

# **Data Opportunities and Challenges in Meeting MAP-21 Performance Measure Requirements**

Presentation for TRB Plenary Session 2:

Mandates of MAP-21

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# MAP-21 Freight Initiatives and Programs with Performance Measures Linkages

- National Performance Measures
- Statewide and Metropolitan Planning
- State Freight Plans
- National Freight Network
- Enhanced Federal Share
- Jason's Law Truck Parking
- Freight Conditions and Performance Report

# Data is Needed to Support Requirements

- FHWA has several sources for data
  - Freight Performance Measure Program (FPM)
  - Freight Analysis Framework (FAF)
  - Highway Performance Monitoring System (HPMS)
  - Weigh-in-Motion (WIM)
- Researching new data opportunities and applications



# No Data Set is Perfect, Challenges Exist

- Difficult and expensive to collect
- Freight Data is often proprietary in nature
- Multi-modal data is needed to provide an accurate picture
- Needs to be analyzed regionally or at the corridor level, as well as locally



# National Performance Management Research Data Set

- To assist in meeting MAP-21 requirements, FHWA will make available vehicle probe data.
- States and MPOs may use this data for MAP-21 and in developing their own performance measurement programs.

# FHWA Probe Data Requirements

- Support FHWA Freight Performance Measures Program and Urban Congestion Report
- Assist in implementation of performance based Federal-aid program
- Coverage of entire NHS system or logical sub set
- Actual probe data, not imputed or modeled data

# Probe Data to be Acquired

Average travel time for individual road segments in 5 minute increments for:

- All vehicles
- Passenger vehicles
- Freight trucks

Travel time data will include:

- Time
- Date
- Direction
- Travel Time
- Location (segment id, route, State)

# Geographic Coverage of Data

- Approximately 220,000 centerline miles of road
  - United States Interstate System;
  - National Highway System (NHS) including NHS intermodal connectors;
  - Any roadway facilities classified as principal arterials not included in the current NHS;
  - Strategic Defense Network Roadways (STRHANET); and
  - Border crossings on principal arterials.
  - Arterials within a 5 mile radius on either side of the border at the top 20 United States/Canada and top 6 US/Mexico Border Crossings as measured by average daily truck trips.
- System will be broken down into logical segments that range from approx. ½ mile to 10 miles



# Data Sharing Agreements

FHWA use for:

- supporting internal organization operations
- disseminating aggregated information to the public consistent with FHWA's transportation responsibilities

State DOT or MPO use for:

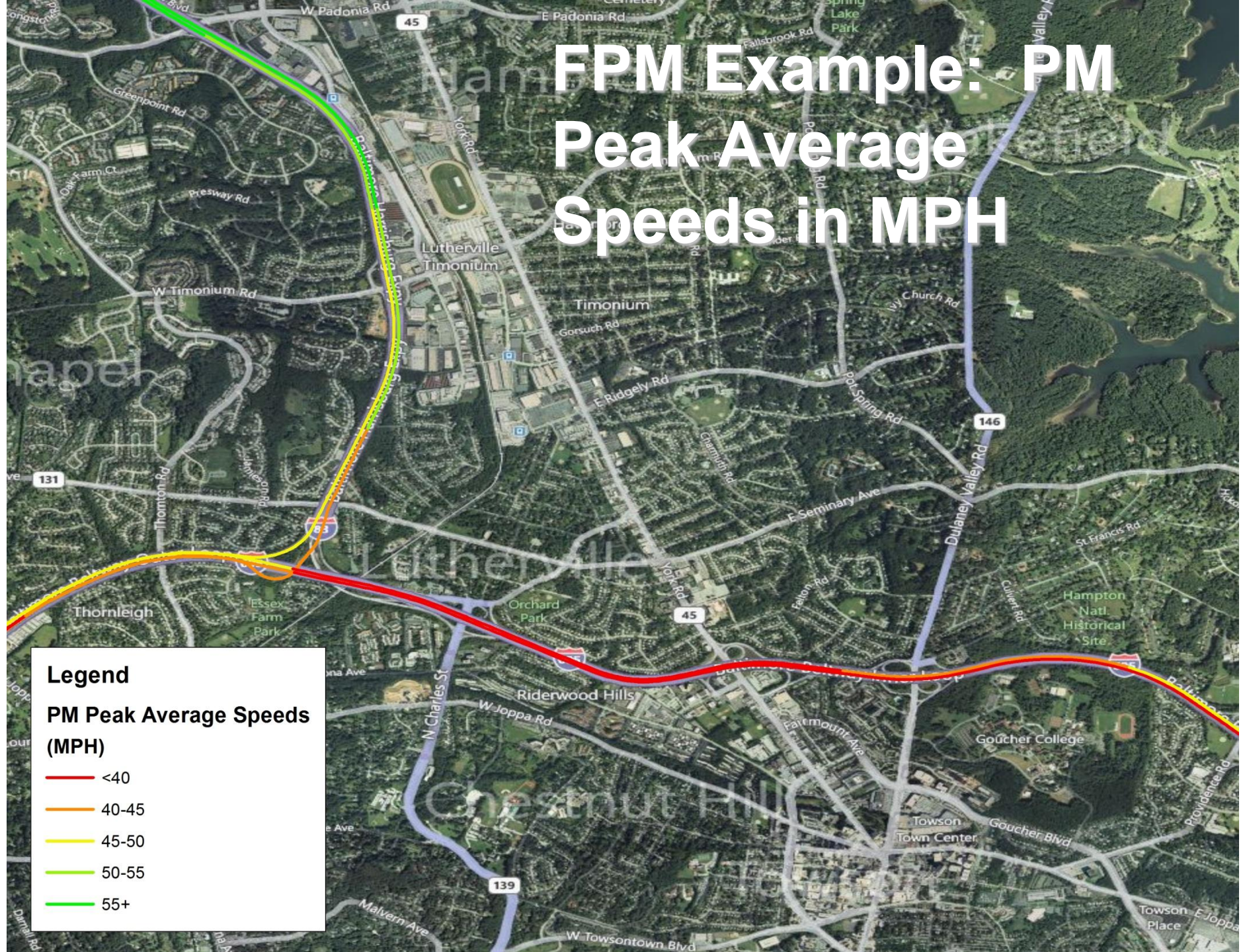
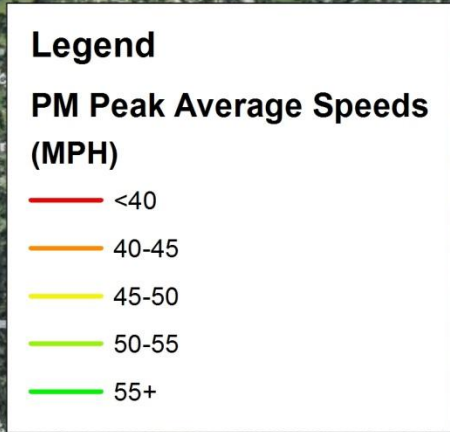
- supporting meeting any federal requirements related to performance indicators, measures and transportation program management
- disseminating aggregated information to the public consistent with transportation responsibilities as they pertain to federal performance management requirements

# Data Validation

- Data Validation and Calibration Quality Plan - describes the actions and activities that will document and repeatedly confirm the quality of the data set on a quarterly basis.
- Descriptive metadata - explains the data set



