

## **ITEM 10–Information**

December 20, 2017

### Performance Based Planning and Programming: Highway Safety Targets

**Staff Recommendation:** Briefing on a draft set of highway safety targets for 2018 for the National Capital Region.

**Issues:** None

**Background:** The board will be briefed on requirements under the federal performance-based planning and programming (PBPP) rulemaking for setting targets for highway safety by state departments of transportation and metropolitan planning organizations. A draft set of highway safety targets for the National Capital Region will be presented, which are consistent with the target setting approaches of Maryland, Virginia, and the District of Columbia. The board will be asked to approve final highway safety targets at its January 2018 meeting.



# PBPP: DRAFT 2018 NATIONAL CAPITAL REGION HIGHWAY SAFETY TARGETS

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Jon Schermann  
TPB Transportation Planner

Transportation Planning Board  
December 20, 2017

Agenda Item 10



National Capital Region  
Transportation Planning Board

## Presentation Items

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- Review of Highway Safety Performance Measures and Target Setting Requirements for MPOs
- Review of Approach for Setting National Capital Region Safety Targets
- Draft 2018 National Capital Region Safety Targets
- Next Steps



# Highway Safety Performance Measures: Federal Requirements

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- PBPP approach is federally required for MPOs, DOTs, and transit providers through MAP-21 and FAST Acts
- For each highway safety performance measure (PM), an MPO will either:
  - 1) Agree to plan and program projects so they contribute toward accomplishing the state DOT safety target for that PM, or
  - 2) Commit to a quantifiable target for that PM for the MPO planning area
    - Each target shall represent anticipated performance outcome for all public roadways in the MPO planning area, regardless of ownership
- MPO targets to be reported no more than 180 days after state DOTs have set their targets - or February 27, 2018



# Highway Safety Performance Measures: Requirements for MPOs

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- MPOs must coordinate with their State partners
- **Targets should be data-driven and realistic**
- Metropolitan Transportation Plan (Visualize 2045) shall include:
  - (1) a description of the performance measures and targets; and
  - (2) a report evaluating the condition of the system(s) with respect to the MPO performance measures and targets, including progress achieved
- Transportation improvement programs (TIPs) must include:
  - discussion of the anticipated effects of the TIP toward achieving the performance targets by linking them to investment priorities



# Highway Safety Performance Measures

Performance Measure	Description	Data Source
Number of Fatalities (5 year rolling average)	Total number of fatalities during a calendar year	FARS <sup>1</sup>
Rate of Fatalities per 100 million VMT (5 year rolling average)	Ratio of total fatalities to VMT	FARS and HPMS <sup>2</sup> (or MPO estimate)
Number of Serious Injuries (5 year rolling average)	Total number of serious injuries during a calendar year	State reported serious injury data <sup>3</sup>
Rate of Serious Injuries per 100 million VMT (5 year rolling average)	Ratio of total serious injuries to VMT	State reported serious injury data <sup>3</sup> and HPMS
Number of Non-Motorized Fatalities and Serious Injuries (5 year rolling average)	Total number of fatalities and serious injuries during a calendar year	FARS and State serious injury data <sup>3</sup>

<sup>1</sup> FARS: Fatality Analysis Reporting System

<sup>2</sup> HPMS: Highway Performance Monitoring System

<sup>3</sup> for the first 36 months – after that States must adopt the Model Minimum Uniform Crash Criteria (MMUCC) definition of serious injury

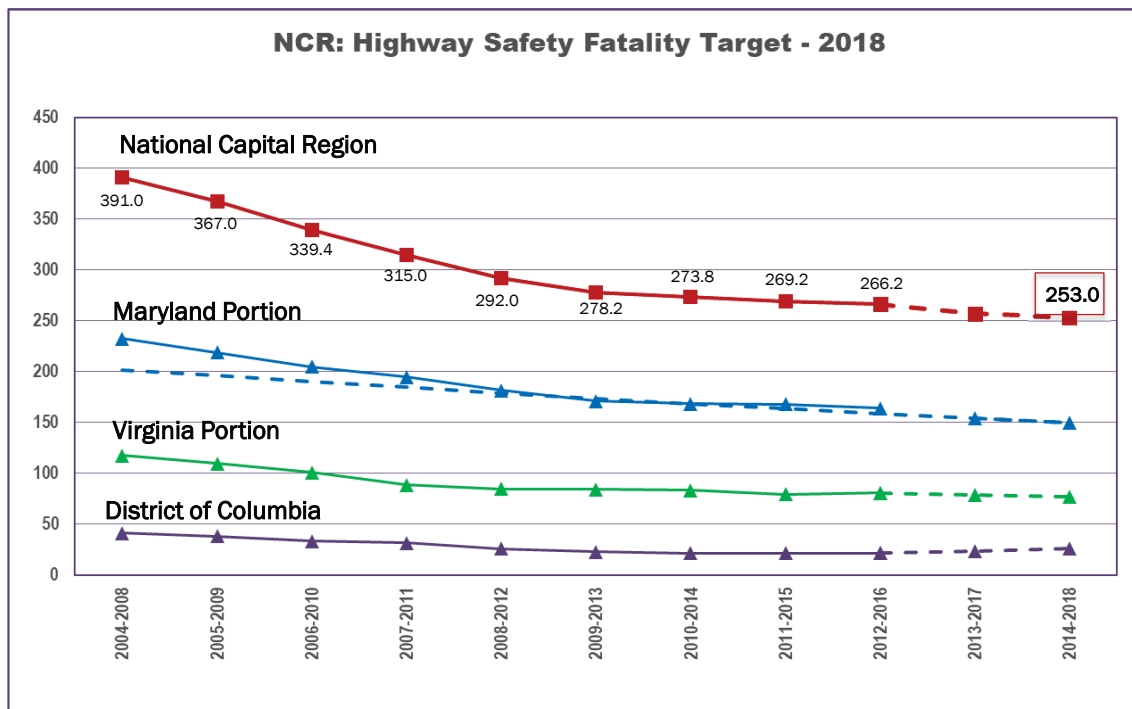
## Highway Safety Performance Measures: An Approach to Setting Regional Targets

