speed data (Countywide)			
234-28 Wedge Design and Implementation	\$2,000,000	Expand the screening and initial assesment of the 234-28 Wedge to implement initial low- cost near term mitigation countermeasures and to design long term ultimate condition solutions. This will include Old Centerville Road, Manassas Drive, Yorkshire Lane, Rugby Road, Amherst Drive, Lomond Drive, Fairmont Avenue, Mathis Avenue and Liberia Road.			
PWC Transportation Engagement Strategy	\$200,000	Develop an integrated cross agency communication and engagement stragegy and implement it over the next 2 years. This will include PWC agencies (DOT, PD, F&R, Communications, OCS, Social Services) and external partners (PWCS, Omniride, VDOT, DMV) and neighboring Towns and Cities (Countywide)			
High Crash Intersection Monitoring	\$500,000	Develop and implement a crash monitoring and analysis tool to monitor and identify HIN signalized intersections that that will be suitable for Automated Traffic Light. Includes but not limited to intersections on PW Parkway, Rt 1, Rt 234, Rt 15, Rt 28, Rt 15, and Rt 29			
PROWAG Intersection Upgrades	\$1,500,000	Upgrade 10-20 pedestrian intersection crossings identified in the HIN/HRN analysis to current PROWAG standards (Countywide)			
Roadway Departure Remediation	\$1,000,000	Develop and implement low to medium cost roadway departure and intersection improvements on rural roads at locations identified by the HIN to include Joplin Road, Purcell Road, Groveton/Rt28 and Valleyview/Bristow Road.			
CMV Truck Inspection Sites	\$400,000	Conduct a safety review and identify locations with High CMV volume and design and build pull offs so PWC PD can safety inspect CMVs. Possible locations may include but not be limited to Rt 234, Rt 28, Rt 29, Fleetwood Drive.			
SMART Connected Vehicle Infrastructure	\$2,000,000	Demonstration Project to install SMART V2X technology at up to 16 HIN intesctions in the Potomac Mills Area and the safety benefits of the connected vehicle technolgy. The demonstration will specifically focus on F&R to show the benefits of this new technology over the current OPTICOM system, demostrate how this technolgy can improve the safety for bus operators, demonstrate the safety benefits of V2X for PWC PD for traversing intersections and responding to calls, in addition to making the technology available for the general motoring public with access to this technology. This will include PW Pkwy (294), Rt1, Opitz Road, Smoketown Road, Minnieville Road and Gideon Drive			
Variable Message Boards	\$2,000,000	Expand the NVTA "Route 234 Arterial Operations Improvements" project to include DMS/CCTV Sites for Posting Roadway Safety Messages on Prince William Parkway (Rt 294)			
Safer Schools Project	\$500,000	Complete an detailed safety analysis and implement medium and low cost pedestrian safety improvements in the walksheds of Schools indentified in the HIN (Countywide)			
Minnieville Corridor Safety Audit	\$150,000	Conduct a road safety audit and detailed study and analysis of the Minnieville Road HIN corridor from Caton Hill to Spriggs Road.			

Appendices



Appendices

- A: Public Engagement Summaries
- B: HIN/HRN Methodology
- C: Complete Prioritization Scoring Matrix
- D: Bicycle and Pedestrian Gap Analysis
- E: Prioritization Results
- F: Countermeasure Toolkit
- *G: Safety Strategies to come*
- H: Residential Traffic Management Guide
- I: Performance Measures Matrix to come
- J: Projects Already Endorsed for Funding

Appendix A

Appendix B

Appendix C
Appendix D

Appendix E

Appendix F

Appendix G

Appendix H

Appendix I

Appendix J