



Baltimore-Washington Parkway, Maryland

Traffic Safety Plan



Source: Mark Brady photograph (July 2011)

Agreement No. P13PG00105
June 2015

Table of Contents

Table of Contents	ii
Report Notes	iii
Acknowledgments	iv
Definitions	v
Executive Summary	1
Introduction	2
<i>Goal and Objectives</i>	2
<i>Stakeholder Engagement</i>	3
<i>Background and Existing Conditions</i>	3
<i>Safety Projects Implemented</i>	4
Safety Challenges on the B-W Parkway	5
<i>The 4Es of Transportation Safety</i>	5
<i>Key Findings</i>	5
Recommendations	7
<i>Long-term Recommendations and “Big Ideas”</i>	12
Next Steps: Plan Implementation and Monitoring	13
<i>Design and Construction</i>	13
<i>Measuring Progress</i>	13
<i>Media and Marketing</i>	14
Appendix A: Existing Conditions	16
Appendix B: Stakeholders	21
Appendix C: Proposed ITS Device Installations	23
Appendix D: Proposed Improved Shoulder Locations	24
Appendix E: Review of Existing Documents	25

Report Notes

This report, including data analysis, photos, references, and recommendations, was prepared by the U.S. Department of Transportation John A. Volpe National Transportation Systems Center in Cambridge, Massachusetts. The project team was led by Susan Smichenko, Organizational Performance Division, and included Ryan Yowell, Transportation Planning Division, and Michelle Maffeo, iBiz.

This effort was funded by the National Park Service National Capital Region allocation of Title 23 funds. The project statement of work was included in the May 2013 interagency agreement between the National Park Service and the Volpe Center (NPS agreement P13PG00105).

Acknowledgments

The authors wish to thank the individuals who graciously provided their time and subject matter expertise in the development of this report, including:

National Capital Region Office

Einar Olsen, Assistant Regional Director for Operations Evaluation
Makayah Royal, Federal Lands Transportation Program Coordinator

National Capital Parks-East

Bobby Johnson, Safety Officer
Gopaul Noojibail, Superintendent
Stephen Syphax, Chief, Resource Management (Retired)
Frank Young, Chief of Maintenance

U.S. Park Police

Lieutenant Christine Lopez
Commander Tom Neider

Definitions

The following terms are used in this report:

4Es	Engineering, Emergency Services, Education, and Enforcement
AADT	Average Annual Daily Traffic
B-W	Baltimore-Washington
CHART	Coordinated Highways Action Response Team
EFLHD	Eastern Federal Lands Highway Division
FHWA	Federal Highway Administration
FTE	Full time employee
ITS	Intelligent Transportation Systems
MOU	Memorandum of Understanding
MUTCD	<i>Manual on Uniform Traffic Control Devices</i>
NACE	National Capital Parks-East
NCR	National Capital Region
NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
NPS	National Park Service
PS&E	Plans, Specifications, and Cost Estimate
RWIS	Road Weather Information System
SHA	Maryland State Highway Administration
TIM	Traffic Incident Management
USPP	U.S. Park Police
VMS	Variable Message Sign

Executive Summary

Over the past decade, a number of studies have documented the traffic safety issues on the National Park Service's (NPS) portion of the Baltimore-Washington (B-W) Parkway. This *Baltimore-Washington Parkway Traffic Safety Plan* provides an action plan to implement improvements related to the proven strategies that employ the "4Es" of transportation safety: engineering, education, enforcement, and emergency services.

NPS owns and operates the 19-mile section of the B-W Parkway between Route 175 (Annapolis Road/Jessup Road) at its northern boundary and Route 50 (New York Avenue) at its southern boundary. Primarily located in Prince George's County, Maryland, the B-W Parkway is a scenic limited-access divided highway and a unit of NPS National Capital Region (NCR). It connects two major metropolitan areas and provides access to a number of major regional developments, including office parks, shopping malls, entertainment venues, and the Baltimore/Washington International Airport.

Since its construction in 1954, no capacity improvements have been made to the B-W Parkway. However, regional development has continued, with only limited mitigation to the road, resulting in increased traffic congestion and crashes. The roadway has a number of issues, including overcapacity operating conditions, roadway features inconsistent with industry transportation safety standards, poor dissemination of information, difficulty with traffic safety enforcement, and limited driver situational awareness. An average of 6 fatalities and 547 crashes per year have occurred on the B-W Parkway since 2006.

An average of 6 fatalities and 547 crashes per year have occurred on the B-W Parkway since 2006.

The conflicting purposes of this road (historic park; major commuter route) have created a dilemma: how can NPS continue to maintain a park with an average daily traffic volume approaching 120,000 vehicles per day? To accommodate the NPS mission, its underlying theme of preservation, and to maintain the historic character of the road, limited safety improvements have been made to the B-W Parkway.

Both NPS and external stakeholders participated in the development of this plan. Recommendations to improve safety were taken from previous studies of the B-W Parkway and developed by stakeholders in a collaborative brainstorming effort focused on the 4E approach. Recommendations in this plan include upgrading infrastructure to industry standards, providing better information to drivers, and increasing the visibility and effectiveness of enforcement.

All stakeholders agreed that the first step towards improving traffic safety will be for the NPS to convene a **B-W Parkway Task Force**, consisting of both NPS staff and external stakeholders. The Task Force should meet on a regular basis to monitor progress and give updates on the 4E projects as they move forward into implementation. By tracking progress on the implementation of this plan, NPS can show positive momentum towards achieving its goal of reducing serious injury crashes and fatalities on the B-W Parkway. Champions will be instrumental to the success of this plan. Without individuals committed to leading the effort, scoping projects, identifying resources, and keeping progress moving forward, traffic safety on the B-W Parkway will not improve. Finally, the NPS should work with the Task Force to send a proactive message to the media and the driving public that it is working to implement solutions that will save lives and reduce injury crashes.

Introduction

Safety for visitors and staff is a core value of the National Park Service (NPS). It is among the top priorities for NPS when considering transportation improvements. Of all the NPS regions, the National Capital Region (NCR) has the most vehicle crashes, accounting for 39% of all NPS crashes. The urban parkways located within NCR have the highest traffic volumes as compared to other parks, since these facilities serve primarily as commuter routes. The Baltimore-Washington (B-W) Parkway is one of these urban parkways.

National Capital Parks-East (NACE), a division of NCR, comprises 15 park sites, parkways, and statuary covering more than 8,000 acres of historic, cultural, and recreational parklands from Capitol Hill to the nearby Maryland suburbs. The B-W Parkway is one of four NPS parkways in and around the Washington, DC area, and one of two under the jurisdiction of NACE.

NCR held a symposium in May 2013 to lay the foundation for the development of a comprehensive “4E” (engineering, emergency, education, and enforcement) strategy to reduce crashes and address other traffic safety issues within NCR. One of several recommendations from this symposium was to develop parkway safety plans; NCR is taking a step towards improving safety across the region through the development of this transportation safety plan.

This effort follows a corridor planning process, starting with an assessment of the baseline conditions. The project team reviewed existing studies and documented crash history, roadway characteristics, traffic operations, land use, and corridor aesthetics (see Appendix A for a summary of existing conditions). The project team then met with key administrative stakeholders, B-W Parkway maintenance and operations personnel, and U.S. Park Police (USPP) to help identify issues and further inform this plan. The project team engaged both NPS and external stakeholders throughout the development of the plan.

The plan identifies key investment interests and strategies that conserve natural, historical, and cultural resources, reduce crashes, and enhance driver mobility on the B-W Parkway. Past studies have focused exclusively on infrastructure improvements. Operational changes, such as enforcement and driver education programs, are also included in this plan. Additionally, because of the historic nature of the corridor, recommendations are focused on context sensitive design solutions.