- MD, VA, and DC have used different approaches in developing targets
- Staff is proposing a target setting methodology that accounts for / incorporates each State's approach:
  - Apply Maryland's approach to identify a sub-target for the Suburban Maryland portion of the NCR
  - Apply Virginia's approach to identify a sub-target for the Northern Virginia portion of the NCR
  - Incorporate the District of Columbia's target as a sub-target for the DC portion of the NCR
  - Mathematically combine the three sub-targets into an overall target for the NCR

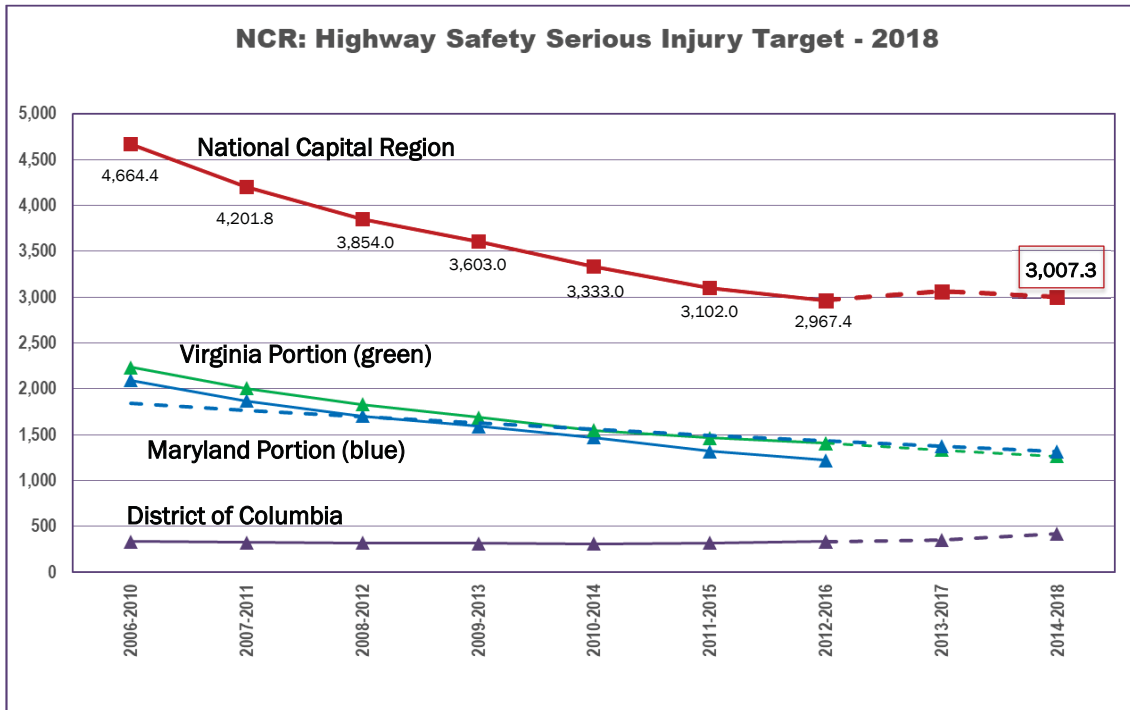
# NCR Highway Safety Targets: Summary

	2012-2016 Actual	2014-2018 Target	Difference	Percent Difference
# of Fatalities	266.2	<u>253.0</u>	↓ 13.2	↓ 4.9%
Fatality Rate (per 100 MVMT)	0.621	<u>0.588</u>	↓ 0.033	↓ 5.3%
# of Serious Injuries	2,967.4	<u>3,007.3</u>	↑ 39.9	↑ 1.3%
Serious Injury Rate (per 100 MVMT)	6.879	<u>6.768</u>	↓ 0.111	↓ 1.6%
# Nonmotorist Fatalities & Serious Injuries	545.6	<u>528.8</u>	↓ 16.8	↓ 3.1%

