

# 5<sup>th</sup> International Transportation Systems Performance Measurement and Data Conference

**Intermodal or Multimodal: It's About People and Freight – State of the Practice**

## **Mobility Performance Management: Maryland State Highway Administration's Performance-Based Approach for Improving Mobility, Reliability and Multi-modalism**

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# About Maryland SHA

- Maryland is home to **6 million people** with lots of geographic and socio-economic diversity
- SHA operates and maintains the numbered, non-toll routes in - **17,000 lane-miles** and **2,576 bridges**
- SHA roadways serve **65% of state VMT** and **85% of truck VMT**



# SHA Decision-making Framework

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**WHY?**

**HOW?**

**WHAT/ WHEN/  
WHERE?**

Goals/ Needs	Process/ Program	Projects/ Outputs	Outcome
<b>SAFETY</b>	CSIS/ CSIL RSA/ PRSA Safety Corridors	Spot/ Corridor Level Safety Improvements Major/Mid-Major	<i>Safe, well-maintained and reliable highway system for Maryland's communities, economy and environment</i>
<b>MOBILITY</b>	Annual Mobility Report MD Statewide Model Comp. Hwy. Corr. (CHC)	Major/Minor Projects Signals, Bike/ Peds ATDM, Incident Mgmt.	
<b>SYSTEM PRES.</b>	Transportation Asset Management Systems (Pavement, Bridges, Signals)	Resurf, Bridge Repair/ Rehab., CC Adaptation, Signals, etc..	
<b>ENVIRONMENT</b>	Green Infrastructure Carbon Neutral Corr.	SWM Facilities Reforestation TMDL Reductions	

# Key Drivers for Performance based Approach

- Support MDOT & Administration initiatives, policies and goals.
- **Statutory Regulatory Requirements**
  - *Managing for Results (MFR)/StateStat*
  - *MDOT Attainment Report*
  - *Government Performance and Results Act (GPRA)*
- Ensures agency accountability with reliable data and processes
- Target Setting and Outcome oriented approach



# Performance Management at SHA

- Performance Management and Data driven decisions at all levels
- Increased focus on Operations
- System Efficiency & Reliability key
- Freight movement and Economy
- Communicating Performance



# SHA Mobility/ Economy KPA

## *Various objectives, performance measures and strategies to achieve SHA Mobility goals*

### *Key Areas*

- *MOBILITY AND RELIABILITY*
- *INCIDENT MANAGEMENT AND TRAVELER INFORMATION SYSTEMS*
- *MULTIMODALISM/ SMART GROWTH*
- *FREIGHT*

*MD Annual State Highway Mobility Report*



# Maryland State Highway Annual Mobility Report

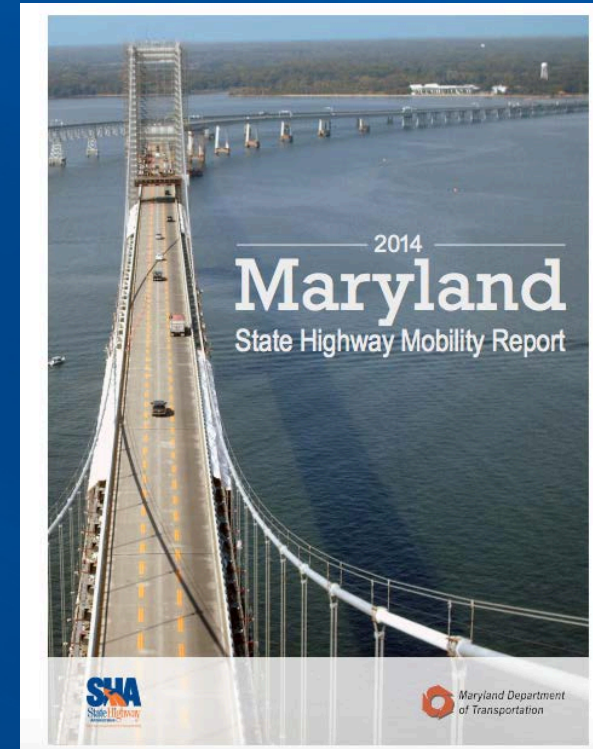
## Background

- Developed to document key initiatives at SHA as it relates to Mobility KPA
- Started in 2012...in the third year of publication
- Exemplifies SHA data and performance based decision-making framework
- Built around a theme of:

