



# US DOT Datapalooza Transportation Performance Management

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Maryland State Highway Administration



# Today's Presentation

- SHA performance based planning program
- Decision-support Tools
- Dashboards to tell the story
- Live demo



# Performance Management at SHA

Performance-based approach to management based on Baldrige Criteria for Performance Excellence

Statutory Regulatory Requirements

- Managing for Results (MFR)
- MDOT Attainment Report
- Government Performance and Results Act (GPRA)

Ensures agency accountability with reliable data driven processes

Target Setting and Outcome-oriented approach





# SHA Business Plan

## KEY PERFORMANCE AREAS (KPA)

- Highway Safety
- Mobility/Economy
- System Preservation and Maintenance
- Managing our Agency
- Environmental Compliance and Stewardship
- Customer Communications, Service and Satisfaction

*Focus on **OUTCOMES***

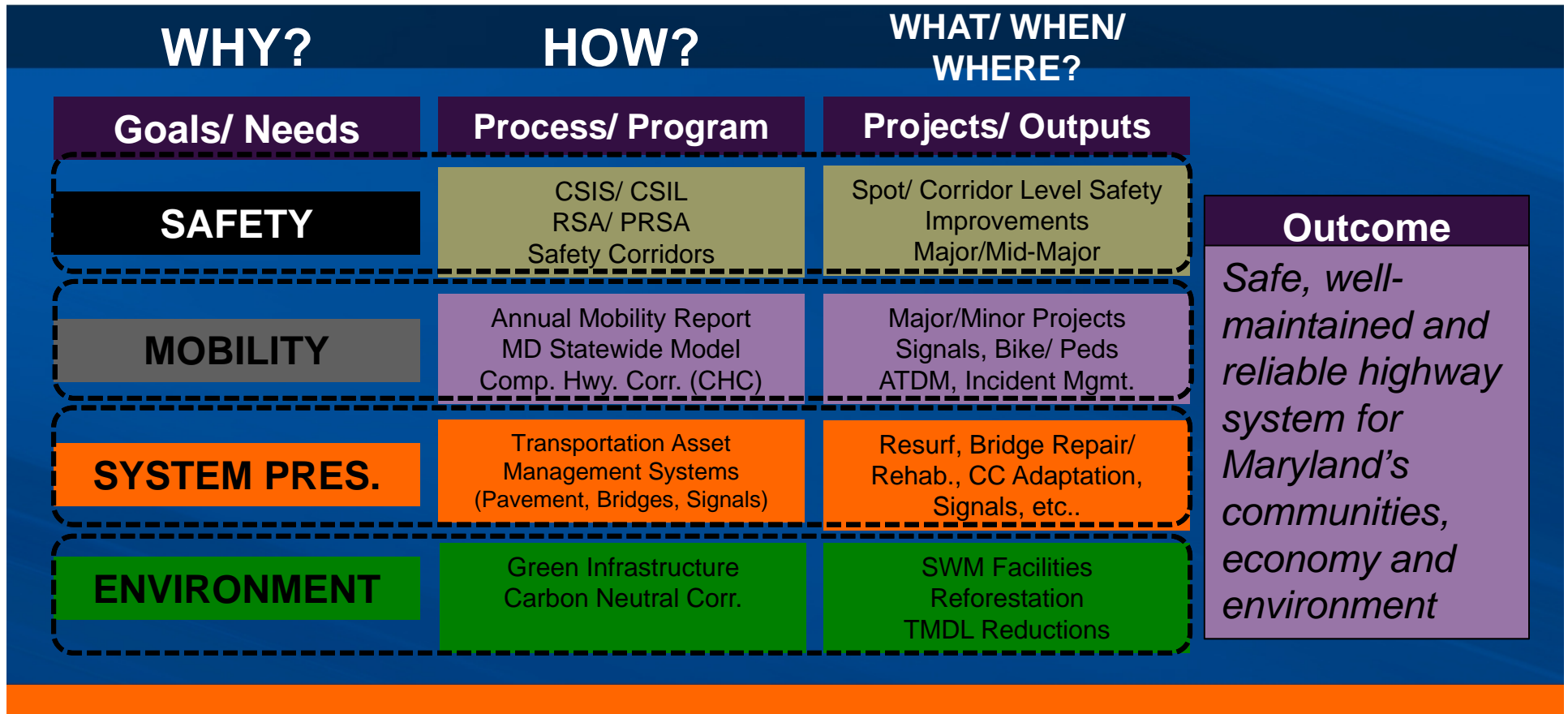
Objectives and Strategies are

- *Specific*
- *Measurable*
- *Achievable/Attainable*
- *Results oriented*
- *Time-bound*