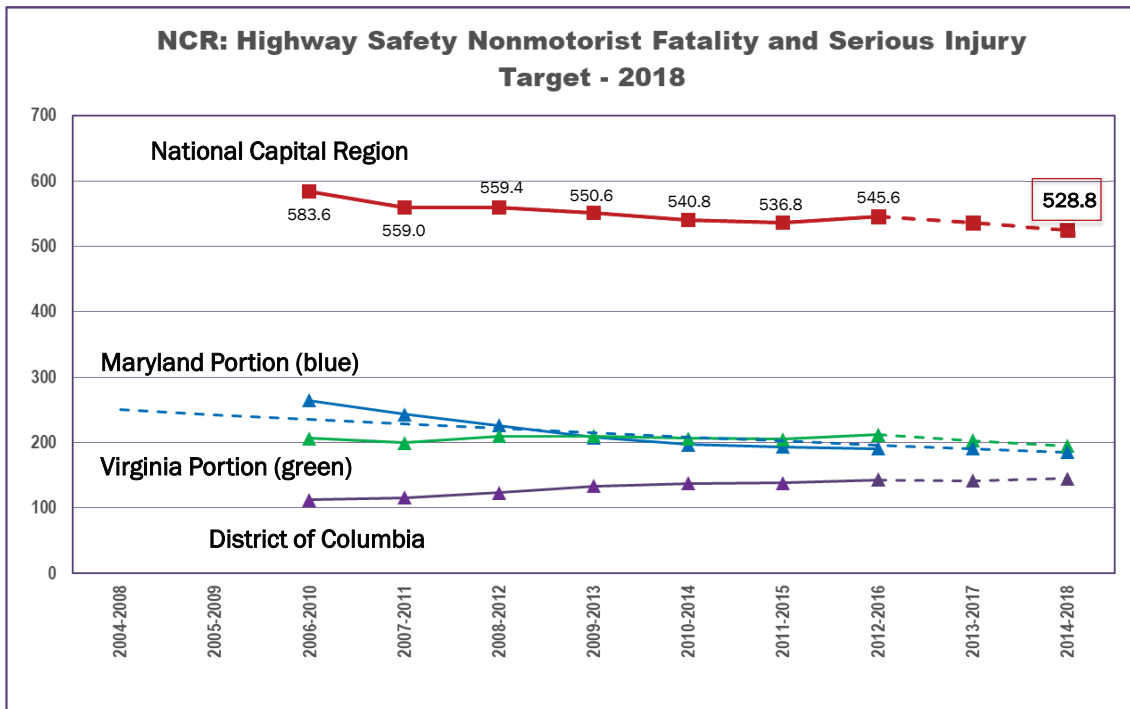
## Fatality Target: 253.0



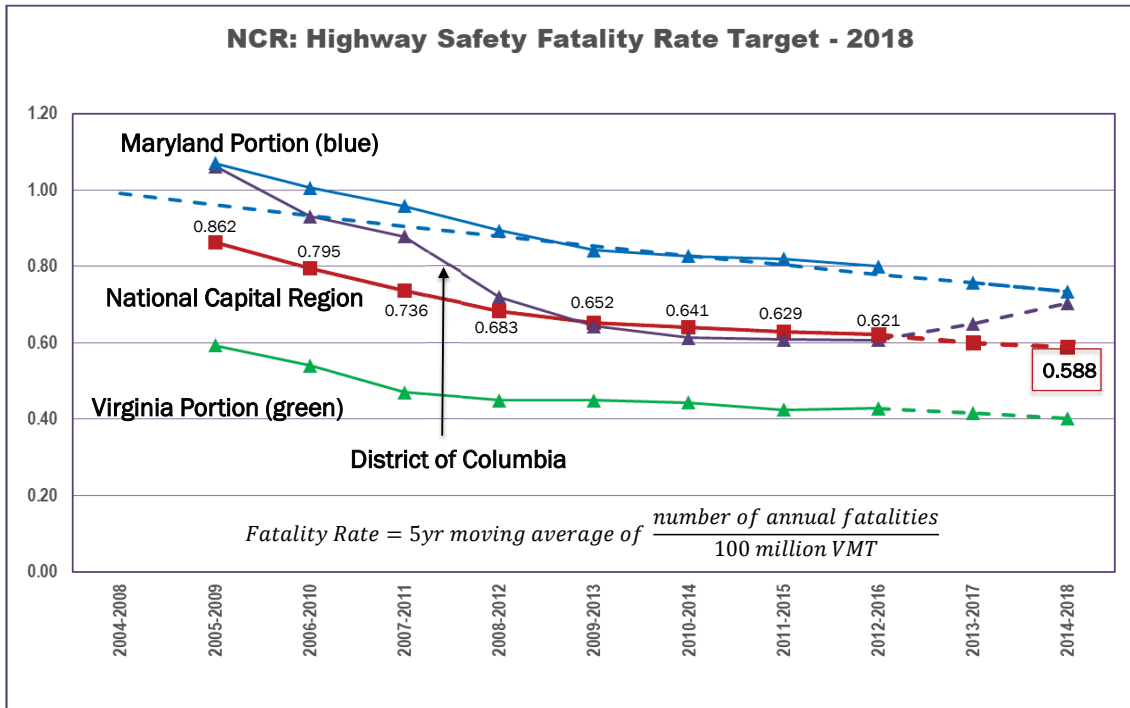
# Serious Injury Target: 3,007.3



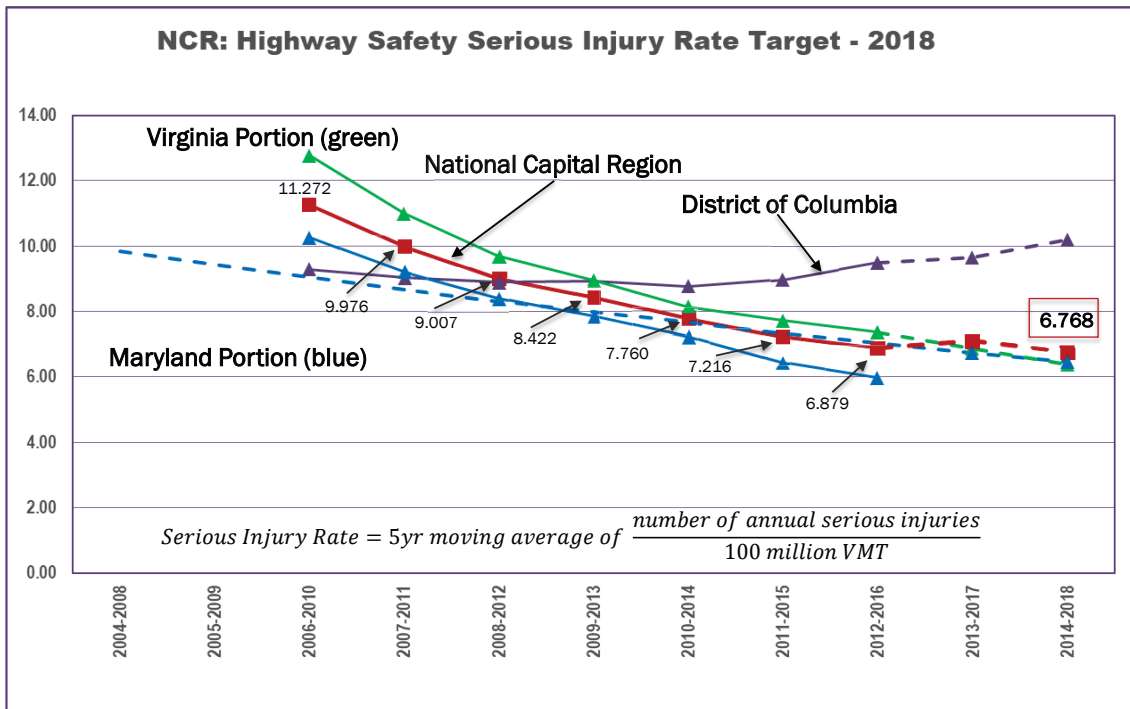
# Nonmotorist Target: 528.8



# Fatality Rate Target: 0.588



# Serious Injury Rate Target: 6.768





# Next Steps

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- Finalize 2018 NCR safety targets based on Transportation Planning Board feedback
- Request Transportation Planning Board approval of 2018 regional highway safety targets at the January 2018 TPB meeting