Goal and Objectives

The goal for the *B-W Parkway Traffic Safety Plan* is to reduce fatalities and serious injuries using a cooperative approach that includes fundamental elements of leadership, collaboration, communication, and data analysis leading to implementation. The plan’s objectives refer to both driver behavior and infrastructure issues and opportunities, including:

- Incorporate 4E considerations into transportation safety projects.
- Promote transportation safety in projects and policies without threatening park resources and values.
- Collect and analyze crash data to make better investment decisions.
- Reduce transportation-related incidents and prepare for future emergencies.
- Continue to engage stakeholders.
- Develop an action-oriented implementation plan.

Plan recommendations are meant not only to reduce crashes and fatalities, and enhance mobility on the B-W Parkway, but also to consider both staff and funding resources. The recommendations included in this plan do not currently have programmed funding and do not constitute a federal action. Recommendations will be considered and evaluated by the NACE Superintendent and staff. Some projects recommended in this study will require further environmental review under the National Environmental Policy Act (NEPA) and National Historic Preservation Act. At the conclusion of the planning process, feasible recommendations can be formalized in the NPS project management information system, a memorandum of agreement documents with stakeholders, or directives by Park Superintendent.

Stakeholder Engagement

The project team held a kick-off meeting in November 2014 with NACE personnel from maintenance, resource protection, and administration, as well as the USPP and Acting Superintendent for the B-W Parkway.

An inclusive process with NPS and external stakeholders was pursued to provide knowledge and input about the B-W Parkway throughout the development of this plan. A list of stakeholders, as well as a description of the engagement process, can be found in Appendix B. After reviewing previous reports documenting safety issues on the B-W Parkway, the project team held a web conference with NPS and external partners in February 2014. The web conference introduced stakeholders to the project and gathered initial ideas related to improving traffic safety on the B-W Parkway.

The project team then held an in-person stakeholders workshop in April 2014 in Landover, Maryland. The workshop provided participants with an overview of the safety issues, and provided an opportunity to voice concerns and brainstorm potential actions for improving safety on the B-W Parkway.

Following the April workshop, the project team held a web conference to share the recommendations developed as a result of the team's outreach and begin prioritizing this list. The recommendations from the stakeholders are outlined in the following sections.

Stakeholders identified the top three safety issues on the B-W Parkway as: speeding, distracted driving, and congestion. With these concerns and the goal and objectives of the plan in mind, stakeholders suggested many of the recommendations outlined in the following sections. Many of these recommendations would benefit—or are only possible—through the financial commitment of external stakeholders. NPS resources are limited. External funding champions will be needed.

One of the key conclusions of the stakeholder process was that NPS should convene a **B-W Parkway Task Force** to keep the discussion and momentum of the process going. Consisting of internal and external stakeholders, the Task Force should meet on a regular basis to monitor progress and provide updates on the 4E projects as they move forward into implementation.

Background and Existing Conditions

NPS owns and operates the 19-mile section of the B-W Parkway between Route 175 (Annapolis Road/Jessup Road) at its northern boundary and Route 50 (New York Avenue) at its southern boundary. This segment comprises the study area for the traffic safety plan. The NPS-owned segment of the B-W Parkway typically has two 12-foot travel lanes in each direction, an 8-foot paved right hand shoulder, and curbs and gutters on both sides.

The Maryland State Highway Administration (SHA) owns and operates a 10-mile section of the B-W Parkway between I-695 and Route 175. SHA expanded this segment of the B-W Parkway to three lanes of travel in each direction. NPS uses design standards and guidelines from the *Park Road Standards*, while SHA uses its own standards.

Despite being separate entities, NPS and SHA do collaborate to improve traffic conditions along the entire corridor. For example, through a Memorandum of Understanding (MOU) with NPS, SHA will install Intelligent Transportation System (ITS) equipment along the B-W Parkway over the next few years (see Appendix C). By 2015, SHA and the Coordinated Highways Action Response Team (CHART) anticipate installing the following equipment along the NPS portion of the B-W Parkway:

- **Closed-circuit television (CCTV).** Cameras will be used to monitor traffic congestion and provide incident detection and verification.
- **Microwave detectors.** Detectors will monitor traffic speed and volume.
- **Road Weather Information System (RWIS).** Detectors will monitor pavement temperature and conditions (e.g., icy conditions).

Safety Projects Implemented

From 2002 to 2012, NPS made various safety improvements along the B-W Parkway. These improvements have addressed some infrastructure issues on the highway:

- Rumble strips have been installed along the right lane just outside of the fog line in the shoulder. This is an important countermeasure for reducing run-off-the-road crashes and head-on collisions.
- The B-W Parkway has undergone main line and on/off ramp resurfacing.
- Lighting has been installed at the interchange area at the southern section of the B-W Parkway.
- Median guardrail has been installed along most of the NPS-owned portion of the B-W Parkway, except where the north and south bound lanes are separated by forested medians.
- In 2012, three traffic count stations along the B-W Parkway were inspected, inventoried and repaired.

Safety Challenges on the B-W Parkway

Traffic safety and congestion are major concerns on the B-W Parkway. An average of 6 fatalities¹ and 547 crashes² per year have occurred on the B-W Parkway since 2006. One in four crashes results in injury or death.³ NCR identifies the “4E” approach to addressing traffic safety as a critical aspect to developing this plan; therefore, the key findings on safety challenges and recommendations for improvements on the B-W Parkway have been structured around these topics.

The 4Es of Transportation Safety

Effective solutions to addressing traffic safety focus on the four major transportation system components, referred to as the 4Es:

1. **Engineering.** Engineering addresses roadway infrastructure improvements to prevent crashes or reduce the severity of collisions when they occur.
2. **Enforcement.** The enforcement of traffic laws and a visible police presence tend to deter motorists from unsafe driving behavior. Enforcement on the B-W Parkway is provided by the USPP.
3. **Education.** Providing drivers good information can encourage them to make better decisions, such as not texting while driving, avoiding alcohol or medications, and wearing a seatbelt. Good information can also remind people about the rules of the road and alert them to road conditions.
4. **Emergency services.** Emergency services provide the initial response at a crash, caring for and transporting the injured, managing traffic, clearing the scene, and providing a detailed report.

Key Findings

As a result of internal discussions with NPS, NACE, and B-W Parkway staff, stakeholder outreach, and a review of previous studies, a number of issues were identified which impact the resolution of the B-W Parkway’s deficiencies. The lack of a reliable process for NPS to collect and record crash data is the most significant. Crash data collection is integral to developing a safety improvement program and fundamental to making informed decisions about safety strategies and investments. The following issues with data collection were identified:

- Crash data along the B-W Parkway has been collected inconsistently since 2005; fatalities on the B-W Parkway are recorded in a spreadsheet, but all crashes are not recorded.
- Injury crashes are only recorded locally.
- Statistical analysis of crash data service-wide in the NPS has not been available since 2006.

Furthermore, there is not a coordinated, organized approach to addressing safety issues despite a high level of concern among all stakeholders.

Table 1 lists the project team’s key findings regarding specific 4E challenges.

¹ Fatality Crash Data Summary (2005-2013). Internal NCR spreadsheet. Data collected 2014.

² Prince George’s and Anne Arundel Counties, Maryland. *Crash Data Analysis*. 2011.

³ CH2M Hill. *National Capital Region Crash Data Summary*. 2011.

