Mobility and Economy Dashboard

Promoting Maryland SHA's Performance-Based Approach to Safety and Mobility Improvements

SHA State Highway Administration
Maryland Department of Transportation

JMT TECHNOLOGY GROUP

ECO INTEGRATION
ENGINEERING • CONSTRUCTION • OPERATION

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Agenda

- Project Overview
  - Vision
  - Key Messages
- Application Features
- Demonstration
- System Architecture and Technologies
- Challenges and Way Ahead

Performance Based Planning

- Vision: Provide a world class highway system
- SHA Business Plan – Key Performance Areas:
  - Highway Safety
  - Mobility & Economy
  - System Preservation and Maintenance
  - Management of the Agency
  - Environmental Compliance and Stewardship
  - Customer Communications, Service and Satisfaction

Mobility & Economy Goal: *Support Maryland's economy and communities through enabling the reliable movement of people and goods*

M&E Performance Measures

Travel reliability objective:

- Achieve an annual user cost savings of at least $1.1 billion as a result of congestion management.

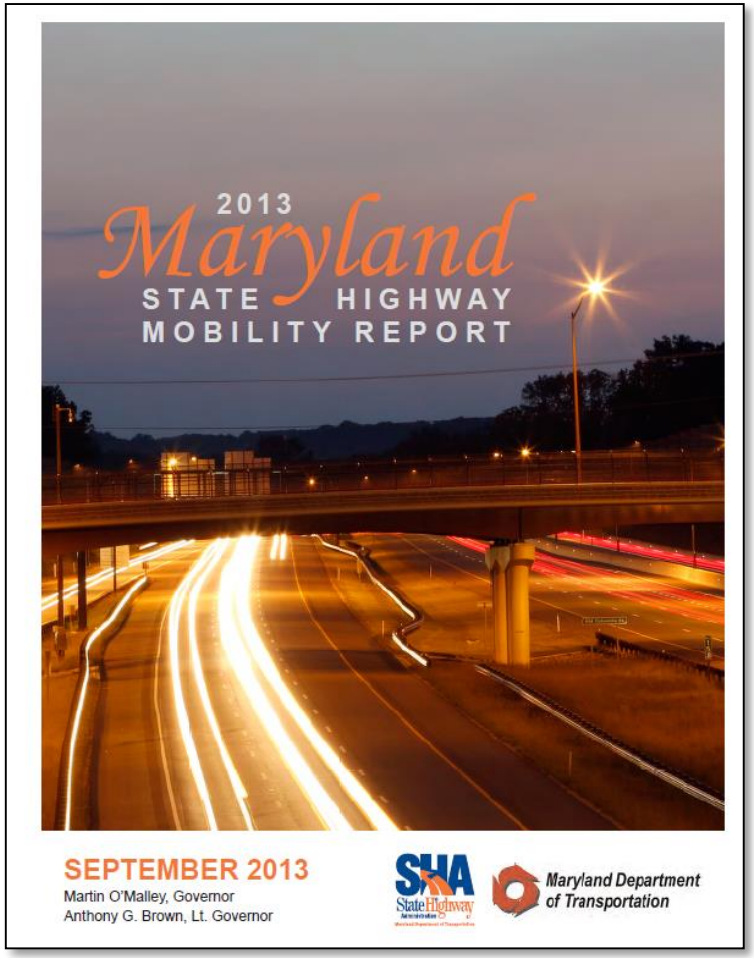
Performance measures:

- Annual user cost savings due to congestion management.
- Average incident duration.
- Percent of freeway lane-miles with average annual volumes at or above congested levels.
- Reduction in vehicle miles traveled through park and ride usage.
- Average weekday utilization of SHA-operated statewide park and ride facilities.

Data Driven Approach

- Mobility Report

  www.roads.maryland.gov/OPPEN/2013_Maryland__Mobility.pdf

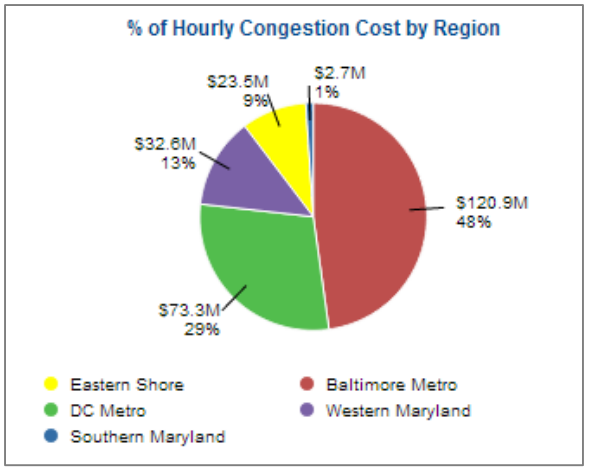


Dashboard Goals

- Increase transparency
- Increase accountability
- Showcase SHA's performance-based approach
  - Monitor system from year to year using performance measures
  - More effective investments
- Provide an integrated web-based solution
  - Report annual key mobility performance indicators
  - Report mitigation strategies
  - Interactive charts, maps, and corridor-level impact analysis

Key Messages

- What is Happening? (Trends)
  - Congestion
    - Measured using **Travel Time Index (TTI)**
    - Recurring congestion only
  - Reliability
    - Measured using **Planning Time Index (PTI)**
    - Variability of travel time
  - Traffic Volume
    - Measured using **Average Vehicle Miles Traveled (AVMT)**
    - Number of vehicles times the distance they're traversing the network
  - Freeways and expressways only



