US DOT Datapalooza Transportation Performance Management

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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

- ***S**pecific*
- ***M**easurable*
- ***A**chievable/Attainable*
- ***R**esults oriented*
- ***T**ime-bound*

Agency wide and office/ district level plans are aligned

SHA Decision-making Framework

WHY?	HOW?	WHAT/ WHEN/ WHERE?
Goals/ Needs	**Process/ Program**	**Projects/ Outputs**
SAFETY	CSIS/ CSIL RSA/ PRSA Safety Corridors	Spot/ Corridor Level Safety Improvements Major/Mid-Major
MOBILITY	Annual Mobility Report MD Statewide Model Comp. Hwy. Corr. (CHC)	Major/Minor Projects Signals, Bike/ Peds ATDM, Incident Mgmt.
SYSTEM PRES.	Transportation Asset Management Systems (Pavement, Bridges, Signals)	Resurf, Bridge Repair/ Rehab., CC Adaptation, Signals, etc..
ENVIRONMENT	Green Infrastructure Carbon Neutral Corr.	SWM Facilities Reforestation TMDL Reductions

Outcome

Safe, well-maintained and reliable highway system for Maryland's communities, economy and environment

SHA Mobility / Economy KPA

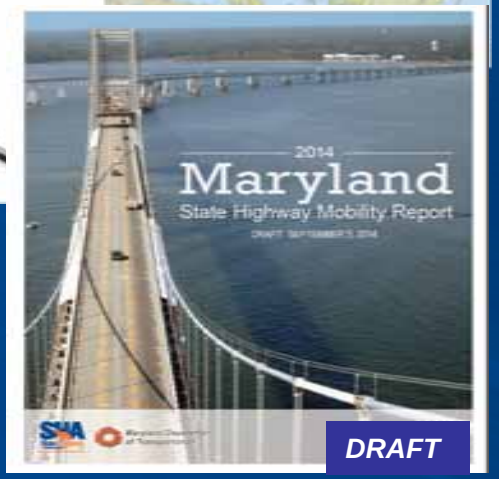
Various objectives, performance measures and strategies to achieve SHA Mobility goals

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

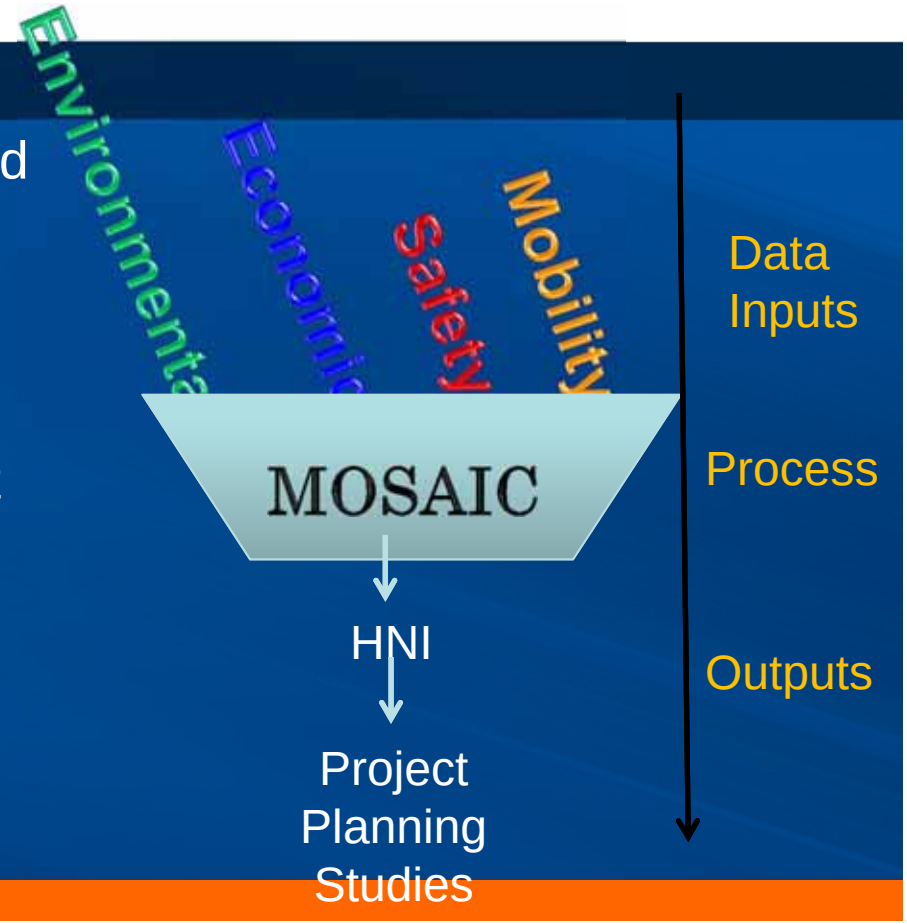


SHA Decision-support Tools & Applications

- 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.