Table 1: Key findings for 4E challenges

Component	Key Findings
Engineering	<ul style="list-style-type: none"> ▪ Design and construction of transportation safety projects, programs, and initiatives are not consistently funded. ▪ Effectiveness of projects is compromised due to low NPS staff capacity to initiate and manage the process. ▪ Projects are considered within the context of important cultural and natural resources; exceptions to industry design standards (e.g. reduced clear zones) may be granted. ▪ Signs and pavement markings are not in accordance with industry standards for retroreflectivity (see Figure 1), as detailed in the Manual on Uniform Traffic Control Devices (MUTCD).[*] This results in low visibility, particularly during nighttime driving hours.
Enforcement	<ul style="list-style-type: none"> ▪ Enforcement campaigns are limited due to low staffing levels. ▪ B-W Parkway’s narrow shoulders and deficient median crossovers prevent law enforcement officers from conducting roadside speed/distracted driving campaigns. ▪ Drivers are aware of the lack of consistent enforcement; they don’t obey posted speed limits, drive aggressively and violate other rules of the road. ▪ USPP has concurrent jurisdiction with state and local enforcement agencies; however no formal agreements exist for various reasons.
Education	<ul style="list-style-type: none"> ▪ Variable message signs (VMS) have not been effective for traffic control; in the recent past they were placed too close to travel lanes and destroyed. ▪ The general public is not aware of the serious crash history on the Parkway. ▪ Limited staff are available to manage traffic safety education campaigns. ▪ NPS is not an eligible recipient of National Highway Traffic Safety Administration (NHTSA) grants.
Emergency Services	<ul style="list-style-type: none"> ▪ Maintenance staff responding to incidents put themselves at risk due to narrow shoulders and deficient median crossovers. ▪ Emergency response times for crashes may be hindered by communication shortfalls.

^{*}The MUTCD, administered by the Federal Highway Administration, defines the standards used by road managers nationwide to install and maintain traffic control devices on all public highways.

Figure 1: An exit sign not in compliance with the MUTCD.



Recommendations

One of the key conclusions of the stakeholder meetings was that the NPS should convene a **B-W Parkway Task Force** and identify champions to keep the discussion and momentum of the process going. Consisting of NPS and external stakeholders, the Task Force should meet on a regular basis to monitor progress and give updates on the 4E projects as they move forward into implementation. The Task Force will encourage safety partnerships and allow NPS to leverage existing safety efforts and align its messaging with key stakeholders. Leadership of the Task Force should include the Parkway's Superintendent, a representative from USPP, and at least one external stakeholder.

The B-W Parkway Task Force will be instrumental in identifying champions for the short- and medium-term. Infrastructure projects will need to be designed, and the projects' cost estimates must be determined so that the funds can be programmed in future year construction spending. Yearly maintenance budgets should be evaluated to determine the most immediate needs.

Identifying Task Force members, scheduling a kick-off meeting, and developing an agenda should be a priority for the NPS to move forward on improving safety on the B-W Parkway.

Short-term (6 to 12 months) and medium-term (1 to 5 years) recommendations are included for each of the 4Es in the tables below and include both past projects that were recommended but never constructed and new ideas developed in the stakeholder outreach process. For these recommendations, stakeholders focused their time on exploring implementable solutions that may be achievable with existing resources. Potential funding opportunities and possible champions for championing these projects are identified.⁴

The projects are not listed in any particular order, and their inclusion in this study does not constitute a federal action. Prioritization of recommendations will be determined by NACE, with stakeholder input, after the plan is adopted and potential resources and champions are identified. The implementation of some recommendations may preclude the need for others.

⁴ Champions identified below are only suggestions of the project team; their inclusion here does not signify an organization's commitment to helping to advance a project, or any formal or informal partnership with NPS.

Table 2: Engineering Short- and Medium-Term Recommendations

Engineering recommendations address opportunities to improve roadway infrastructure to prevent crashes, or reduce the severity of collisions when they occur. Projects to add capacity were not considered, based on the recommendations of previous studies.

Horizon	Engineering Recommendation	Issue Addressed	Potential Champion(s) and Funding Sources	Estimated Cost Range
Medium	Improve pavement markings and signage at 3 high-risk interchanges (I-95, Route 197, Route 32)	Existing poor lane definition and sign visibility contribute to weaving issues and crashes at interchanges	NPS, FHWA-EFLHD, SHA	\$500,000 - \$1,500,000
Medium	Improve shoulder area at 8 locations for law enforcement/ breakdowns (see Appendix D: Proposed Improved Shoulder Locations for a list of proposed locations)	Lack of refuge for breakdowns can lead to secondary crashes; USPP enforcement could be improved with sufficient space for vehicles	NPS, FHWA-EFLHD, SHA	\$1,500,000 - \$3,000,000
Medium	Install 8 permanent variable message signs to share incident and safety information (4 northbound & 4 southbound)	Lack of real time information for drivers may lead to unnecessary congestion; information regarding incidents allows drivers to make informed decisions on route selection	NPS, FHWA-EFLHD, SHA	\$500,000 - \$1,000,000
Short	Replace signage (retro reflectivity) (19 miles)	Poor visibility of signage leads to unsafe driving, particularly at night or during poor weather conditions	NPS, FHWA-EFLHD, SHA	\$2,000,000 - \$3,500,000
Short	Restripe all pavement markings to MUTCD standards (19 miles)	Poor definition of lanes leads to unsafe driving, particularly at night or during poor weather conditions	NPS, FHWA-EFLHD, SHA	\$750,000 - \$1,000,000
Medium	Install 4 permanent VMS on Maryland access routes to Route 295 indicating travel times; install ITS devices to collect travel time along 295.	Real time information for drivers will allow for better decision making regarding travel routes	NPS, FHWA-EFLHD, SHA	\$400,000 - \$750,000
Short	Maintain the clear zone according to AASHTO standards	Recommendation would reduce fixed object crashes	NPS, FHWA-EFLHD, SHA	\$850,000 - \$1,000,000
Medium	Improve lighting (8 light poles per interchange)at 3 high-risk interchanges (I-95, Route 197, Route 32)	Poor visibility at night contributes to crashes	NPS, FHWA-EFLHD, SHA	\$250,000 - \$500,000
Medium	Improve 4 authorized vehicle median crossovers for law enforcement/breakdowns	Lack of refuge for USPP enforcement results in fewer effective campaigns; breakdowns can block travel lanes and cause secondary crashes as well as unsafe conditions for the vehicles involved in a crash	NPS, FHWA-EFLHD, SHA	\$400,000 - \$600,000

Table 3: Enforcement Short- and Medium-Term Recommendations

The enforcement of traffic laws and a visible police presence tend to deter motorists from unsafe driving behaviors. These recommendations improve enforcement opportunities along the Parkway.

Horizon	Enforcement Recommendation	Issue Addressed	Potential Champion(s) and Funding Sources	Estimated Cost Range
Medium	Hire two additional USPP officers	Added enforcement to address at-risk drivers (impaired, distracted, speeding) will encourage a safer driving culture	SHA, NPS	\$150,000 - \$200,000
Medium	Install automated enforcement equipment (8 locations)	Added enforcement to address speeding will increase driver awareness and encourage safer driving	NPS	\$300,000 - \$500,000
Medium	Create Memoranda of Understanding or other agreements with state and/or counties	Regular, additional enforcement would address at-risk drivers	State and local enforcement agencies, NPS	No cost, requires staff time
Medium	Explore grant opportunities for increased enforcement programs	Need for increased enforcement campaigns to address at-risk drivers	SHA, NPS, NHTSA	No cost, requires staff time
Short	Develop and enforce policies such as "Slower Traffic Keep Right"	Reduces congestion by directing drivers that are travelling below the normal speed of traffic to move to the right lane	NPS	No cost, requires staff time

Table 4: Education Short- and Medium-Term Recommendations

Transportation safety education gives drivers information about making good choices regarding distracted and impaired driving resulting in a reduction in collisions. These recommendations will help NPS staff and the stakeholders better inform drivers about the rules of the road and conditions on the Parkway. In order to fulfill the education recommendations, NPS will need to hire two full time employees (FTEs). The annual salary for each FTE is estimated to be between \$50,000 and \$70,000. Suggested position titles for these employees include “Safety Liaison” and “Communications/Public Relations Specialist.”