National Capital Region  
Transportation Planning Board

Agenda Item 10: PBPP: Draft National Capital Region Highway Safety Targets  
December 20, 2017

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## Jon Schermann

TPB Transportation Planner

(202) 962-3317

[jschermann@mwkog.org](mailto:jschermann@mwkog.org)

[mwkog.org/tpb](http://mwkog.org/tpb)

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Metropolitan Washington Council of Governments

777 North Capitol Street NE, Suite 300

Washington, DC 20002



National Capital Region  
Transportation Planning Board



# DRAFT REGIONAL HIGHWAY SAFETY TARGETS

## Performance-Based Planning and Programming

December 2017



## **DRAFT REGIONAL HIGHWAY SAFETY TARGETS, DECEMBER 2017**

December 20, 2017

### **ABOUT THE TPB**

The National Capital Region Transportation Planning Board (TPB) is the federally designated metropolitan planning organization (MPO) for metropolitan Washington. It is responsible for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process in the metropolitan area. Members of the TPB include representatives of the transportation agencies of the states of Maryland and Virginia and the District of Columbia, 24 local governments, the Washington Metropolitan Area Transit Authority, the Maryland and Virginia General Assemblies, and nonvoting members from the Metropolitan Washington Airports Authority and federal agencies. The TPB is staffed by the Department of Transportation Planning at the Metropolitan Washington Council of Governments (COG).

### **CREDITS**

Editor: Jon Schermann

Contributing Editors: Mathew Gaskin, Eric Randall, Andrew Meese

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Jurisdictional agency staff from across the region.

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# REGIONAL HIGHWAY SAFETY TARGETS

This report proposes a set of draft regional highway safety performance targets that meet the MAP-21/FAST performance-based planning and programming (PBPP) requirements and are consistent with the target setting approaches of Maryland, Virginia, and the District of Columbia.

## Overview of Performance-Based Planning and Programming Requirements

Under the Moving Ahead for Progress in the 21st Century Act (MAP-21) and reinforced in the Fixing America's Surface Transportation (FAST) Act, federal surface transportation regulations require the implementation of performance management requirements through which states and metropolitan planning organizations (MPOs) will “transition to a performance-driven, outcome-based program that provides for a greater level of transparency and accountability, improved project decision-making, and more efficient investment of federal transportation funds.”

The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) have been gradually issuing a set of rulemakings, initially proposed and subsequently final, for the implementation of this performance-based planning and programming (PBPP) process. Each rulemaking lays out the goals of performance for a particular area of transportation, establishes the measures for evaluating performance, specifies the data to be used to calculate the measures, and then sets requirements for the setting of targets.

Under the PBPP process, states, MPOs, and providers of public transportation must link investment priorities to the achievement of performance targets in the following areas:

- Highway Safety;
- Highway Assets: Pavement and Bridge Condition;
- System Performance (Interstate and National Highway System, Freight Movement on the Interstate System, and the Congestion Mitigation and Air Quality Improvement Program); and
- Transit Safety and Transit Asset Management.

The final Statewide and Metropolitan Planning Rule, published May 27, 2016, provides direction and guidance on requirements for implementation of PBPP, including specified measures and data sources, forecasting performance, target-setting, documentation in the statewide and metropolitan long-range transportation plans and Transportation Improvement Programs (TIPs), and reporting requirements. The initial part of the PBPP process will require coordination and agreement on specific responsibilities for each agency in accordance with the planning rule.

## Highway Safety Targets: Setting, Coordinating, and Reporting

The expectation of the implementation of the Safety Performance Measure rule is to improve both the quantity and quality of safety data, with respect to data pertaining to serious injuries and fatalities. This implementation will also allow greater transparency by disseminating the data publicly. In addition, aggregation of targets and progress at the national level will become possible through improved data consistency among the states and MPOs.

State DOTs and MPOs are expected to use the information generated by these regulations to make investment decisions that result in the greatest possible reductions in fatalities and serious injuries. The five required safety performance measures, along with proscribed data sources, are outlined in Table 1 below.

**Table 1: Highway Safety Performance Measures Summary**

Performance Measure	Description	Data Source
Number of Fatalities (5 year rolling average)	Total number of fatalities during a calendar year	FARS <sup>1</sup>
Rate of Fatalities per 100 million VMT (5 year rolling average)	Ratio of total fatalities to VMT	FARS and HPMS <sup>2</sup> (or MPO estimate)
Number of Serious Injuries (5 year rolling average)	Total number of serious injuries during a calendar year	State reported serious injury data <sup>3</sup>
Rate of Serious Injuries per 100 million VMT (5 year rolling average)	Ratio of total serious injuries to VMT	State reported serious injury data <sup>3</sup> and HPMS
Number of Non-Motorized Fatalities and Serious Injuries (5 year rolling average)	Total number of fatalities and serious injuries during a calendar year	FARS and State serious injury data <sup>3</sup>

<sup>1</sup> FARS: Fatality Analysis Reporting System

<sup>2</sup> HPMS: Highway Performance Monitoring System

<sup>3</sup> for the first 36 months – after that States must adopt the Model Minimum Uniform Crash Criteria (MMUCC) definition of serious injury

## TARGET SETTING

States and MPOs must fulfill the target setting requirements of the final rule. State DOTs are required to set statewide targets for each of the five performance measures. Targets for the first three performance measures (number of fatalities, rate of fatalities, and number of serious injuries) must be identical to the targets set by the State Highway Safety Office (SHSO). Each target must also represent the anticipated performance outcome for all public roadways in the state, regardless of ownership. A breakdown of responsibilities for target setting are listed below.