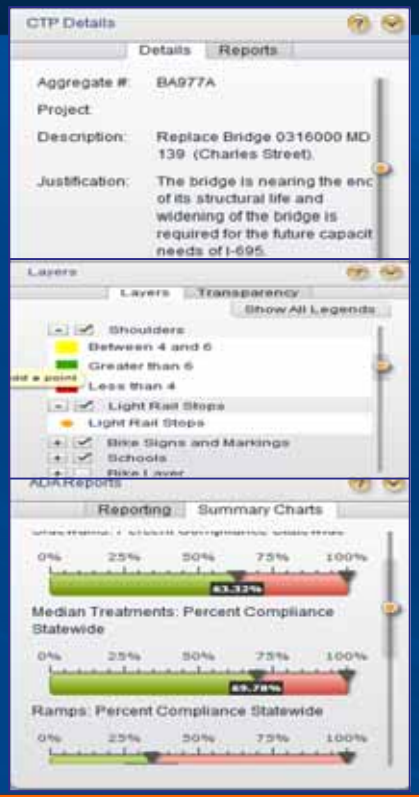
- Model Applications
  - System Performance and Long-Range Planning
  - Corridor Studies
  - Scenario Planning
  - Freight Movement

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

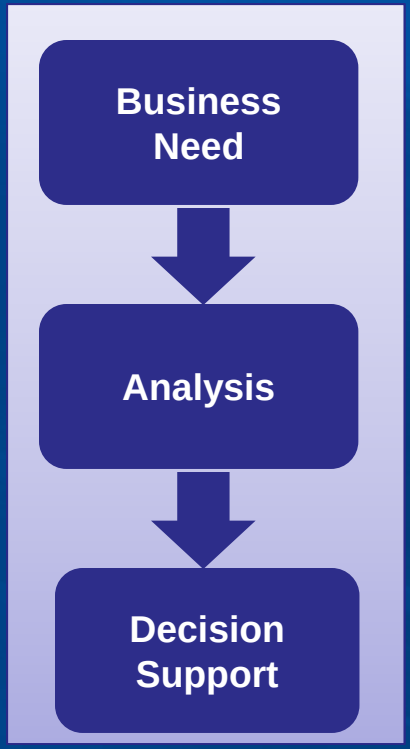
1. Operational e-GIS: supports day-to-day business needs

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

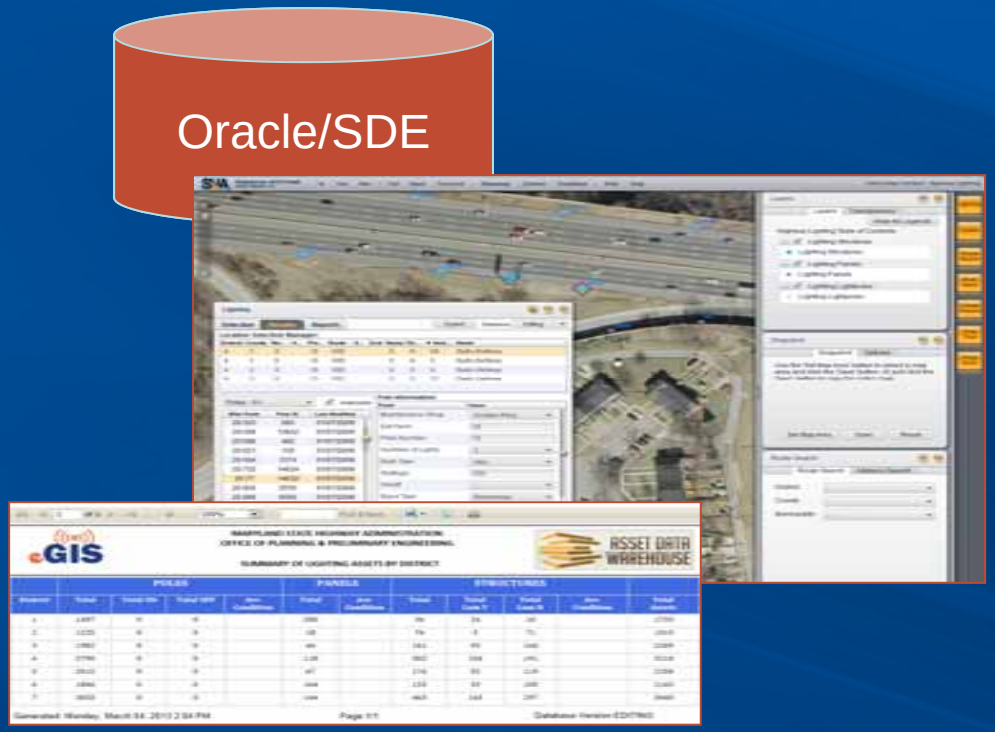
5. Mobile e-GIS: Could be the same as 3-4