Horizon	Education Recommendation	Issue Addressed	Potential Champion(s) and Funding Sources	Estimated Cost Range
Short	Coordinate with Maryland in its Strategic Highway Safety Plan development	Provides opportunity for NPS to partner/coordinate with the State to address safety	SHA, NPS ¼ FTE	\$12,500 - \$17,500; \$5,000*
Medium	Encourage regular media attention	Informs the public on the high level of fatal and serious injury crashes on the Parkway	NPS ¼ FTE	\$12,500 - \$17,500; \$5,000*
Short	Continue stakeholder outreach and communications	Keeps public informed and allows them to continue actively participate in safety solutions	Task Force, SHA, NPS ¼ FTE	\$12,500 - \$17,500; \$5,000*
Short	Develop yearly education campaign for agency safety awareness trainings and conduct training	Inform regular commuters on the Parkway of traffic safety issues and encourages safer driving habits	Local businesses ,NPS ¼ FTE	\$12,500 - \$17,500; \$5,000*
Medium	Use coordinated approach to educate Congress on the issues on the B-W Parkway	Encourage funding for traffic safety projects; increase awareness of issues	NPS ¼ FTE	\$12,500 - \$17,500; \$5,000*
Medium	Solicit public-private partnerships for driver awareness campaigns (e.g., Maryland BikeSmart program)	Encourage funding for traffic safety projects; increase awareness of issues	NHTSA, USPP, NPS ¼ FTE	\$12,500 - \$17,500; \$5,000*
Short	Take part in Maryland Highway Safety Office traffic safety campaigns	Provides opportunity for NPS to partner/coordinate with the State to address safety	Maryland Highway Safety Office, NPS ¼ FTE	\$12,500 - \$17,500; \$5,000*
Short	Implement actions/policies to improve work zone safety and nighttime road closures	Improves safety for maintenance/law enforcement workers	NPS ¼ FTE	\$12,500 - \$17,500; \$5,000*

*Cost will depend on the duration and scope of the campaign. These costs can include travel, speaking fees, reservation of event space, printed materials, A/V equipment, security, consultant firms that design the campaign, and/or other direct material costs.

Table 5: Emergency Services Short- and Medium-Term Recommendations

Emergency services provide the initial response at a crash, caring for and transporting the injured, managing traffic, clearing the scene, and providing a detailed report. When a crash occurs, congestion quickly builds up, and the chances of a secondary incident increases. An effective traffic incident management program (TIM) reduces the duration and impacts of traffic incidents and improves the safety of motorists, crash victims and emergency responders.

Horizon	Emergency Services	Issue Addressed	Potential Champion(s) and Funding Sources	Estimated Cost Range
Short	Install signage for #77 program for incident response (10 signs)	Improve driver awareness of emergency services	NPS	\$100,000 - \$150,000
Short	Develop training for Traffic Incident Management practices and conduct yearly training	Reduce response time for crashes and reduce potential for secondary crashes	NPS	\$25,000*
Short	Install mile markers along the corridor (190 signs total if placed individually, or fewer signs if only placed on existing signage)	Assist with locating crashes to allow for shorter response times	NPS	\$25,000 - \$30,000
Medium	Implement a motorist assistance program	Clear disabled vehicles from the road and reduce potential for secondary crashes	SHA (included in CHART MOU)	SHA funding
Medium	Purchase additional maintenance equipment for emergency response and work zones (2 portable VMS, 2 arrow boards, 1 crash attenuator truck)	Prevent work zone and emergency response crashes	NPS	\$500,000 - \$750,000

*Cost will depend on the level of the training. This cost may include hiring a consultant to develop the training material and conduct the training classes. Cost maybe reduced by using NCR staff to prepare and conduct the training.

Long-term Recommendations and “Big Ideas”

Large dollar value infrastructure improvements were also discussed by the stakeholders. These projects will likely require substantial resources and political support. They are considered “long-term” (5 years or greater), and include:

- **Opening the southbound National Security Agency (NSA) ramp (see Figure 2) to the general public to access the National Business Park.** The current restriction requires commuters to use the next exit, although the business park campus has direct access to NSA’s ramp. By working with the NSA and National Business Park to open this ramp, NPS can ease congestion at the following exit. NPS can work with NSA facilities and the National Business Park to secure funding for this project.
- **Adding high-occupancy vehicle (HOV) or bus rapid transit (BRT) lanes to the Parkway.** Previous studies on increasing capacity to the B-W Parkway only considered widening the Parkway for general traffic, not necessarily for these exclusive uses. Funding sources for studying this alternative are not secured, but resources could be identified in conjunction with the Task Force.
- **Expanding the Maryland Area Region Commuter (MARC) rail service, with bus connections to corridor businesses and shopping centers.** The Task Force can work with local businesses to identify the best opportunities and funding sources for increased transit service.

Figure 2: NSA exit ramp



Next Steps: Plan Implementation and Monitoring

The B-W Parkway Task Force should champion the efforts to implement the recommendations identified in the previous section. Infrastructure projects will need to be designed, and the projects' cost estimates must be determined so that the funds can be programmed in future year construction spending. Yearly maintenance budgets should be evaluated to determine the most immediate needs. Potential sources of funding for short- and medium-term projects include:

- NPS funds, including maintenance budgets;
- Federal Land Transportation Program (FLTP);
- Federal Highway Administration-Eastern Federal Lands Highway Division (FHWA-EFLHD);
- SHA, including its Safety, Congestion Relief, Highway and Bridge Preservation Program;
- Individual municipalities;
- Local employers and other stakeholders;
- Grant funds from NHTSA;
- Federal Lands Access Program (FLAP) Funds; or
- Surface Transportation Program (STP).

Design and Construction

Projects requiring design packages can be completed in several ways. Design packages include plans, specifications and a cost estimate (PS&E). The PS&E is needed to secure funding, place the project on the FHWA-EFLHD or the Maryland State Highway transportation improvement program (TIP) and advertise the project for construction.

NPS will also need to provide construction oversight and support services or work with SHA, FHWA-EFLHD, or the Denver Service Center to provide these services to ensure that contractors are constructing projects according to the PS&E packages. Any equipment installed needs to be factory tested and tested in the field. It is further recommended that the contract require a 90 days of continuous operation (burn in period), followed by a 1-3 year maintenance requirement. These items would all be part of the bid package. To complete design packages, provide construction oversight, inspection and support services NPS will need:

- NPS technical support staff,
- Consultant services, or
- Agreements with FHWA-EFLHD, SHA or Denver Service Center to provide technical support staff as part of an MOU.

Measuring Progress

Performance measures, as defined by the U.S. DOT, are “a qualitative or quantitative measure of outcomes, outputs, efficiency, or cost-effectiveness ... used to gauge the impacts of the decisionmaking process on the transportation system.”⁵ State DOTs typically use outcome-based performance measures to track the results of their transportation investments.

By tracking progress on the implementation of this plan, NPS can show positive momentum towards achieving their goal. Monitoring progress and highlighting program and project

⁵ FHWA/Federal Transit Administration Peer Exchange. *Incorporating Performance Measures into Regional Transportation Planning*. 2010. http://planning.dot.gov/Peer/WashingtonDC/dc_2010.asp

implementations can be used as justification for additional funding. Establishing consistent reporting methods and sharing the results with political leaders can draw attention to the changes on the B-W Parkway.

NPS can develop a system for accountability that shows progress on implementing policy changes, programs and projects highlighted in this plan. This can be achieved by identifying project leaders and a methodology for tracking progress through reporting.