State DOTs:

- Required to set statewide targets for each of the five performance measures:
  - Each of these targets must be identical to those set by the State Highway Safety Office (SHSO).
  - Each target shall represent anticipated performance outcome for all public roadways in the State, regardless of ownership.
  - Targets cannot be changed after they are reported.



MPOs:

- For each performance measure, the MPO will either:
  - Agree to plan and program projects so they contribute toward accomplishing the state DOT safety target for that PM, or
  - Commit to a quantifiable target for that PM for the MPO planning area:
    - Each target shall represent anticipated performance outcome for all public roadways in the MPO planning area, regardless of ownership.
    - MPOs shall coordinate with the state DOT(s) to ensure consistency.

## **MPO Coordination with State DOTs**

MPOs are required to establish their performance targets in coordination with their state partners and these targets should be data-driven and realistic. Coordination is essential between these two entities in setting HSIP targets. Both should work together to share data, review strategies and understand outcomes.

## **Target Reporting**

State DOTs must report their targets to the FHWA within the state's HSIP (Highway Safety Improvement Program) annual report due each year on August 31. This requirement is effective beginning with the 2017 HSIP annual report.

MPOs do not report their targets to the FHWA, but rather to their respective state DOTs in a manner that is documented and mutually agreed upon. MPOs also report progress toward achieving their targets within the "System Performance Report" portion of their long-range transportation plan (Visualize 2045). In addition, MPO TIPs must include a discussion of how the implementation of the TIP will further the achievement of the targets.

## **FHWA Determination of Significant Progress**

States do not have to meet each of their safety targets to avoid the consequences outlined in the rule, but must either meet the target or make significant progress toward meeting the target for four of the five performance measures. The FHWA determines that the significant progress threshold is met if the performance measure outcome is better than the "baseline" – which is defined as the 5-year rolling average for that performance measure for the year prior to the establishment of the target. MPO targets are not evaluated by the FHWA.

## **Consequences for Failing to Meet Targets of Making Significant Progress**

State DOTs that have not met or made significant progress toward meeting their safety performance targets lose some flexibility in how they spend their HSIP funds and are required to submit an annual implementation plan that describes actions the DOT will take to meet their targets.

There are no consequences outlined in the rule for MPOs not meeting their targets. However, the FHWA will review how MPOs are incorporating and discussing safety performance measures and targets in their long-range transportation plans and TIPs during MPO certification reviews.

## NCR REGIONAL SAFETY TARGET SETTING APPROACH

To account for and incorporate the different target setting approaches used by Maryland, Virginia, and the District of Columbia into targets for the entire National Capital Region (NCR), staff applied the following target setting methodology to develop the draft targets proposed:

- identify a “sub-target” for the Maryland portion of the NCR by applying MDOT’s target setting approach to the NCR safety data;
- identify a “sub-target” for the Virginia portion of the NCR by applying VDOT’s target setting approach to the NCR safety data;
- identify a “sub-target” for the District of Columbia portion of the NCR by directly incorporating DDOT’s targets; and
- establishing the draft NCR targets by mathematically combining items 1 through 3.

### Overview of Member States’ Target Setting Methodologies

**Maryland:** Maryland applied their existing Toward Zero Deaths approach to develop interim targets to reduce fatalities by at least 50 percent from the 2008 base year to the 2030 target year. This same approach was used to set targets for each of the five performance measures. For each performance measure an exponential trend line connecting the historical (2008) data to the long-term (2030) goal which was set to 50 percent of the 2008 value. Five-year averages were used to calculate projections, and targets for each interim year were taken from the midpoint of the five-year average (e.g., 2018 annual interim target = midpoint of the 2016-2020 average). Maryland officials provided TPB staff with the exponential trend lines and interim targets for each of the five performance measures based on the safety data for the Suburban Maryland portion of the NCR.

**Virginia:** Virginia analyzed their statewide safety data using a variety of time periods and trend lines (straight and exponential) using annual, 3-year average, and 5-year average safety measure data. Based on this analysis, Virginia determined the 5-year average targets by apply the following factors to the 2015 base year:

Number of fatalities:	2 percent annual reduction
Number of serious injuries:	5 percent annual reduction
Number of nonmotorist fatalities and serious injuries:	4 percent annual reduction
Rate of fatalities per 100 million VMT:	3 percent annual reduction
Rate of serious injuries per 100 million VMT:	7 percent annual reduction

TPB staff applied these same reduction factors to the data for the Northern Virginia portion of the NCR.

**District of Columbia:** The District of Columbia analyzed their safety data using a combination of annual and 5-year average data and polynomial trend lines to determine their targets. TPB staff directly incorporated the District of Columbia targets, as published in their HSIP Annual Report, into the NCR target setting methodology.

## Calculation of the National Capital Region Highway Safety Targets

### Numerical Targets

The NCR targets for the number of fatalities, number of serious injuries, and number of nonmotorist fatalities and serious injuries were calculated by summing the sub-targets for the Suburban Maryland, Northern Virginia, and District of Columbia portions of the region. This is straightforward mathematical addition.

### Rate Targets

Determination of rate targets (fatality rate and serious injury rate) are somewhat more complicated and involve mathematically combining the effects of the Suburban Maryland, Northern Virginia and District of Columbia targets according to their respective proportions of total regional VMT. The following steps illustrate the process for the fatality rate (a similar process was used for the serious injury rate):

- 1) Determine the percent fatality rate reduction represented by each sub target.