*Agency wide and office/  
district level plans are aligned*



# SHA Decision-making Framework





# SHA Mobility / Economy KPA

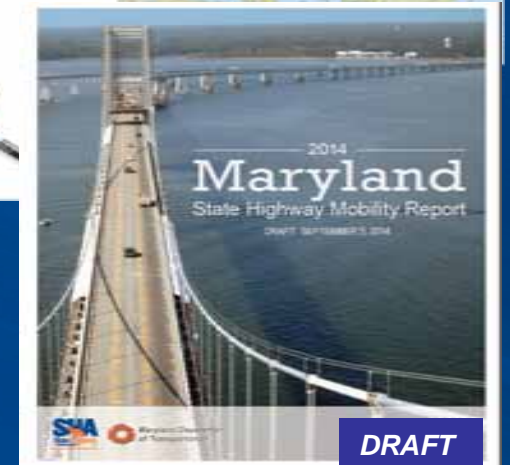
*Various objectives, performance measures and strategies to achieve SHA Mobility goals*

## **Key Areas**

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

**MD Annual State Highway Mobility Report** summarizes

- Annual state highway system performance
- Effects of SHA policy/ programs/ projects
- Identifies bottlenecks and needs to alleviate congestion and improve mobility and reliability





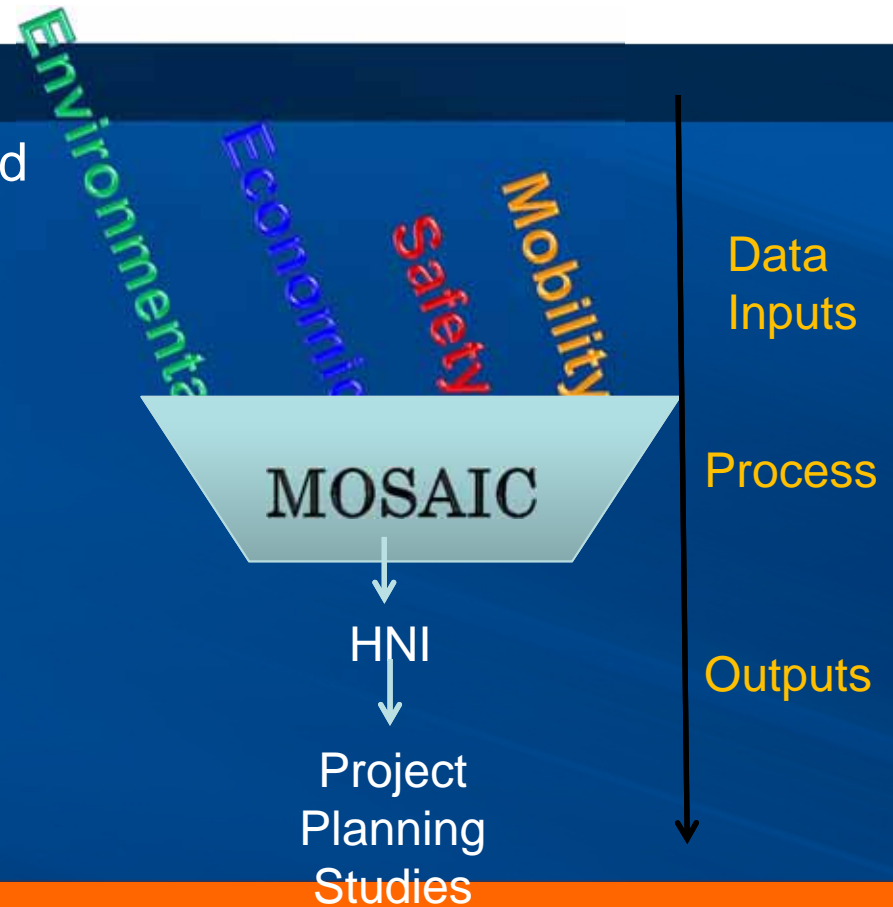
# SHA Decision-support Tools & Applications