Table 6
Plan objectives and potential performance measures

Objectives	Potential Performance Measures
Incorporate 4E considerations into transportation safety projects.	<ul style="list-style-type: none"> ▪ Percent reduction in serious crash rate (injury and fatal crashes by vehicle miles traveled) on the B-W Parkway.
Promote transportation safety in projects and policies without impairing park resources and values.	<ul style="list-style-type: none"> ▪ Number of transportation safety projects that consider context sensitive designs. ▪ Funding allocated for transportation safety projects on the B-W Parkway.
Collect and analyze crash data and its effective use to make better investment decisions.	<ul style="list-style-type: none"> ▪ Input crash data (both injury and fatality) into a database.
Reduce the number of crashes and prepare for emergencies.	<ul style="list-style-type: none"> ▪ Number of enforcement/educational initiatives, such as distractive driving, speeding, seat belt enforcement, and drunk driving campaigns.
Continue to engage stakeholders and get their input.	<ul style="list-style-type: none"> ▪ Number of meetings and stakeholders participating in the B-W Parkway Task Force.
Develop an action-oriented implementation plan.	<ul style="list-style-type: none"> ▪ Amount of NPS funding spent on transportation safety improvements on the B-W Parkway.

Media and Marketing

In order to bring attention to safety issues on the B-W Parkway, it is important to communicate regularly with the public. Informing the general public on transportation safety issues, educating key political leaders on their role in improving safety on the B-W Parkway, and encouraging active participation in the implementation of this plan will be instrumental in the success of this plan. To generate public interest on the B-W Parkway, NPS can potentially:

- Create press releases and host “ribbon cuttings” for traffic safety projects when completed or initiated,
- Develop a video to promote awareness of the B-W Parkway’s safety issues; suggestions for use include:
 - Employee training for businesses,
 - Public service announcements on local cable channels, and
 - Presentations for conferences that may have interest in NPS and/or traffic safety.
- Partner with a local celebrity or government official to endorse safety on the B-W Parkway and encourage safe driving behavior,
- Adopt a mascot and slogan to incorporate into all messaging,
- Partner with “friends” and citizens groups to promote safety awareness,
- Initiate and promote enforcement campaigns to alert drivers that unsafe actions will have severe consequences,

- Encourage drivers/stakeholders to provide feedback on traffic safety through an email account linked to the B-W Parkway website,
- Utilize existing NCR social media presence or start a Twitter account to:
 - Alert drivers to unsafe and congested conditions (e.g., closures, planned maintenance activities),
 - Provide daily updates on construction/maintenance activities, and
 - Celebrate successes in project implementation and “safe driving days.”
- Continue to partner with the [National Safety Council](#) or other national organizations that have coordinated campaigns to address:
 - Safety belt use,
 - Driving sober,
 - Focusing on the road, and
 - Driving defensively.
- Promote important milestones for traffic safety on the B-W Parkway through the media, NPS website, and social media accounts.

Appendix A: Existing Conditions

The B-W Parkway opened in 1954 as an alternative to nearby U.S. Route 1, which runs parallel to the west of the Parkway. Today, the B-W Parkway is designated as a Historic District and is listed on the National Register of Historic Places. The B-W Parkway is a 29 mile, limited-access scenic highway, with a posted speed limit of 55 MPH, except at the southern limit, where the posted speed limit is 45 MPH. The highway generally follows flat terrain, with small elevation changes taking place over long vistas (see Figure 3 for a typical cross section). The average daily traffic (ADT) on the B-W Parkway is estimated at approximately 120,000 vehicles per day. Commercial vehicle traffic is restricted on the B-W Parkway.

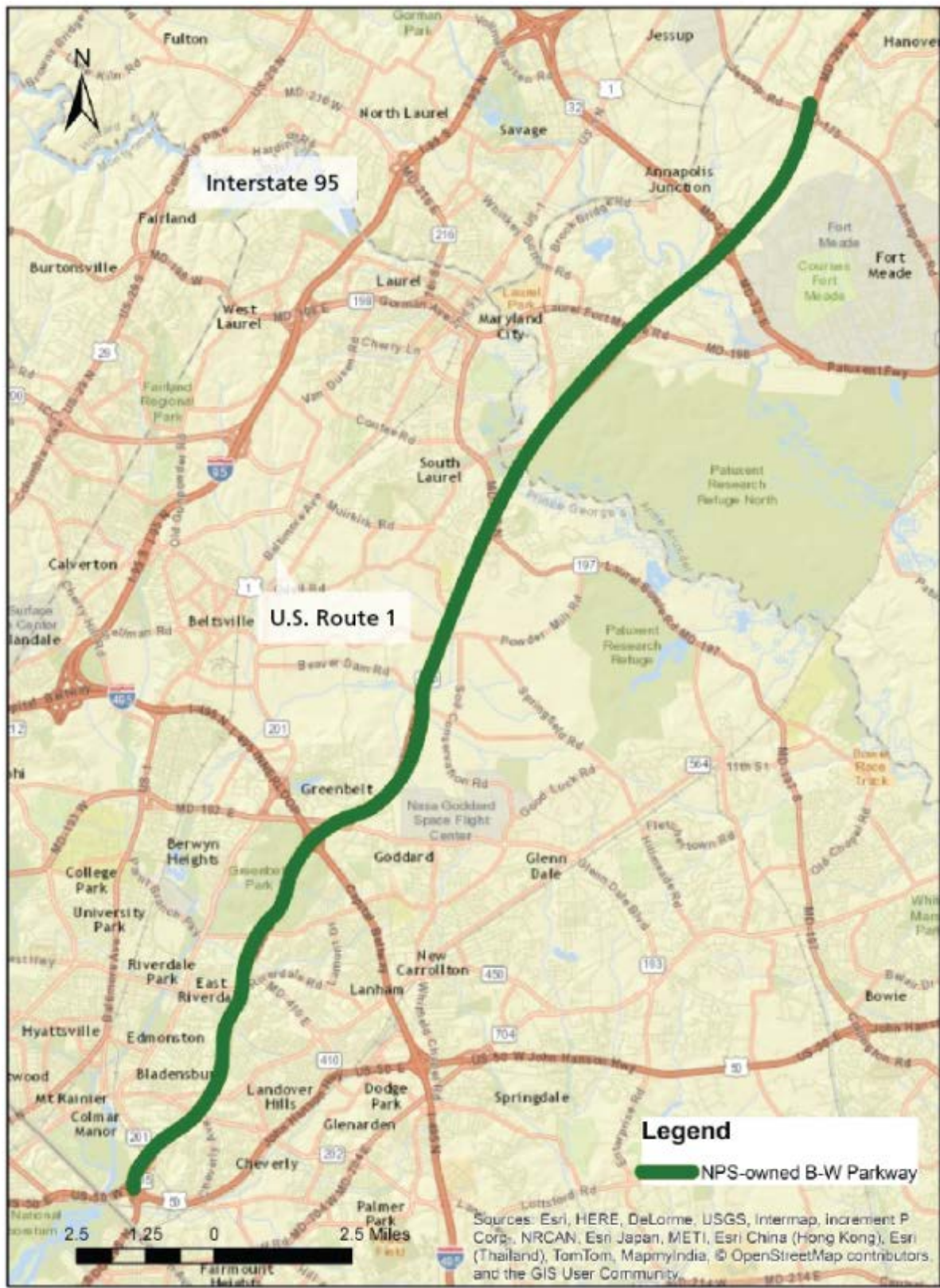
Figure 3: Typical cross section of the B-W Parkway



The federal government has established transportation safety on all public roads as a policy priority. The Moving Ahead for Progress in the 21st Century Act (MAP-21) established a performance-based Federal program and identifies safety as a national goal area.

