Presentation Outline

- HPMS / TPM Background
- Use Case Scenarios
- Data Quality Improvement
- Data Integration
- Questions?
HPMS / TPM Background
HPMS Background

- Developed in 1978
- Roadway condition & performance data
- Used to help determine apportionment of Federal-aid funds
- Key source of data for biennial *Conditions & Performance (C&P) Report to Congress*
- Program objectives/business needs are reassessed periodically
Core Data Components

- Attribute Data
  - Inventory
  - Route
  - Traffic
  - Geometric
  - Pavement
  - Special Networks

- Geospatial Data
  - Linear Referencing System (LRS)
Uses of HPMS Data

- **Federal Uses**
  - Federal-Aid Funding Apportionment Formula
  - Highway Economic Requirements System (HERS) Model
  - Highway Safety Improvement Program (HSIP)
  - Freight Analysis Framework (FAF)
  - Transportation Performance Management (TPM)

- **Non-Federal Uses**
  - Statewide Planning Programs
  - Transportation Research
What is Transportation Performance Management (TPM)?

A strategic approach that uses system information to make investment and policy decisions to achieve transportation system performance goals.
TPM Rulemaking – Effective 5/20/2017

• Final rule issued for the following performance areas:
  • Pavement & Bridge (PM2)
  • System Performance, Freight, and CMAQ (PM3)

• HPMS data collection/reporting requirements have been revised in order to support finalized rules
Pavement Condition (PM2) Metrics

- International Roughness Index (IRI)
- Present Serviceability Rating (PSR)
- Surface Type
- Rutting
- Faulting
- Cracking Percent
# Pavement Condition (PM2) Measures

<table>
<thead>
<tr>
<th>Measure Area</th>
<th>Performance Measures</th>
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| National Performance Management Measures to Assess Pavement Condition | • **Interstate System:**  
  • Percentage of pavements in **Good** condition  
  • Percentage of pavements in **Poor** condition  

• **Non-Interstate NHS System:**  
  • Percentage of pavements in **Good** condition  
  • Percentage of pavements in **Poor** condition |
System Performance, Freight, & CMAQ (PM3) Metrics

- Directional Annual Average Daily Travel (AADT)
- Level of Travel Time Reliability (LOTTR)*
  - AM, PM, Midday, Weekend
- Travel Time*
- Truck Travel Time Reliability*
  - AM, Midday, PM, Overnight, Weekend
- Truck Travel Time*
- Peak Hour Excessive Delay (PHED)*

*The data needed to generate these metrics can be obtained either from the National Performance Management Research Dataset (NPMRDS), or an equivalent data source.
## System Performance, Freight, & CMAQ (PM3) Measures

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<th>Performance Measures</th>
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</table>
| Performance of the National Highway System (System Performance) | • **Interstate Travel Time Reliability Measure:**  
  o Percent of person-miles traveled on the Interstate that are reliable  
• **Non-Interstate Travel Time Reliability Measure:**  
  o Percent of person-miles traveled on the Non-Interstate NHS that are reliable |
| Freight Movement on the Interstate System | • **Freight Reliability Measure:**  
  • Truck Travel Time Reliability (TTTR) Index on the Interstate |
| Performance of the National Highway System (System Performance) | • **Peak Hour Excessive Delay (PHED) Measure:**  
  o Total excessive delay (person-hours) on the NHS |
Use Case Scenarios
Pavement Condition Assessments
Travel Time Reliability Observations
Traffic Data Quality Control
Bridge Location Verification
Crash Location Analysis

ArcGIS Fatal Accident Locations (FARS 2017)

Legend
FARS 2017
- Urban
- Rural
- Not Reported
- Not in State Inventory
- Unknown

Decennial Census 2010 Urban (population GT 5k)

FHWA_AdjUrbanBoundary_052617

North Pacific Ocean
Crash Location Analysis
Data Quality Improvement
NPMRDS Network Discrepancies
NPMRDS Network Resolution
Pavement Data Coverage Issues
Pavement Data Coverage Verification
FHWA HEP GIS Application
Data Integration
Integrated Transportation Information Platform (ITIP)

“Integrated Systems – A suite of integrated business systems (e.g., financial, human resources, acquisition, information technology, and knowledge inventory) is in place to enhance processes that facilitate effective and timely decision-making, create effective business processes, and optimize use of organizational resources.”
TPM Measure Computation/Reporting Workflow

Integrated Transportation Information Platform (ITIP)

FHWA Data Sources
- HPMS
- RADS
- NBI
- FMIS

PM2 & 3 Metrics

Measure Computations
- Extract: Batch Process: Data Consolidation, Event Driven: Data Propagation
- Transform: Data restructuring & Reconciliation, Data Cleansing & Aggregation
- Load: Bulk Loading, Changed Data Capture, Incremental Updates

Data Integration
- Staging Area

Data Store
- Metadata Repository
- EDW
- Checks & Balances

Data Delivery
- Business Intelligence
- Data Exploration
- Data Visualization
- Dashboards

Data Access Services

Application/Data Security
- TPM Website
- Data Access
- Data Users
- Enterprise Portal
- System Integration

Java EE
.NET
Internal/External Systems
Existing ITIP Components
ITIP Planned Activities

- Migrate application to a COTS solution-based platform to allow for enhanced integration, analytics, reporting and dissemination
- Perform application redesign, development, and deployment work needed to support pending migration to the agency’s Microsoft Azure Cloud (currently in development)
THERE WILL BE NO QUESTIONS

ARE THERE ANY QUESTIONS?
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