- CHC- MOSAIC
- Maryland Statewide Transportation Model
- UMD VPP Suite and RITIS
- Travel Modeling and Traffic Simulation Tools
- Enterprise GIS (e-GIS)
- Dashboards



# Comprehensive Highway Corridors- MOSAIC

- ⦿ Analyze strategic corridors in short and long term
- ⦿ To take a data driven approach to the Highway Needs Inventory.
- ⦿ Analyze different project improvement alternatives to expedite the project planning process.
- ⦿ Organize data layers and develop outputs to assist in corridor selection.







# Maryland Statewide Transportation Model

- Multi-layer travel demand model working at *national, statewide and regional levels* to forecast and analyze key measures of transportation system performance.
- Model Applications
  - ✦ System Performance and Long-Range Planning
  - ✦ Corridor Studies
  - ✦ Scenario Planning
  - ✦ Freight Movement

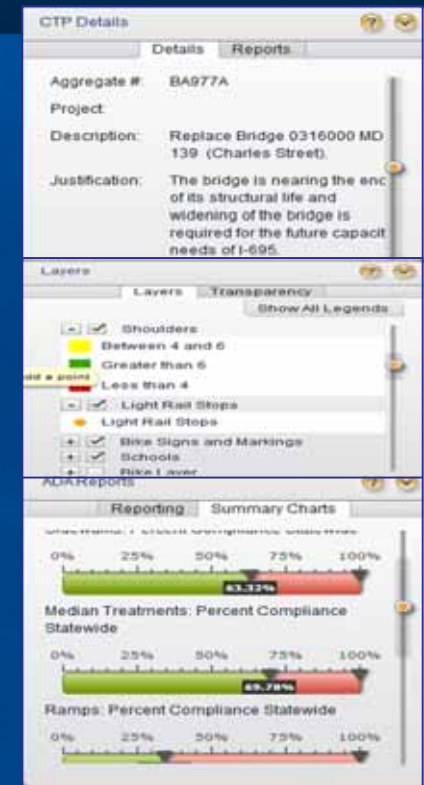
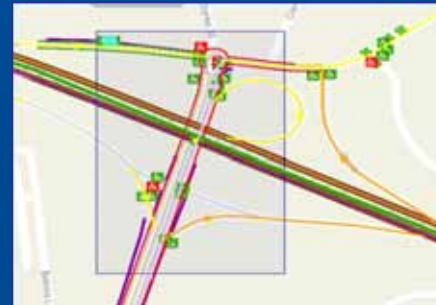


# Enterprise GIS Applications

- Common interface between multiple databases/ programs/ processes
- Based on “One Maryland One Map” philosophy
- Decision-support system

## Capabilities Include

- Route Search
- Data Overlay
- Data Query
- Reporting Tools
- Photo Viewer
- Summary Charts
- Feature Details



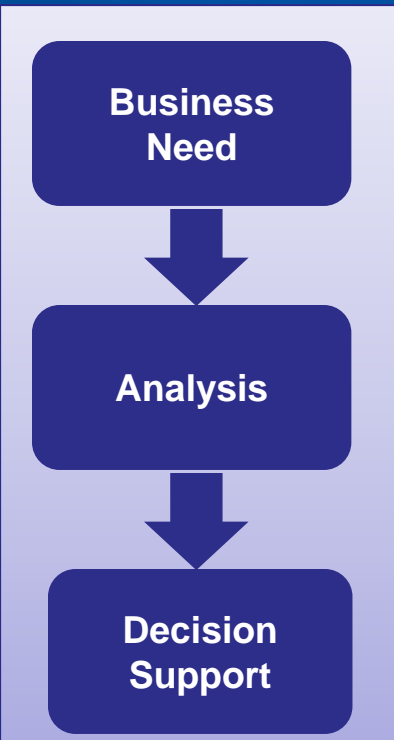


# SHA e-GIS Initiatives

Building GIS technology based data architecture so that one system feeds all business purposes in and outside the agency