The B-W Parkway has been studied numerous times over the last ten years. Most recently the feasibility of widening the Parkway from a 4 lane to a 6 lane roadway was explored. The study ultimately makes no definitive recommendations for any further examination of the potential widening of the B-W Parkway. Additionally, a crash data analysis (2006-2009) and a safety study (2003) specific to the parkway were completed. Other larger NPS efforts have also been completed in recent years.

Figure 4: Map of the NPS-owned B-W Parkway



Future safety projects (under design/construction)

NPS staff members are aware of the following future safety projects:

- Through a MOU, there is currently a joint project with NPS and SHA to install CCTV, microwave detectors, and RWIS detectors along the B-W Parkway. The cameras will be used to monitor traffic congestion, incident detection and verification; the microwave detectors will monitor speed and volume; and the RWIS detectors will monitor pavement temperature and conditions (dry, wet, ice, or snow). The project has an anticipated completion date of 2015.
- SHA operates CHART, which provides road side assistance to stranded drivers, communicates traffic information to the public, provides the State's #77 Program. The #77 Program routes incoming calls from the driving public to the appropriate law enforcement jurisdiction. CHART will install the #77 Program signs along the B-W Parkway once the locations are approved by NPS.

Fatalities and Injury Crashes on the B-W Parkway

Injury Crash Data Summary (1990 – 2005) (NCR Crash Data Summary, CH2MHILL, 2011)

There were 11,758 total crashes on the B-W Parkway from 1990 to 2005, including 112 fatal crashes. The primary type of severe crash on the Parkway during this time period was multiple-vehicle rear end collision.

Crash Data Summary (1997-2002) (B-W Parkway Safety Study, 2003)

From 1997-2003, 65% of all fatal motor vehicle accidents in the metro area that NPS has jurisdiction over were on the B-W Parkway. Data during this time showed that there is an average of 8 fatalities per year on the B-W Parkway. From 1998 – 2002, USPP reported an average of 145 accidents involving personal injury and an average of 400 accidents involving property damage.

Crash Data (2006-2009) (B-W Parkway Crash Data Analysis, 2011)

Between 2006 and 2009, there were 2,189 crashes and 16 fatalities including:

- 575 injury crashes with contributing factors related to the driver and the environment
- 70 vehicle – animal collisions
- 169 related to drivers under the influence of drugs

Fatality Crash Data Summary (2005-2013) (Fatality Spreadsheet, Provided by NACE, 2014)

Although injury crash data has not been collected by NPS in a standardized database since 2005, the USPP do still continue to record crashes on the crash data form. We were not able to obtain copies of these paper reports for this study. However, we were able to obtain a fatality crash data spreadsheet for review and analysis. Repeated crash types can be summarized as follows:

- Rear End/Angle/Sideswipe crashes with other motor vehicles
- Interchange rear end crashes
- Roadway departure crashes involving striking trees, stone wall, guardrail, etc.
- Motor vehicle crashes with animals
- Distracted driving

Interestingly, between 2005 and 2013, 33 of the 52 (63%) fatalities occurred between the hours of 8 pm and 5 am. With such a large percentage of fatal crashes occurring during night time hours, when the roadway is less congested, recommended strategies for reducing these crashes would include enforcement (speeding and driving under the influence) and educational campaigns (seatbelt usage, distracted driving).

Table 7: Fatalities 2005-2013 (Source: Internal NCR Database)

Year	Number of Fatalities
2005	6
2006	7
2007	5
2008	4
2009	8
2010	5
2011	8
2012	5
2013	4
Total	52

Table 8: Cause of Fatalities (2005-2013)

Cause	Number of Fatalities*	Percentage
Alcohol/Drugs	7	13%
Speeding	6	12%
Pedestrian/Cyclist	9	17%
Fixed Object	24	46%
Other Motor Vehicle	17	33%

*The total number of fatalities is greater than Table 7, as several fatalities had more than one primary contributing factor.

Societal cost of collisions

Traffic crashes kill tens of thousands of people and injure millions more every year in the United States. These tragic events exact substantial financial costs on loved ones burdened with emotional loss, as well as on the businesses, government and insurers that make up the larger community.

Although the economic impact of an injury or fatal crash cannot compare to the human grief involved, it is useful in measuring how one collision affects an entire community on the financial level. NHTSA has estimated the cost of just one fatal accident is estimated at \$6.4 million in 2012. The cost of one injury crashes are estimated at \$132,555 in 2012. It is important to note that the costs resulting from crashes are rising at the same time as the number of fatal and injury crashes are on the decline. The reduction of fatal and injury traffic collisions not only saves lives, but leads to real cost-saving benefits for U.S. communities.⁶

From 1990 to 2005, crashes in the NCR represented 39% of system-wide crashes and had a total societal cost of \$650 million.

⁶ National Coalition for Safer Roads. *Collisions Cost Insurers and Communities Big: Traffic Safety Cameras Prevent Crashes, Reduce Financial Toll*. 2012. <http://ncrsafety.org/evidence/collisions-cost-insurers-and-communities-big-traffic-safety-cameras-prevent-crashes-reduce-financial-toll/>

Commercial Land Use

In 1954, when the B-W Parkway opened, it had an Average Annual Daily Traffic (AADT) of 21,000 vehicles. Commercial land use and development along the B-W Parkway has increased tremendously since then. The AADT on the corridor has tripled since the parkway opened. The opening of the B-W Parkway further cultivated suburban development seen in the 1950s and beyond. Today, much of the rural land in the corridor has been replaced by residences, government properties, and other large activity centers. Maryland Live! Casino opened in 2012, and another casino is planned at National Harbor south of the Parkway. Projected population growth between 2005 and 2040 is expected at a rate of 38% (B-W Parkway Widening Feasibility Study, 2012).

Safety education by major employers is an effective tool that can be used to reach commuters. A MARC commuter rail line runs parallel to the B-W Parkway. This is an alternative method to traveling into the city. It would also be feasible for business along the B-W Parkway to provide shuttle service to the many large employers and the shopping center. Free shuttle service to and from the commuter rail stations could encourage drivers to get out of their cars and commute to work.

Table 9: Average Annual Daily Traffic (AADT)

Year	AADT
1954	21,000
1993	74,600 @ US 50
2003	105,000 @ 197
2013	117,000 @ 193
CAPACITY	100,000 for LOS-E*

*Level of Service (LOS) for a roadway is the standard measurement used by transportation officials which reflects the relative ease of traffic flow on a scale of A to F, with free-flow being rated LOS-A and congested failing conditions rated as LOS-F. On the B-W Parkway during peak hours both in the morning and the afternoon, the roadway is operating at LOS-E or F, which means it is failing and speeds are reduced to 35 miles per hour (mph) or less during these congested periods.

Appendix B: Stakeholders

Engagement Description

The project began with an internal stakeholders meeting in November of 2014 with NACE personnel from maintenance, resource protection, and administration, including the Acting Superintendent. The team also met with the U.S. Park Police.

After a review of the existing documents, the team held a web conference with internal and external stakeholders in February of 2014. External stakeholders were identified from the NCR Traffic Safety Symposium held in 2013. The web conference introduced stakeholders to the project and gathered initial ideas related to improving traffic safety on the B-W Parkway.

The project team then held an in-person workshop in early April 2014 in Landover, Maryland, with all stakeholders. The workshop provided stakeholders with an overview of the safety issues, an opportunity to voice concerns, and the environment to brainstorm potential actions for improving safety on the B-W Parkway.

Following this workshop, the project team held a web conference at the end of May 2014 to share the project list and to begin prioritizing this list. The recommendations from the stakeholders are outlined in the following section.