<b>Fatalities per 100 MVMT</b>	<b>2012-2016 Average</b>	<b>2014-2018 Average (sub target)</b>	<b>Percent change</b>
Suburban MD	0.792	0.734	-7.38%
NOVA	0.428	0.403	-5.91%
DC	0.598	0.703	17.58%

- 2) Determine the proportion of total regional VMT attributable to Suburban Maryland, Northern Virginia, and DC.

<b>Sub region</b>	<b>100 MVMT (2016)</b>	<b>Proportion</b>
Suburban MD	213.78	47.95%
NOVA	193.29	43.35%
DC	38.80	8.70%
<b>Sum</b>	<b>445.87</b>	<b>100.00%</b>

- 3) Determine the percent change for the regional rate by multiplying the percent change (from step 1) by the VMT proportion (from step 2).

<b>Sub region</b>	<b>A: Percent change in fatality rate (from step 1)</b>	<b>B: Proportion (from step 2)</b>	<b>A x B</b>
Suburban MD	-7.38%	47.95%	-3.537%
NOVA	-5.91%	43.35%	-2.562%
DC	17.58%	8.70%	1.530%
<b>Sum</b>			<b>-4.569%</b>

- 4) Apply the percent change for the regional rate calculate in step 3 (-4.569%) to the 2012-2016 average fatality rate. This is the regional fatality rate target for 2014-2018.

Fatalities per 100 MVMT	2012-2016 Average	Regional percent change (from step 3)	2014-2018 Average (regional target)
NCR	0.617	-4.569%	0.588

## REGIONAL SAFETY TARGETS

Figures 1 through 5 and Table 2 display the proposed NCR Highway Safety Targets.