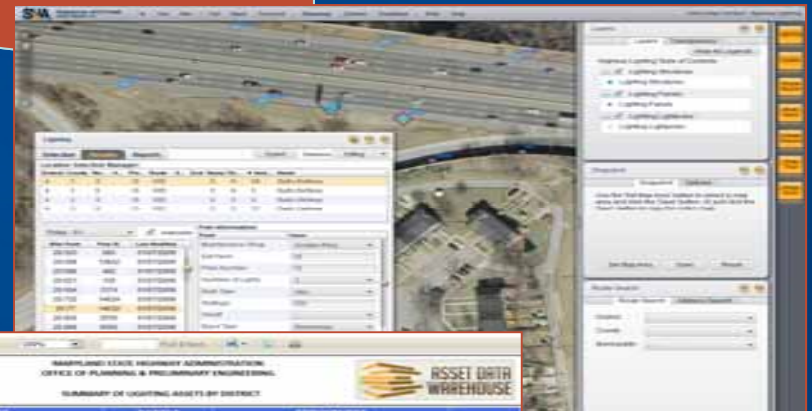
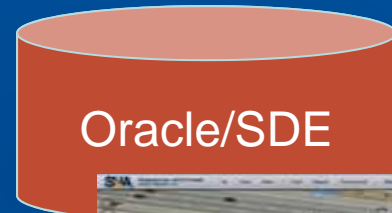
## *Various levels of e-GIS Implementation*

1. **Operational e-GIS:** supports day-to-day business needs
2. **Executive e-GIS:** designed for leadership with certain functions and reporting capabilities
3. **External Performance Measurement e-GIS:** performance dashboard type displays and maps
4. **External Tools e-GIS:** an external operational user experience with paired down data
5. **Mobile e-GIS:** Could be the same as 3-4



# Asset Data Warehouse

- Spatial Data Inventory
  - Lighting Assets
  - Signs
  - Traffic Barriers
  - Rumble Strips
  - Line Striping
  - Weather sensors
  
- Integrated data sources
- Web-based editing
- Reporting



MARYLAND STATE HIGHWAY ADMINISTRATION  
 OFFICE OF PLANNING & PROGRAMMING ENGINEERING  
 SUMMARY OF LIGHTING ASSETS BY DISTRICT

District	POLES			FIXTURES			STRUCTURES		
	Total	Total Cost	Total Watt	Total	Total Cost	Total Watt	Total	Total Cost	Total Watt
A	4,897	0	0	200	0	0	0	0	0
B	2,220	0	0	100	0	0	0	0	0
C	1,000	0	0	50	0	0	0	0	0
D	2,778	0	0	100	0	0	0	0	0
E	2,220	0	0	100	0	0	0	0	0
F	1,000	0	0	50	0	0	0	0	0
G	1,000	0	0	50	0	0	0	0	0
H	1,000	0	0	50	0	0	0	0	0
I	1,000	0	0	50	0	0	0	0	0

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# Dashboards

- Tell a story
- Increase transparency
- Increase accountability
- Showcase SHA's performance-based approach
  - More efficient investments





# Mobility & Economy Dashboard

- Increase transparency
- Showcase SHA Performance Based Approach
- Focus on Policies, Programs and Projects
- Address Recurring and Non-recurring Congestion
- Web-based Solution
  - Reports annual key mobility performance indicators
  - Reports mitigation strategies
  - Interactive charts, maps and corridor level impact analysis

# Mobility & Economy Dashboard

- What is Happening
- What SHA is doing
- What was the outcome
- What has changed over time



**SHA**  
State Highway  
Administration  
Maryland Department of Transportation

## 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  
 in 2012 for All Vehicles

**Where?**  
 Statewide  
 All Regions

[View](#)

**Where is Congestion a problem?**  
 Highway congestion occurs as a result of too many users trying to share common roadway segments at the same time. The impacts of a congested system are detrimental in several ways, from an individual user perspective to the commerce/economy and overall quality of life in the region.  
[View](#)

**Where is Reliability a problem?**  
 Reliability focuses on the variability of travel time and speeds on freeways / expressways, and serves as the primary measure of system stability. Reliability measures the impact of the non-recurring nature of congestion due to unforeseen circumstances – such as vehicles crashes and breakdowns, weather events, and special social events.  
[View](#)

**Where is Network Volume highest?**  
 General volume of traffic is measured by Vehicle Miles Traveled (VMT), and is defined as the number of vehicles times the distance that they traverse the network. VMT metrics establish the proper context by which the road network is being utilized by the general population for a specific point in time (typically annualized).  
[View](#)

Maryland Department of Transportation



Take a Tour

# Mobility & Economy Dashboard

I would like to explore: Congestion in 2012 for All Vehicles Where? In a County Baltimore County

What's happening? What is SHA doing? What was the outcome? What has changed over time?