List of Stakeholders

The primary users of the B-W Parkway are commuters. Presumably, many commuters on this corridor are affiliated with the federal government. Large government properties within the corridor include:

- USDA's Beltsville Agricultural Research Center
- NASA Goddard Space Flight Center
- National Security Agency (NSA) Headquarters
- Fort George G. Meade
- Patuxent Research Refuge
- Anacostia Park
- Greenbelt Park

Other large activity centers within the corridor include:

- Baltimore/Washington International Airport (BWI)
- Arundel Mills Shopping Center
- Odenton Town Center
- Greenbelt Station Town Center
- Maryland Live Casino

Stakeholders internal to NPS include:

- National Capital Region (NCR)
- National Capital Parks-East (NACE)
- U.S. Park Police

State and federal partners (not listed above) include:

- Maryland State Police

- Maryland State Highway Administration (SHA)
- Coordinated Highways Action Response Team (CHART)
- Metropolitan Area Transportation Operations Coordination Program (MATOC)
- National Highway Traffic Safety Administration (NHTSA) Marketing Program for Distracted Driving
- FHWA Eastern Lands Highway Division
- Washington Metropolitan Area Transit Authority (WMATA Metro)

Municipal partners include counties, towns, and traffic enforcement entities along the B-W Parkway, primarily:

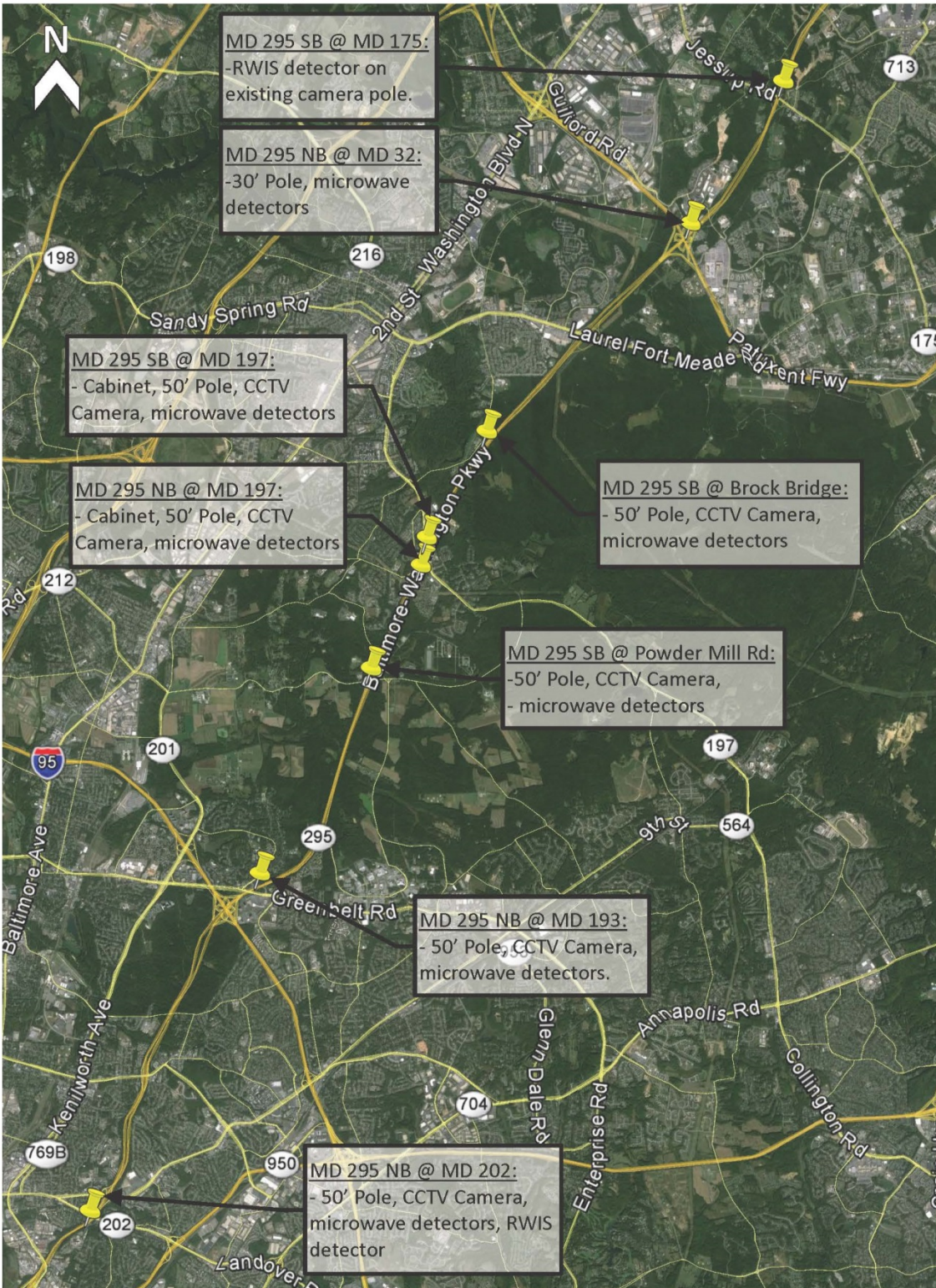
- City of Greenbelt
- City of Cheverly

Those stakeholders primarily involved in traffic safety education include:

- Mothers Against Drunk Driving – Maryland Chapter
- Make Roads Safe Campaign for Global Road Safety
- National Organization for Youth Safety
- Washington Regional Alcohol Program
- Local TV, radio and print media

Appendix C: Proposed ITS Device Installations

Source: CHART



Appendix D: Proposed Improved Shoulder Locations

Engineering recommendations in this plan address opportunities to improve roadway infrastructure to prevent crashes, or reduce the severity of collisions when they occur. Projects to add capacity were not considered, based on the recommendations of previous studies. An exception to this viewpoint was to recommend improving the shoulder area at 8 locations for law enforcement/breakdowns (4 northbound, 4 southbound) (on page 12 of Traffic Safety Plan). The locations for these improvements are as follows:

Northbound direction

1. North of Route 450 (before Route 410)
2. North of I-95/I-495 (near Beaver Dam Creek)
3. North of Route 197 (before Route 198)
4. North of Route 198 (before Route 32)

Southbound direction

5. South of Route 410 (before Route 450)
6. South of Powder Mill Road Exit (near Beaver Dam Creek)
7. South of Route 198 (before Route 197)
8. South of Route 32 (before Route 198)

Appendix E: Review of Existing Documents

National Capital Parks-East Goal Detail Report, 2014

Completed by: NACE, internal report

NACE has an overall goal: “To reduce visitor injuries at National Capital Parks-East (NACE).” This report addresses how NACE has been working to address this goal since 2007.

Year	Specific Activities Undertaken On The B-W Parkway To Reduce Visitor Injuries
2007	Increased traffic law enforcement efforts by the U.S. Park Police Staff.
2008	Increased cooperation and coordination with Maryland CHART and safety messages.
2009	USPP supported patrol efforts on the parkway which resulted in 401 tickets. Maintenance operations were performed including: road inspections; filling of potholes; replacement/repair of missing or damaged directional and information signs; and sweeping operations.
2010	NACE conducted safety training on identifying, preventing and reporting safety hazards. Maintenance personnel received training in chainsaw operation.
2011	Nothing was noted in the document.
2012	NACE conducted safety training. Specific to the B-W Parkway, the following was noted: <ul style="list-style-type: none"> ▪ Performed routine daily inspections of parkway to remove any dead animals and other debris. ▪ Removed hazardous trees throughout the year from areas along the parkway. ▪ Used message boards to alert drivers of hazardous conditions along the parkway and the use of sign radar to alert drivers of their speed and the speed limit. ▪ FHWA started first phase of the repaving of the B-W Parkway from north and southbound of the parkway. ▪ Park assisted the USPP by providing funds for the Smooth Operator initiative that resulted in issuing 418 tickets.

