

# Highway Performance Monitoring System (HPMS): Concepts, Data Collection & Reporting Requirements

## Module I



U.S. Department of Transportation  
Federal Highway Administration



# HPMS Background and Core Components

- Lesson 1
  - HPMS Background
- Lesson 2
  - HPMS Core Components Overview

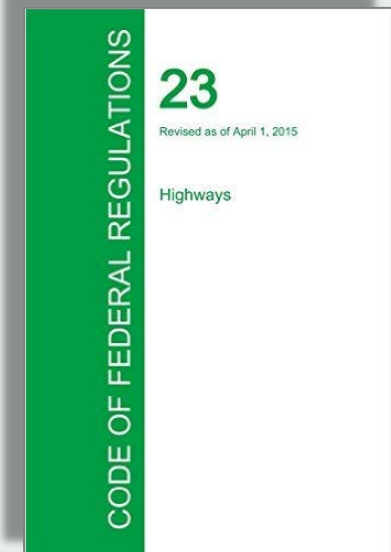
# Lesson One



HPMS Background

# HPMS-related Statute & Regulations

- Statute
  - 23 U.S.C. (United States Code) – “Highways”
- Regulations
  - 23 CFR §1.5\*, §420.105(b)\*
    - State highway info required for Fed-aid program purposes
  - 23 CFR §460.3(b)
    - Certified public mileage
  - 23 CFR §470.105(a)
    - Urban area boundaries

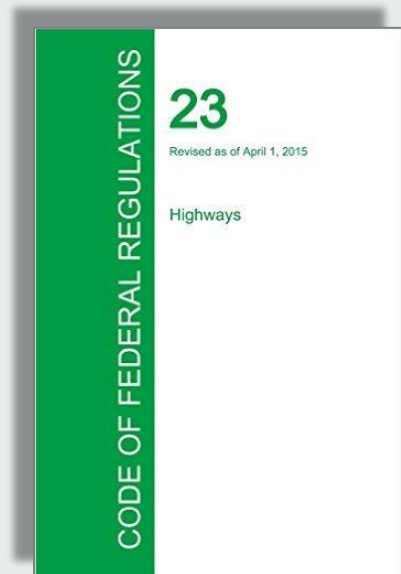


*\*Denotes key regulatory references*

# HPMS-related Statute & Regulations (cont'd)

- Regulations
  - 23 CFR §470.105(2)
    - Functional classification
  - 23 CFR §470.113
    - National Highway System (NHS)
  - 23 CFR §490.207(a)(2)\*
    - TPM - Safety
  - 23 CFR §490.307(a)\*
    - TPM - Pavement condition
  - 23 CFR §490.511(e), 611(b), 711(f)8\*
    - TPM - System performance

*\*Denotes key regulatory references*







# HPMS Background

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

# Scope of HPMS

- All Public Roads
  - Open to public travel
  - Certified by the States' Governors annually
  - Owned by a Federal, State, or local entity
  - Includes privately owned roads (e.g. toll roads)
  - Includes roads located on Indian Reservations