Key Messages

- What is SHA doing about it? (Mitigation)
  - Projects
    - Major and Minor Projects
  - Programs
    - Signal retiming
    - CHART/Incident Management
    - Intelligent Transportation System/511
  - Policies
    - Park N Ride
    - HOV Users
    - Reversible Lanes
    - Bicycle
    - Pedestrian
    - Transit Oriented Development
    - MDTA Toll Lanes

Key Messages

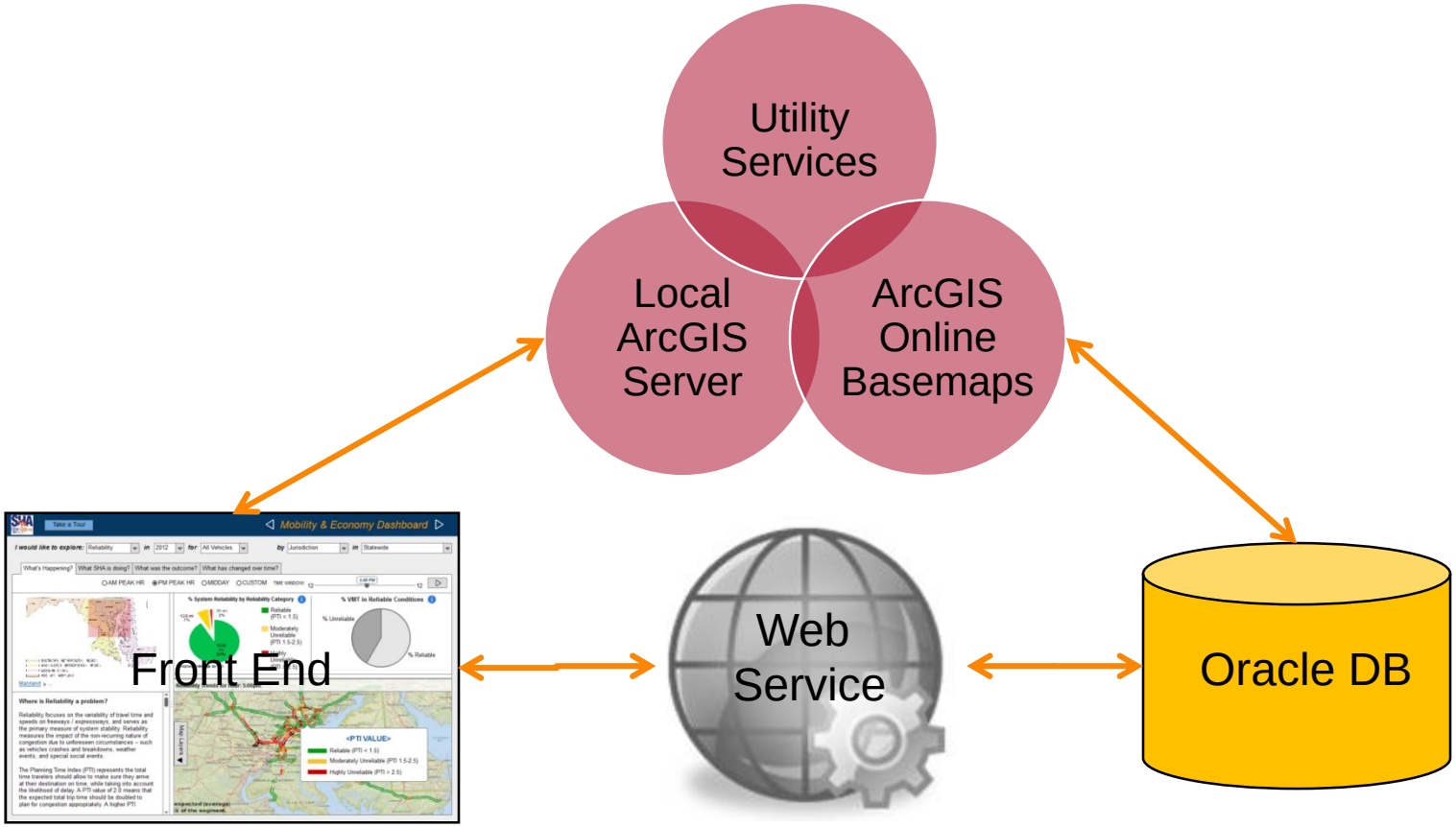
- How things have changed over time (Past Trends)
  - Year to year comparisons
  - Is the highway system performance improving?
  - Is there an increase in travel demand?

Application Features

- Review performance metrics
  - View data by year and by time of day
  - View aggregated and differentiated data
- Mapping
  - Quickly identify problem areas
  - Animate over 24 hour period
  - Overlay mitigation strategies with hotspots
- Perform different types of geographic analyses
  - By jurisdiction or corridor
- Provide data in chart format with metadata

Demonstration

System Architecture



Technologies Used

- Back End
  - Oracle
  - Java
  - .NET Web API

- Front End
  - Ember MVC JavaScript framework
  - HTML 5
  - JavaScript libraries (Ember MVC and jQuery)
  - Esri ArcGIS Server API for JavaScript
  - D3 - JavaScript rendering library for charting
  - SCSS

Challenges

- TMC vs SHA's Linear Referencing System
  - INRIX data
  - SHA volume data
- Data Availability
  - Dashboard requires data by year and often by hour
  - Data owner/stakeholder buy-in
- ArcGIS Server 10.2 upgrade

Way Ahead

- Mobility & Economy Dashboard
  - Release to public early 2015
- Asset Management Dashboard
  - Requirements validation and source data evaluation
  - Development, testing, and deployment
- TMDL Dashboard
  - Enhancements to the Bay Restoration Viewer
- Map 21 Dashboard
- Safety Dashboard

Questions?

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