B-W Parkway Safety Studies/Plans

Baltimore-Washington Parkway: Safety Study, 2003

Completed by: Eastern Federal Lands Highway Division (EFLHD)

The number and severity of motor vehicle accidents is a problem along the B-W Parkway. From 1997 to 2002 and 1998 to 2002, respectively, sixty-five percent of all fatal motor vehicle accidents in the Washington Metro Area that took place on areas where the United States Park Police have jurisdiction were on the B-W Parkway. The average total number of accidents (fatalities, personal injury, and property damage incidents combined) along the B-W Parkway was 550 per year.

Safety hazards identified by EFLHD requiring mitigation included:

- Fixed objects
- Side slopes
- Median areas
- Guardwall barrier terminals
- Hazardous entry / exit into authorized vehicle median crossovers
- Confusing interchange weaving movements

Recommendations to reduce crashes included milling shoulder rumble strips, adding and reconfiguring guardwalls, adding parking pads for use by Park Police to increase enforcement,

removing or shielding roadside hazards, correcting steep side slopes, improving entry/exit tapers at median crossovers, clearing and grubbing, and improving signage.

Baltimore Washington Parkway Prince George's & Anne Arundel Counties Maryland: Crash Data Analysis, 2011

Completed by: Prince George's and Anne Arundel Counties

Report assessed available crash data provided by NPS from the period between 2006 and 2009. The Average Daily Traffic was estimated at 125,350 vehicles per day during this time. The predominant crash types involved rear end collisions and roadway departure crashes. The primary contributing crash cause was driver error for failing to give full time and attention to the task of driving.

The report gives recommendations for safety improvements:

- Animal crossing warning signs
- Treatments that may reduce the frequency or severity of roadway departures crashes
- Selective clearing of trees inside the clear zone
- Use of larger panel sizes for warning signs
- Installing wider edge lines (6-inches vs. standard 4-inches)
- Consider DUI Enforcement Area or Targeted Enforcement Area

Baltimore-Washington Parkway Widening Feasibility Study, 2012

Completed by: EFLHD, NPS, and Maryland State Highway Administration

Study directed by House Report 110-238 with a purpose of determining the feasibility of widening the Parkway. Issue of safety was not addressed by the study. Regarding traffic congestion and widening, the study concluded:

- Widening selected sections of the Parkway may provide localized improvement to traffic operations, attract more traffic on the Parkway.
- As a result, widened sections would not necessarily be less congested in the future than current conditions.

The study ultimately makes no definitive recommendations for any further examination of the potential widening of the B-W Parkway.

NCR Safety Studies/Plans

National Capital Region Crash Data Summary, 2011

Prepared for: Jennifer Proctor, WASO and Greg Schertz FHWA Federal Lands; Prepared by: CH2M HILL

The report included a summary of reported crash data, document crash patterns and trends; crash rates and crash densities for selected parks and roadways within the NCR.

- On parkways, crashes typically occur where frequent stops or speed changes may occur due to congestion or incidents.
- From 1990 to 2005, NCR reported 226 fatal crashes, 8,661 injury crashes, and 42,600 total crashes; these crashes accounted for 39% of all crashes in the NPS.

The B-W Parkway is one of eight parks in the NCR in which over 91 percent of fatal crashes took place. From 2001 to 2005, the B-W Parkway experienced:

- 3,100 total crashes
- 27.1 severe crashes per 100 million motor vehicle miles traveled

The memo suggested that a more detailed review and further segmentation of the Parkway be conducted to assess if high-crash locations are prevalent.

NPS Safety Studies/Plans

National Park Service: DRAFT NPS Traffic Safety Overview, 2008

Prepared for: WASO; Prepared by: CH2M HILL

The report summarizes findings on crashes and offers recommendations for NPS management's consideration.

- From 1989 to 2005, recreational and non-recreational visits increased from 339 million to 423 million.
- In 2004, the national fatal crash rate was **1.44 fatalities per 100 million** vehicle miles; in the park system, a fatal crash rate of **1.89 fatalities per 100 MVM** was calculated.
- The majority of crashes in NCR involved multiple vehicles (75%).
- From 1990 to 2005, crashes in the NCR represented **39% of system-wide crashes** and had a total societal cost of **\$650 million**.
-

The report offers four national goal recommendations for safety.

- Continue development and implementation of a Safety Management System (SMS).
- Design all safety program efforts to be expressly sensitive to NPS' core mission established by the National Park Service Organic Act in 1916.
- Create an institutional awareness of safety in the context of the NPS mission.
- Develop the NPS safety program gradually into a "4E" process.

National Park Service National Long-range Transportation Plan: Draft Safety Technical Report, Baseline Conditions Chapter, 2013

Completed by: NPS

The report notes that especially in the NCR, many park roads and parkways are increasingly included as part of the daily commute, with the associated safety and congestion concerns. By addressing these concerns, the National Park Service can improve visitor experience and protect resources.

- Crashes in the park system cost society approximately \$335 million annually.
- This report describes current servicewide safety issues relating to transportation, as well as identifies the "4 E's" of transportation safety:
 - Education – giving drivers information about making good choices
 - Engineering – addressing roadway infrastructure improvement
 - Enforcement – enforcing traffic laws and providing a visible police presence
 - Emergency services – providing rapid response and trained professionals in situations

Safety Elements of Transportation Plans in Maryland

Maryland Strategic Highway Safety Plan 2011-2015, 2011

Prepared by: Maryland State Highway Administration

Despite increases in the vehicle miles traveled since 2006, reported traffic crashes declined in Maryland, dropping to a historic low of 96,392 in 2009. Between 2005 and 2009, the number of

fatalities decreased by 10.4 percent, overall injuries decreased by 14.4 percent, and serious injuries declined by 39.9 percent.

Maryland updated its Strategic Highway Safety Plan (SHSP) in 2011. The plan identified six emphasis areas:

- Distracted driving
- Impaired driving
- Aggressive driving
- Occupant protection
- Highway infrastructure
- Pedestrian

To reduce the annual number of highway infrastructure fatalities, specifically, on all roads in Maryland from 424 in 2008 to fewer than 340 by the end of 2015, the plan recommends developing a corridor program that targets safety improvements where the severity index is high.

Federal Legislation

Safety Provisions in Moving Ahead for Progress in the 21st Century (MAP-21), 2012

Presentation prepared by: Federal Highway Administration

This presentation gives a general overview of safety programs and their funding in MAP-21. MAP-21 supports USDOT's aggressive safety agenda. It dramatically increases the size of the Highway Safety Improvement Program, expands the list of participants in a state's Strategic Highway Safety Plan, and supports several other federal safety programs.

- MAP-21 establishes transportation safety **on all public roads** as a policy priority.
- MAP-21 supports USDOT's aggressive safety agenda. It dramatically increases the size of the **Highway Safety Improvement Program**, expands the list of participants in a state's Strategic Highway Safety Plan, and supports several other federal safety programs.
- MAP-21 establishes a **performance-based federal program** and the identification of safety as a national goal area.

Enabling Legislation (Public Law 643 – 81st Congress), 1950

- Legislation providing for the construction, development, administration, and maintenance of the **Baltimore-Washington Parkway** by the Secretary of the Interior, through the National Park Service.
- Directed that it be a limited access road to provide a protected, safe, and suitable approach for passenger vehicle traffic.

REPORT DOCUMENTATION PAGE

*Form Approved
OMB No. 0704-0188*

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE (DD-MM-YYYY)	2. REPORT TYPE	3. DATES COVERED (From - To)
------------------------------------	-----------------------	-------------------------------------

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	8. PERFORMING ORGANIZATION REPORT NUMBER
---	---

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER (Include area code)



As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.