# FPM Example: PM Peak Average Speeds in MPH

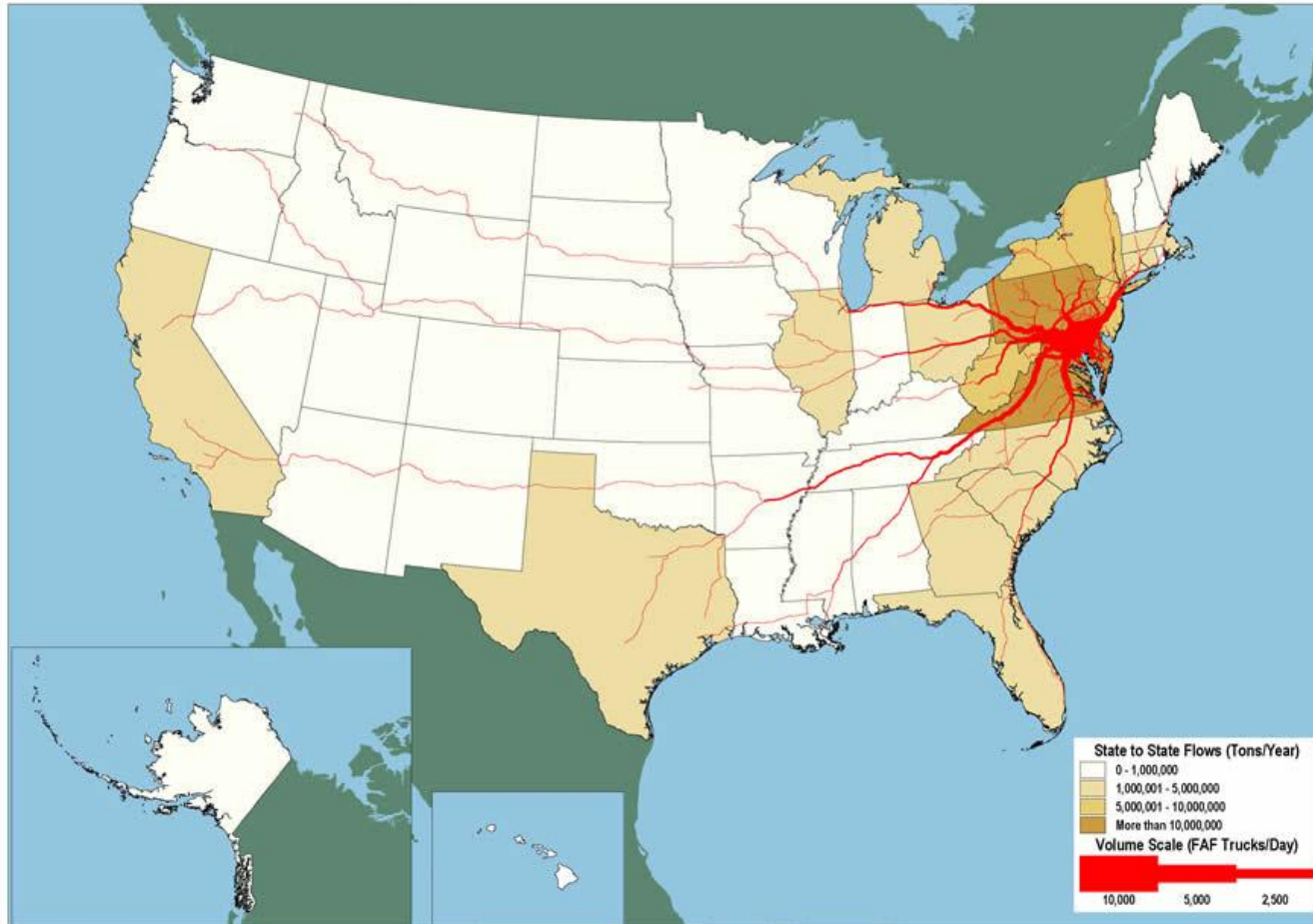


# Freight Analysis Framework - An Understanding of Freight Transportation

- **How much & what** freight moves from place to place?
  - Weight (tonnage; tonnage-mile)
  - Value (\$)
  - Type of commodity
- **Where & how** is freight moving?
  - Origin & Destination (Domestic & Foreign; Imports & Exports)
  - Type of mode
- **When & how** is freight being carried?
  - Historical data
  - Provisional Annual Data for current year
  - Forecast values for 2015-2040

# FAF Example: Maryland's Main Trade Corridors

Major Flows by Truck To, From, and Within Maryland: 2007



Note: Major flows include domestic and international freight moving by truck on highway segments with more than twenty five FAF trucks per day and between places typically more than fifty miles apart.

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.1.2, 2011.

# What FAF Does Not Do

- Estimate flows accurately for:
  - local regions
  - individual routes
- Estimate temporal variations in freight flows
- Include effects of capacity limitations on forecasts of future demand
- Forecast future capacity expansion
- Adjust for changes in costs of transportation



# Highway Performance Monitoring System

- National level highway information system on the extent, condition, performance, use and operating characteristics of the nation's highways.
- Modifications reflect changes in the highway systems, legislation, and national priorities, to reflect new technology, and to consolidate or streamline reporting requirements.

# Existing Data Initiatives that Support MAP-21

- Improve quality and consistency of pavement data in HPMS:
  - Development of Pavement Monitoring Guide
  - Possible new requirements for reporting data such as standard reporting intervals
  - Division Office reviews of data
  - New tools for analyzing data
- Expansion of HPMS networks to include dual carriageways and local roads
- Development of Data Integration Platform
- Establishment of Data Governance Advisory Committee
- Development of new data analysis and visualization tools like HIPAT



# Data Improvements are Necessary to Advance Performance Measurement

- Data gaps exist
- Data needs continuous improvement
- Data also needs validation
- Focus on refining and collecting data, new sources
- Improving measurement areas such as
  - Economics
  - Arterials
  - Bottlenecks
  - Volumes
  - Multi-corridor
  - Strategic investment

# Future Data Efforts

- Providing probe data for freight and passenger movements.
- Improve data quality through validation and research
- Freight Performance Measurement Primer to assist States and MPOs Enhance FAF modeling
- Identify how FAF and FPM can better complement each other



# Thank You



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