# 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)



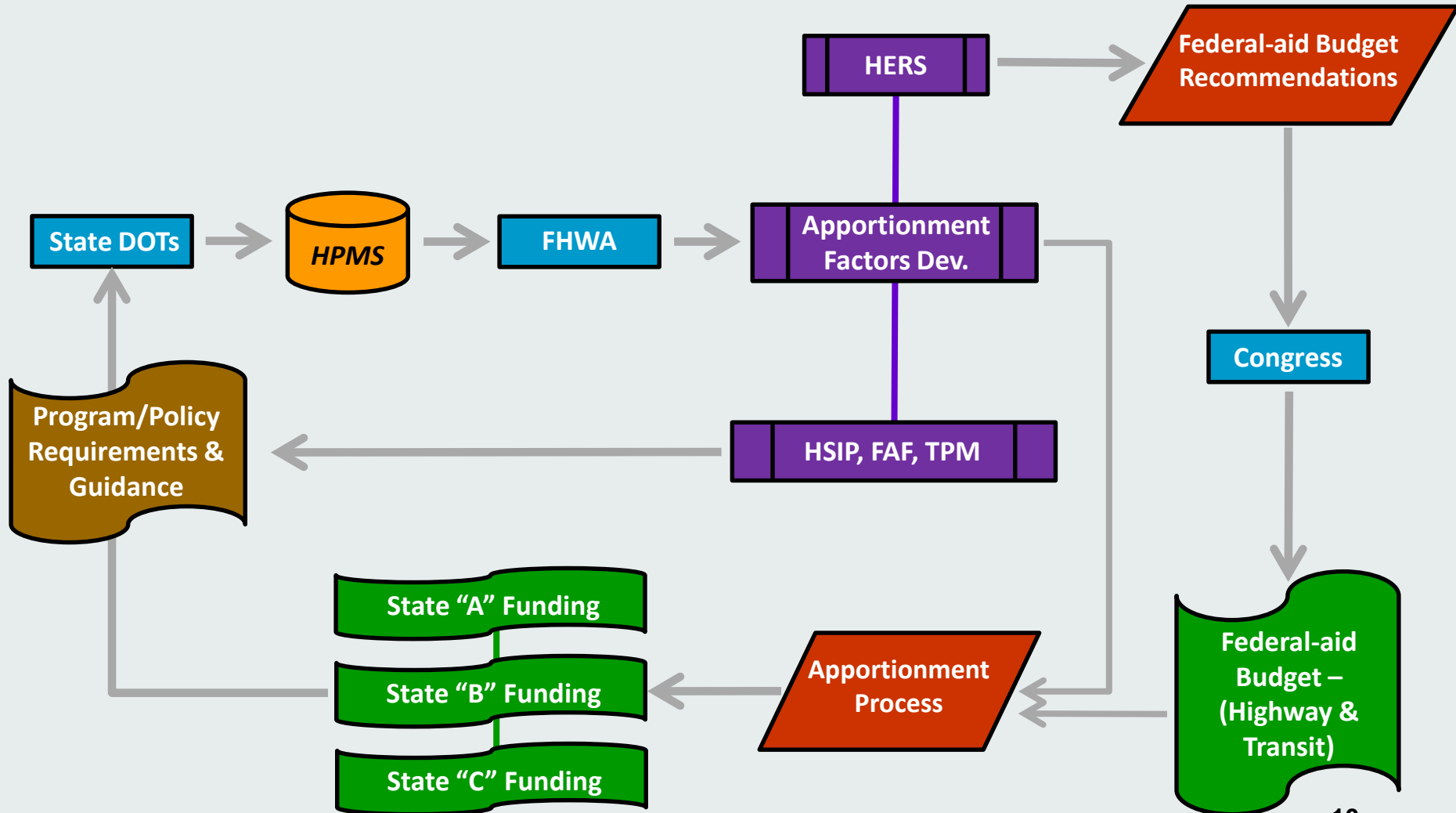


# Uses of HPMS Data (cont'd)

- Non-Federal Uses
  - Statewide Planning Programs
  - Real Estate/Business Sector
  - Transportation Research