**Figure 1: National Capital Region Fatality Target**

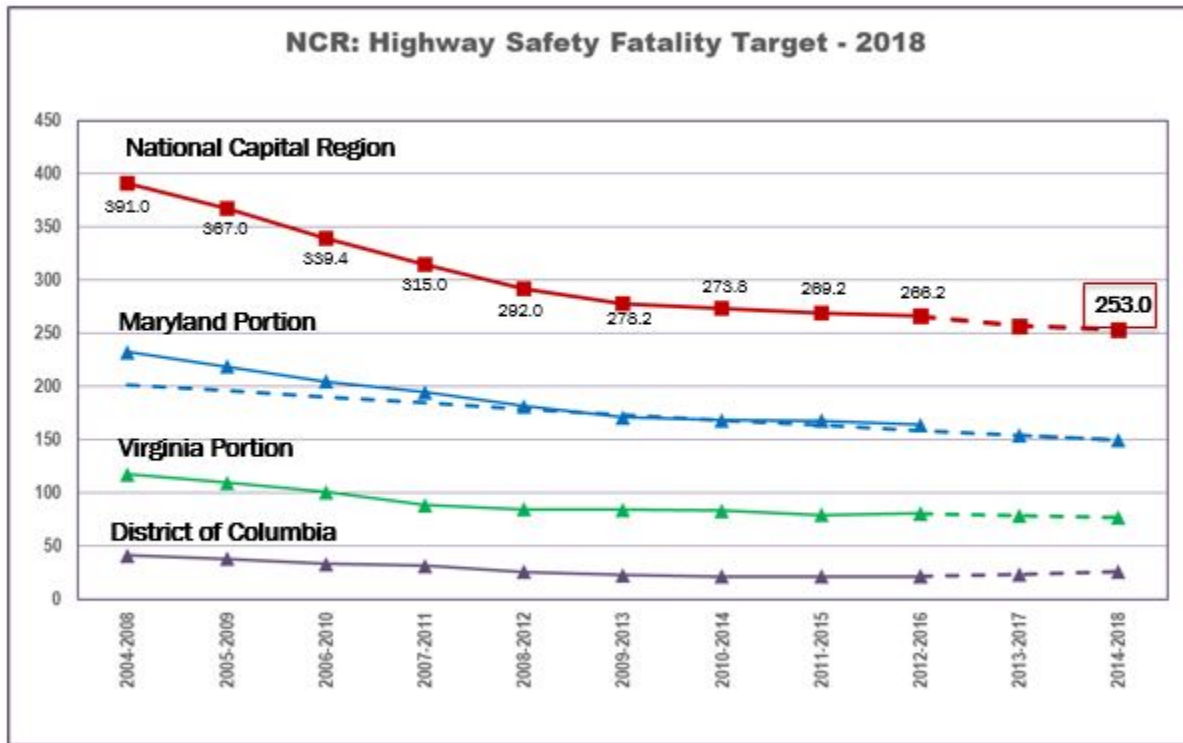


Figure 2: National Capital Region Serious Injury Target

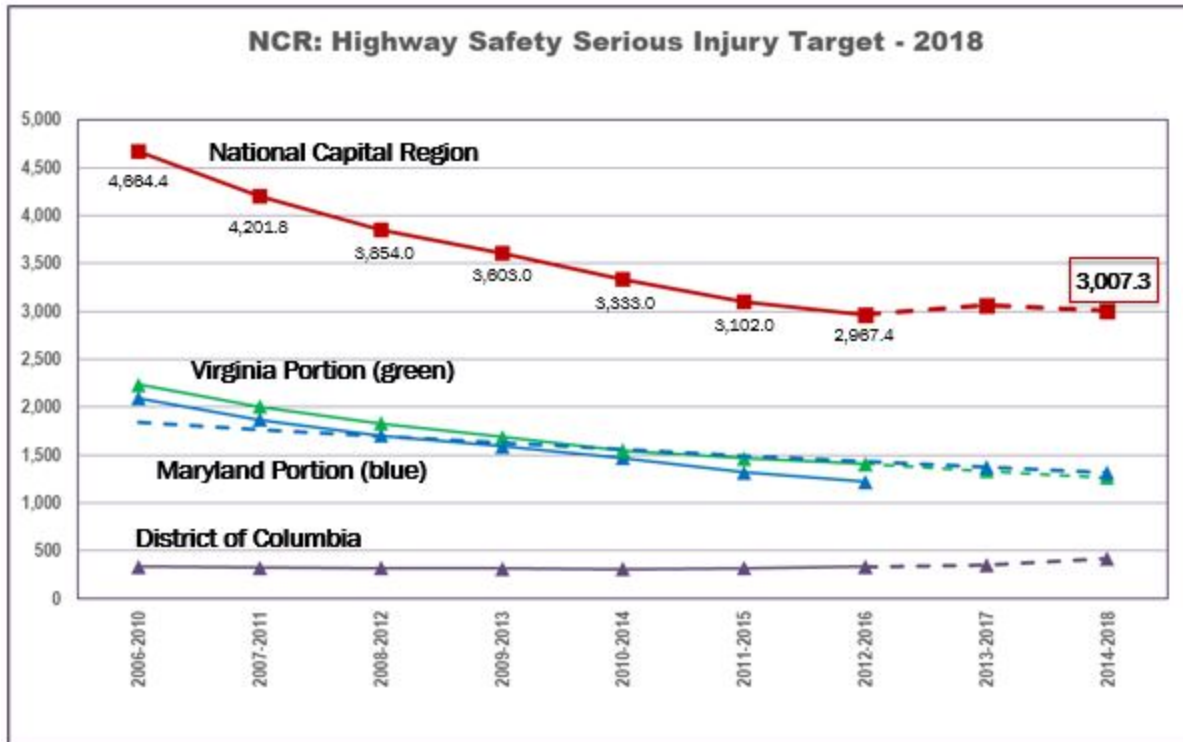


Figure 3: National Capital Region Nonmotorist Fatality and Serious Injury Target

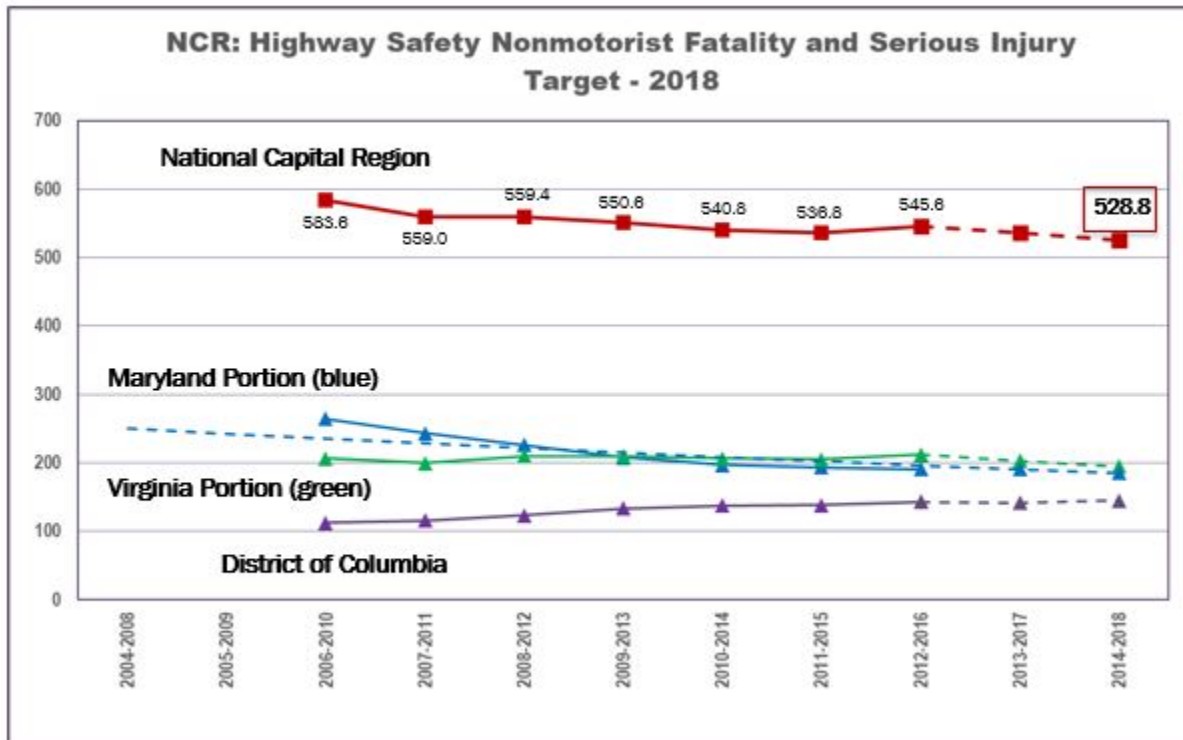


Figure 4: National Capital Region Fatality Rate Target

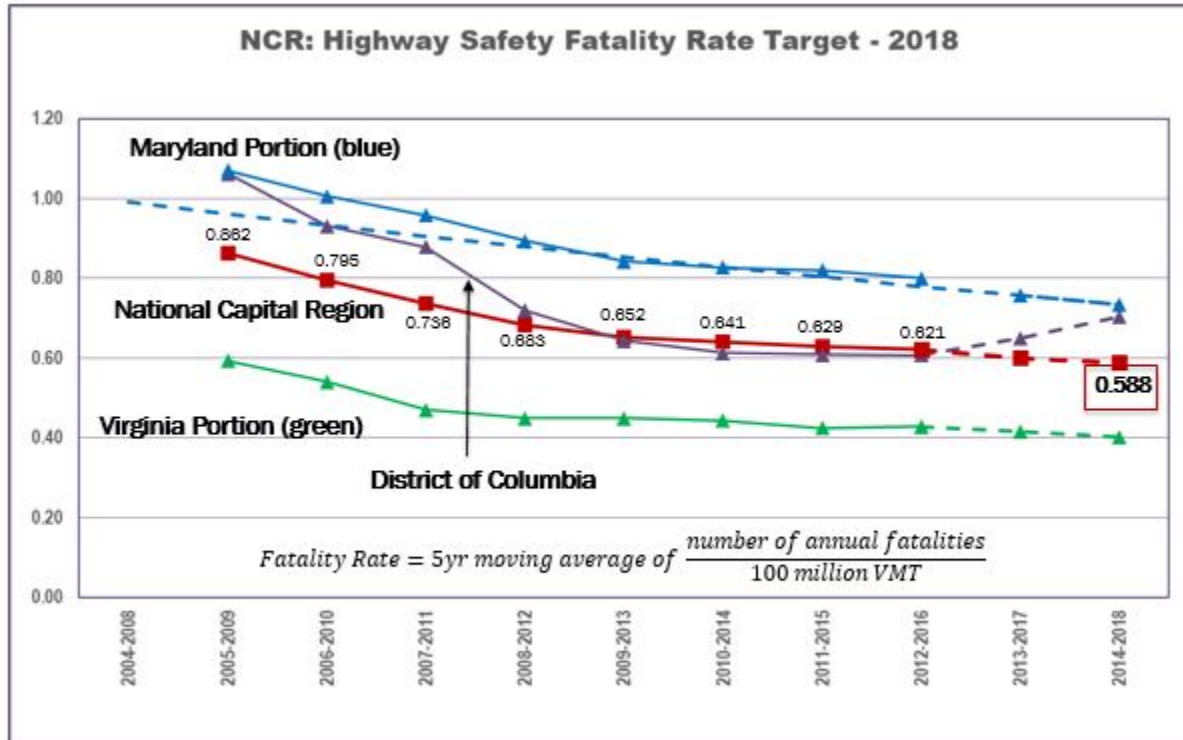
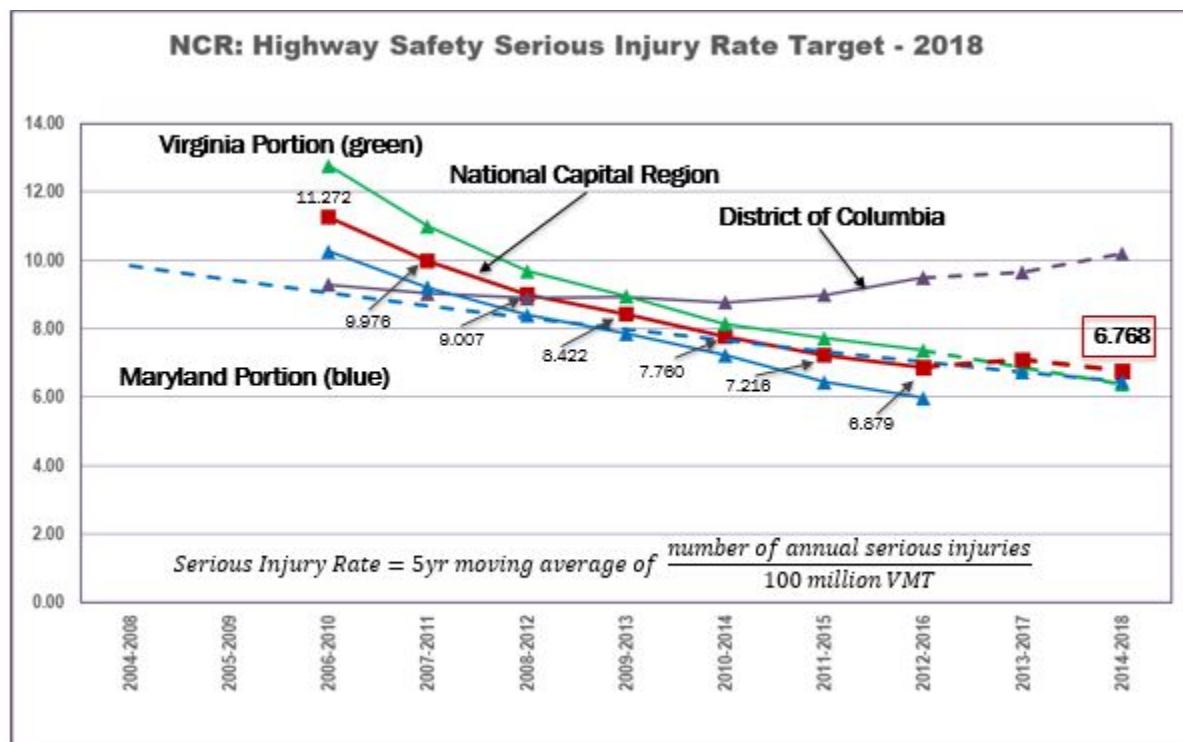


Figure 5: National Capital Region Serious Injury Rate Target



**Table 2: Summary of Highway Safety Targets**

	2012-2016 Actual	2014-2018 Target	Difference	Percent Difference
# of Fatalities	266.2	<u>253.0</u>	↓ 13.2	↓ 4.9%
Fatality Rate (per 100 MVMT)	0.621	<u>0.588</u>	↓ 0.033	↓ 5.3%
# of Serious Injuries	2,967.4	<u>3,007.3</u>	↑ 39.9	↑ 1.3%
Serious Injury Rate (per 100 MVMT)	6.879	<u>6.768</u>	↓ 0.111	↓ 1.6%
# <u>Nonmotorist</u> Fatalities & Serious Injuries	545.6	<u>528.8</u>	↓ 16.8	↓ 3.1%

## DURATION

Upon adoption by the Transportation Planning Board, the targets described in this report become the official National Capital Region highway safety targets for calendar year 2018 (as represented by the average of the 5 years of data from CY 2014 through CY 2018).

As per federal regulations, the National Capital Region highway safety targets will be updated on an annual basis by no later than February 27 of each calendar year.