**What's happening?**

**What is SHA doing?**

**What is the outcome?**



# Mobility Trends – What is Happening?



## Mobility and Economy Dashboard

### Welcome to the Mobility and Economy Dashboard for the State of Maryland!

The Maryland State Highway Administration's (SHA) mobility related efforts are highlighted in this dashboard based on data from the Maryland State Highway Mobility Report. Mobility is a key performance area (KPA) at SHA which aims to "Support Maryland Economy and Communities with Reliable Movement of People and Goods". This dashboard aims to identify successes, challenges, and strategies being utilized to improve the transportation services SHA delivers to Marylanders and the traveling public. This effort aims to drive investment related decisions and make the best use of transportation revenues using data driven performance based approaches.

#### I would like to explore:

Congestion  
What is happening?

#### Where?

Jurisdiction  
Maryland  
2013

View ▶

Disclaimer: This application is intended to serve as a public resource for general reference. The data is preliminary and subject to change. SHA provides this information without any warranty of any kind either expressed or implied.

#### What are the Mobility Trends in Maryland?

Maryland's highway system handles over 56 Billion vehicle miles of travel on an annual basis. SHA has developed comprehensive performance measurement systems. In 2013:



View What's Happening ▶

#### What is SHA doing to address Mobility Challenges?

SHA implements various projects, programs and policies to enhance mobility on its facilities. Our approach includes:



#### What is the outcome of SHA's Mobility Initiatives?

The mobility solutions implemented by SHA projects, programs and policies result in user cost savings for automobile and truck travel. In 2013, annual user savings included:



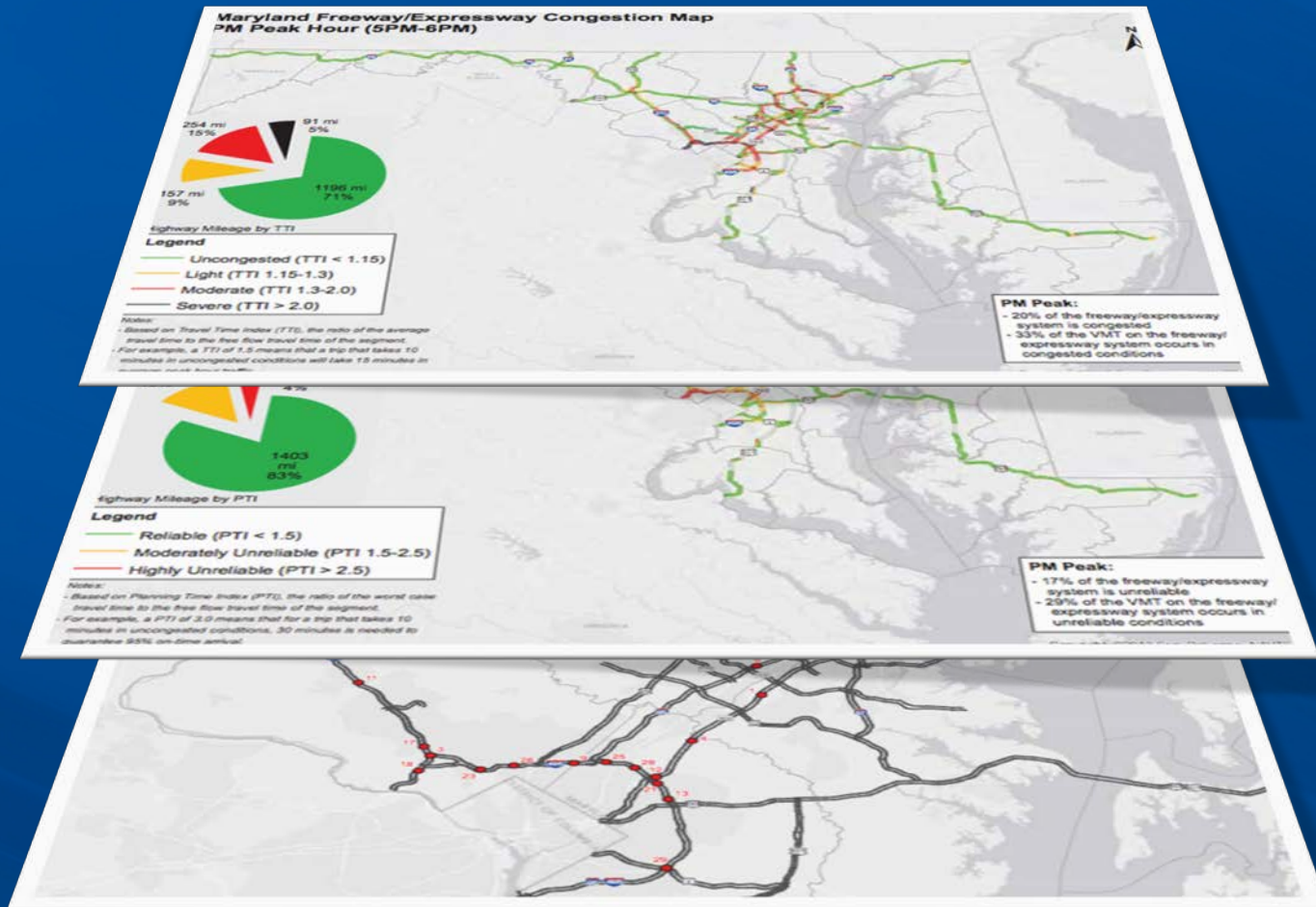
View What SHA is Doing ▶

- Web-based Solution
- Increase Transparency
- Performance Based Approach



# Mobility/Reliability Performance Management

## GOOD DATA DRIVING DECISIONS...



# Improving Reliability

## CAUSES OF UNRELIABILITY

Inclement Weather



Fluctuations in Demand



Crashes



Work Zones



Poorly Timed Traffic Signals

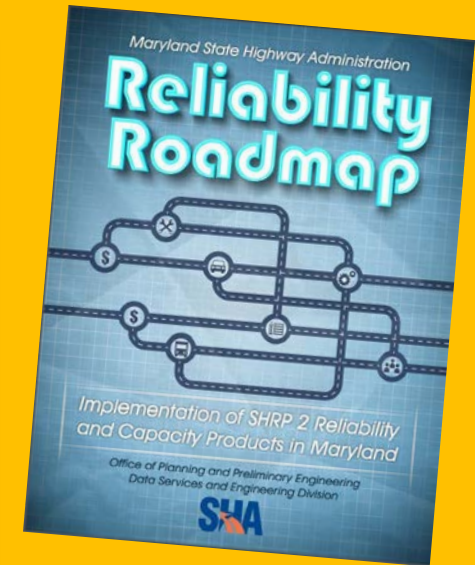
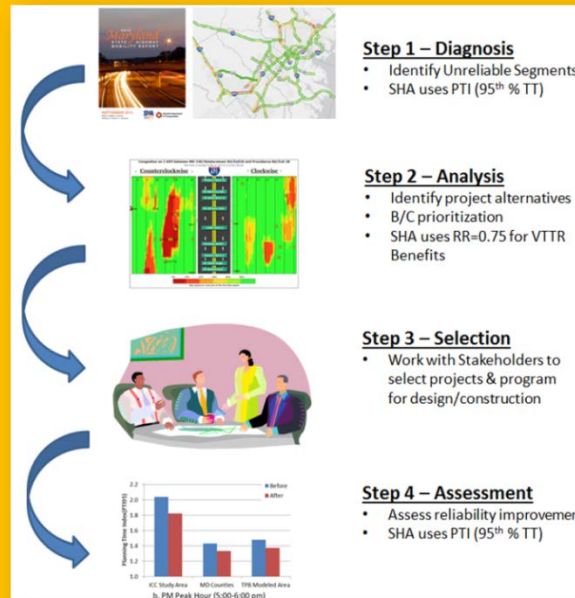


## SHAs FOUR-STEP APPROACH

SHA developed a Reliability Roadmap in Summer 2014

Phased Approach to develop a comprehensive program that improves reliability of our system

SHRP2 Projects will be used to execute Roadmap task activities.



# What is SHA doing? What is the OUTCOME?

## – Projects

- Major and Minor Projects

## – Programs

- Signal retiming
- CHART/Incident Management
- ITS/511

## – Policies

- Park N Ride
- HOV Users
- Reversible Lanes
- Bicycle & Pedestrian
- Transit Oriented Development
- MDTA Toll Lanes

### What is SHA doing to improve Mobility of our highway system?

SHA implements various projects, programs and policies to enhance mobility on it facilities  
Our approach includes:



### What is the outcome of SHA's Mobility Initiatives?

The mobility solutions implemented by SHA projects, programs and policies result in user cost savings for automobile and truck travel.