Asset Data Warehouse

- Spatial Data Inventory
  - Lighting Assets
  - Signs
  - Traffic Barriers
  - Rumble Strips
  - Line Striping
  - Weather sensors

- Integrated data sources
- Web-based editing
- Reporting



Dashboards

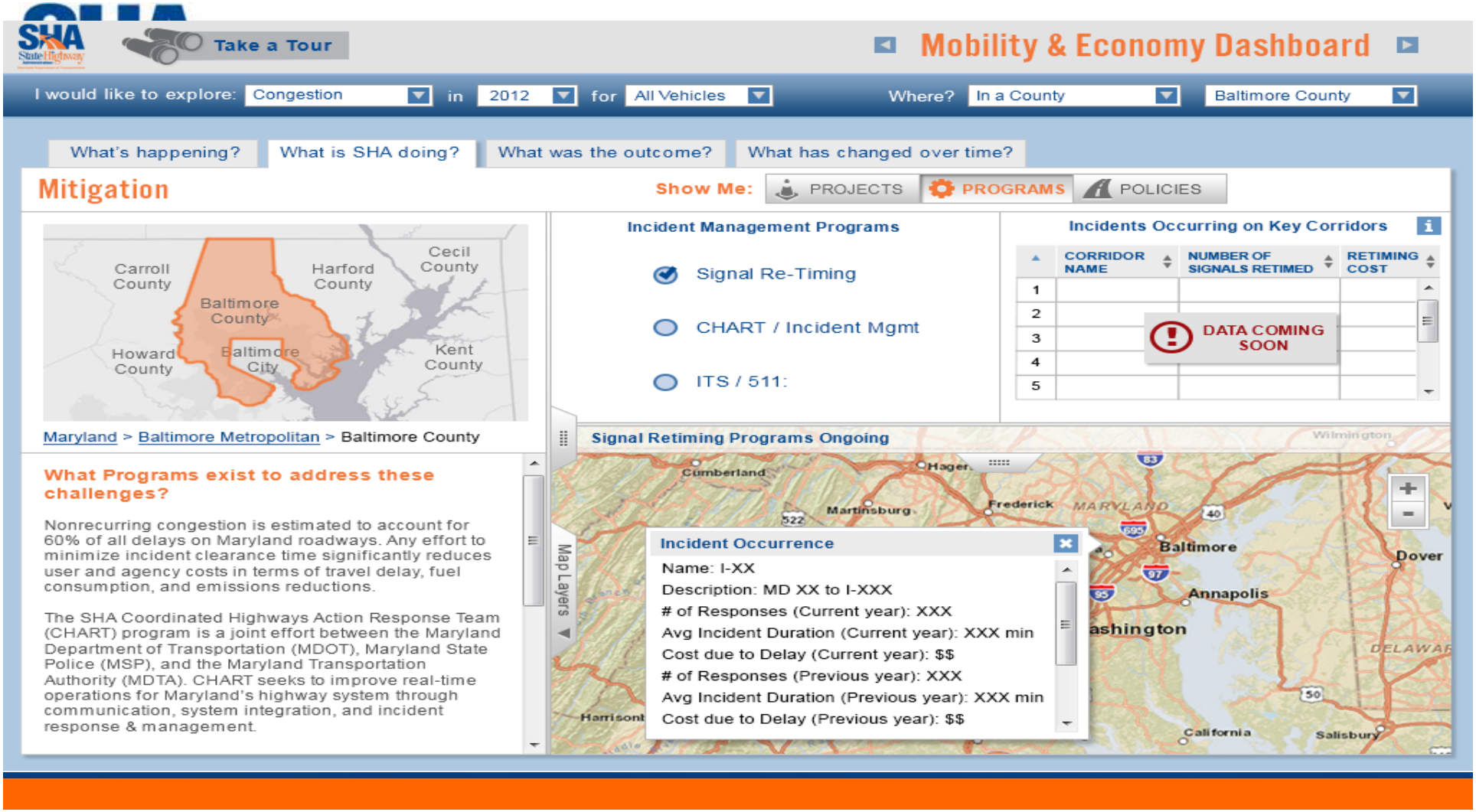
- Tell a story
- Increase transparency
- Increase accountability
- Showcase SHA's performance-based approach
  - More efficient investments

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
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
Carroll County
Harford County
Cecil County
Baltimore County
Howard County
Baltimore City
Kent County
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
4
5
DATA COMING SOON
Signal Retiming Programs Ongoing
Map Layers
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): $$
# of Responses (Previous year): XXX
Avg Incident Duration (Previous year): XXX min
Cost due to Delay (Previous year): $$
Cumberland
Hagerstown
Martinsburg
Frederick
MARYLAND
Baltimore
Annapolis
Dover
Wilmington
California
Salisbury

Mobility 1st 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

Contact Information

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