## Mitigation

Show Me: PROJECTS PROGRAMS POLICIES



Maryland > Baltimore Metropolitan > Baltimore County

### What Programs exist to address these challenges?

Nonrecurring congestion is estimated to account for 60% of all delays on Maryland roadways. Any effort to minimize incident clearance time significantly reduces user and agency costs in terms of travel delay, fuel consumption, and emissions reductions.

The SHA Coordinated Highways Action Response Team (CHART) program is a joint effort between the Maryland Department of Transportation (MDOT), Maryland State Police (MSP), and the Maryland Transportation Authority (MDTA). CHART seeks to improve real-time operations for Maryland's highway system through communication, system integration, and incident response & management.

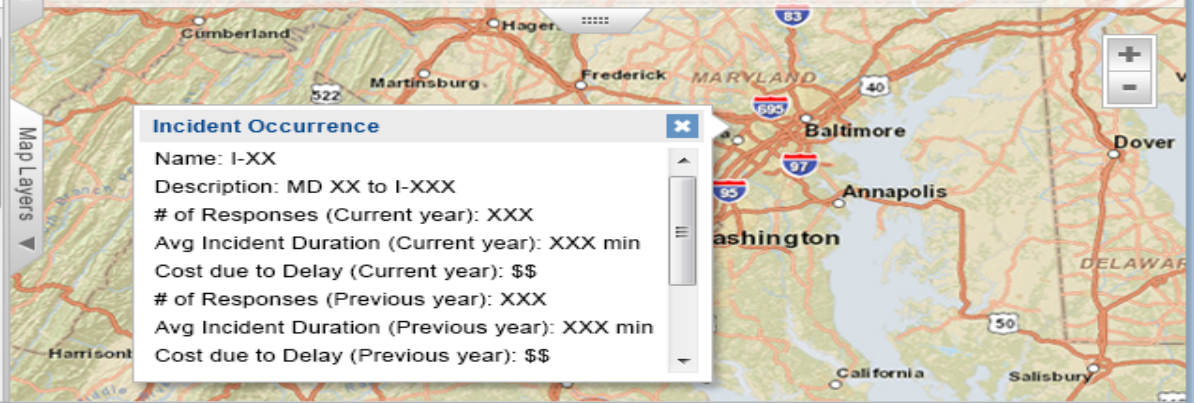
### Incident Management Programs

- Signal Re-Timing
- CHART / Incident Mgmt
- ITS / 511:

### Incidents Occurring on Key Corridors

CORRIDOR NAME	NUMBER OF SIGNALS RETIMED	RETIMING COST
1		
2		
3	! DATA COMING SOON	
4		
5		

### Signal Retiming Programs Ongoing



**Incident Occurrence**

Name: I-XX  
 Description: MD XX to I-XXX  
 # of Responses (Current year): XXX  
 Avg Incident Duration (Current year): XXX min  
 Cost due to Delay (Current year): \$\$  
 # of Responses (Previous year): XXX  
 Avg Incident Duration (Previous year): XXX min  
 Cost due to Delay (Previous year): \$\$





# Mobility 1<sup>st</sup> out of the gate

## Mobility Dashboard

# Do the right projects!

- To make the best decisions data must be disconnected from silos and integrated
- Focus on transparency
- Communicate
- Transportation Journalism

### Project Planning



- Get information on SHA's current planning efforts
- Explore the interactive map of project locations and information
- Attend public meetings via live web broadcasts
- View past meetings on-demand

[View the Planning Site](#)

### Performance Based Planning

- MAP-21**  
Efforts and initiatives that fall under the MAP-21 legislation
- Asset**  
Asset Data including roads, highway signs, and other features
- Mobility**  
Initiatives improving congestion and reliability on MD roadways.
- TMDL**  
Projects supporting water quality and the Clean Water Act.
- Safety**  
Traffic safety programs aimed at protecting workers and the public.

# Contact Information

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