In 2013, annual user savings included:

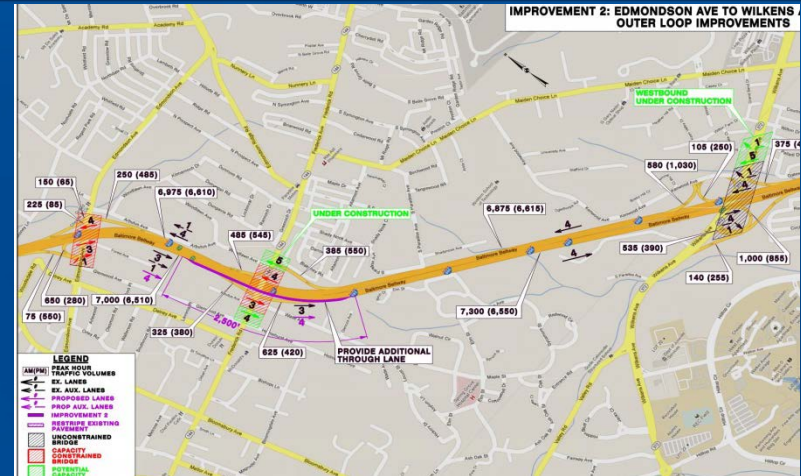
<b>\$1.16 Bil.</b>	+	<b>\$5.7 Mil.</b>	+	<b>\$39.8 Mil.</b>	=	<b>\$1.206 Bil.</b>
CHART		Capital Improvements		Signal Systems & Multimodal Strategies		Total Savings

- Performance based approach to identify and implement high benefit-low cost projects on freeways and arterials
- Adopts a systemic data driven approach of
  - Diagnosis
  - Analysis
  - Selection
  - Implementation
  - Assessment



# Freeway Congestion Management Program

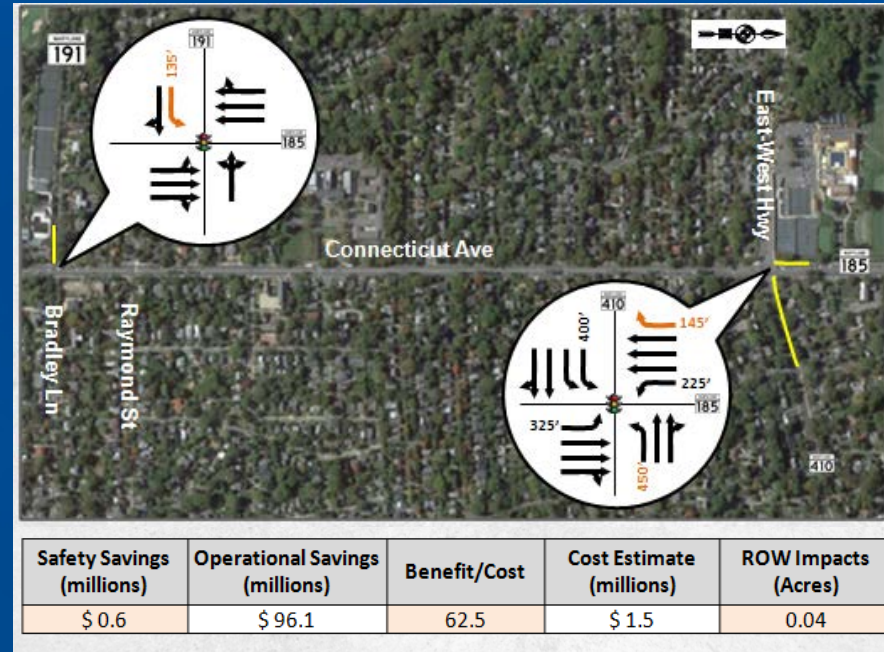
- Identify Congestion Hotspots and Sources using vehicle probe speed and traffic counts
- Develop Traffic Simulation Models to evaluate Low Cost Short Term Improvements analyzed in a Benefit/Cost Context
- Projects carried forward thru' Design and Construction





# Arterial Congestion Management Program

- Identify Congestion Hotspots and develop low cost improvements
- Concepts have overall system level positive impacts
- Concepts analyzed in a Benefit/ Cost and Life-Cycle Context
- Projects carried forward thru' Design and Construction

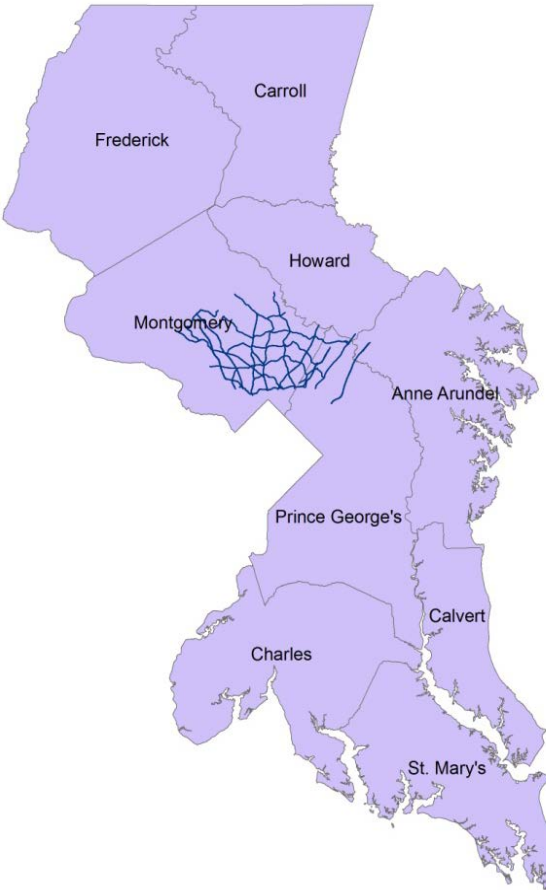


**SHA 2014 Arterial Congestion Management Study identified 15 projects with a total cost of \$40 Million and projected benefits of \$900 Million over 20 years**

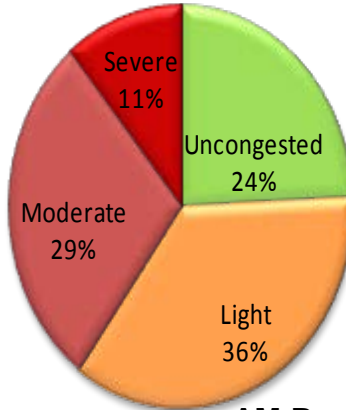
# Before/ After Studies

- Critical to understand the **OUTCOME** of the transportation investment
- Feeds into the **SHA Business Plan performance metrics reporting**  
*e.g Congestion relief projects that opened to traffic in 2013 provided \$5.7 Million/ year in user cost savings*
- Provides insights to see what works and lessons learnt for future projects
- Data driven approach increases **transparency** and **accountability**

# Before/ After Study Example Inter County Connector

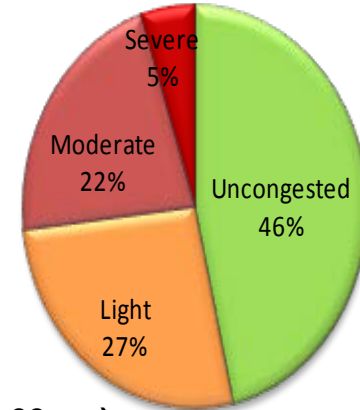


Before

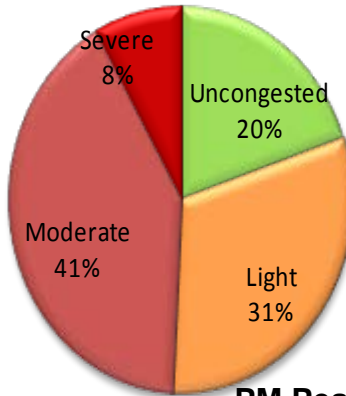


AM Peak Hour (8:00-9:00 am)

After

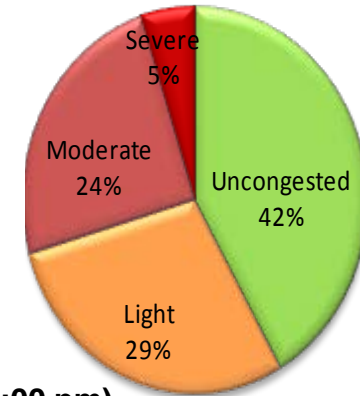


Before



PM Peak Hour (5:00-6:00 pm)

After



# How has Mobility related efforts impacted decision-making?

- Great step demonstrating Performance based Planning and Data Driven Decision-making
- Helps senior management with funding decisions – *multiple low cost short term improvements on have been identified and implemented*
- Multiple Mid term/ Long term corridor studies have been re-evaluated and initiated
- Better prepared to account for Freight and Reliability
- Helps us communicate our performance and tell our side of the story

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