# HPMS.....Why It Matters

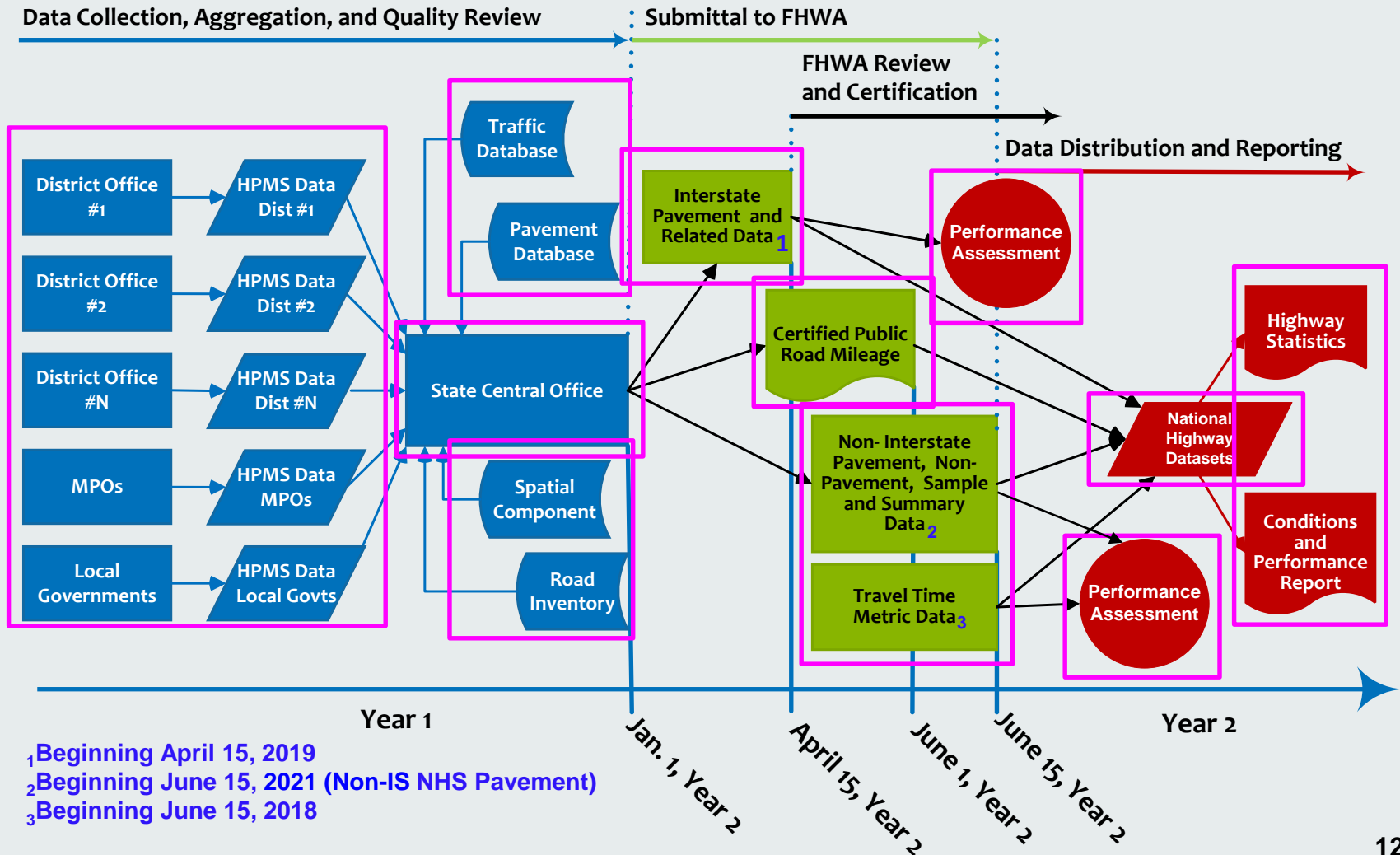


# HPMS Reporting Requirements

- Key annual HPMS submittal dates
  - April 15<sup>th</sup> and June 15<sup>th</sup>
- Mileage must be consistent with Certified Public Road Mileage
- Linear referencing system (LRS) data
- Roadway inventory/attribute data
- HPMS submittal must be transmitted to FHWA via web-based application



# HPMS Workflow / Timeline



# Lesson 1 Summary

- HPMS serves as a major input to the *C&P Report*
- HPMS consists of data for all publically-traveled roads
- The key dates for HPMS submittals are April 15<sup>th</sup> and June 15<sup>th</sup>
- HPMS involves a coordinated effort between FHWA and the States

# Questions???



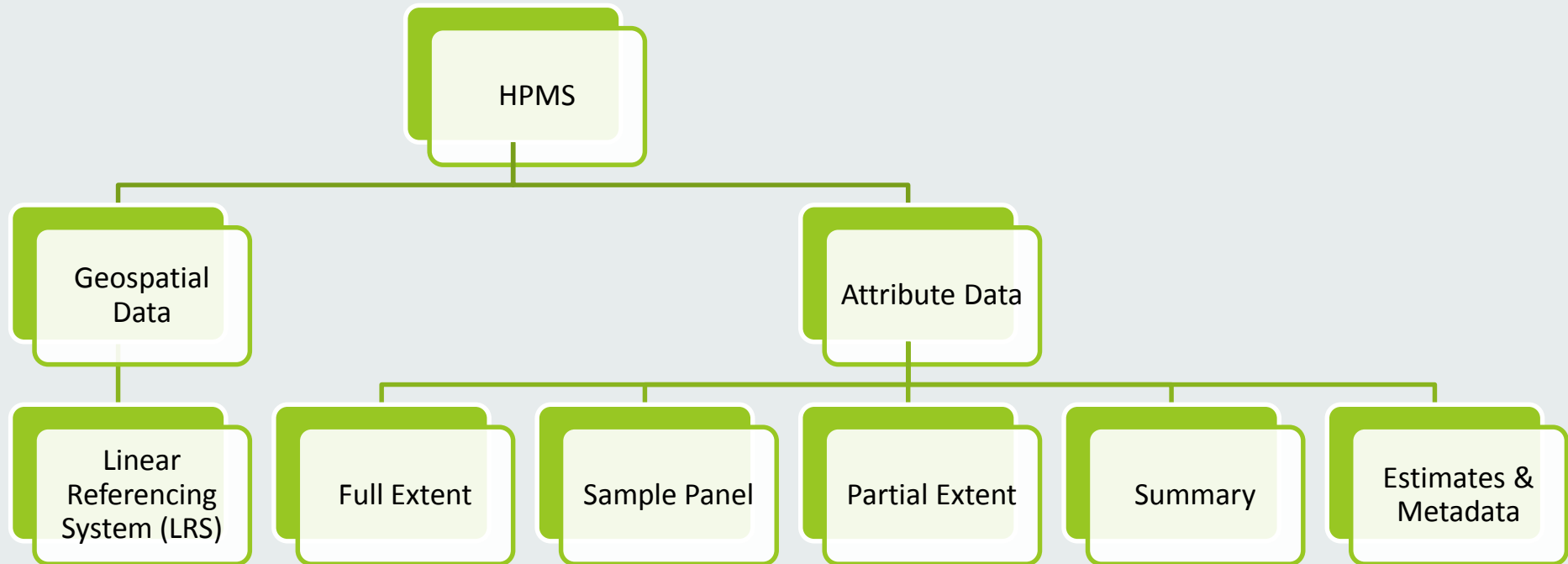
# Lesson Two



## HPMS Core Components Overview



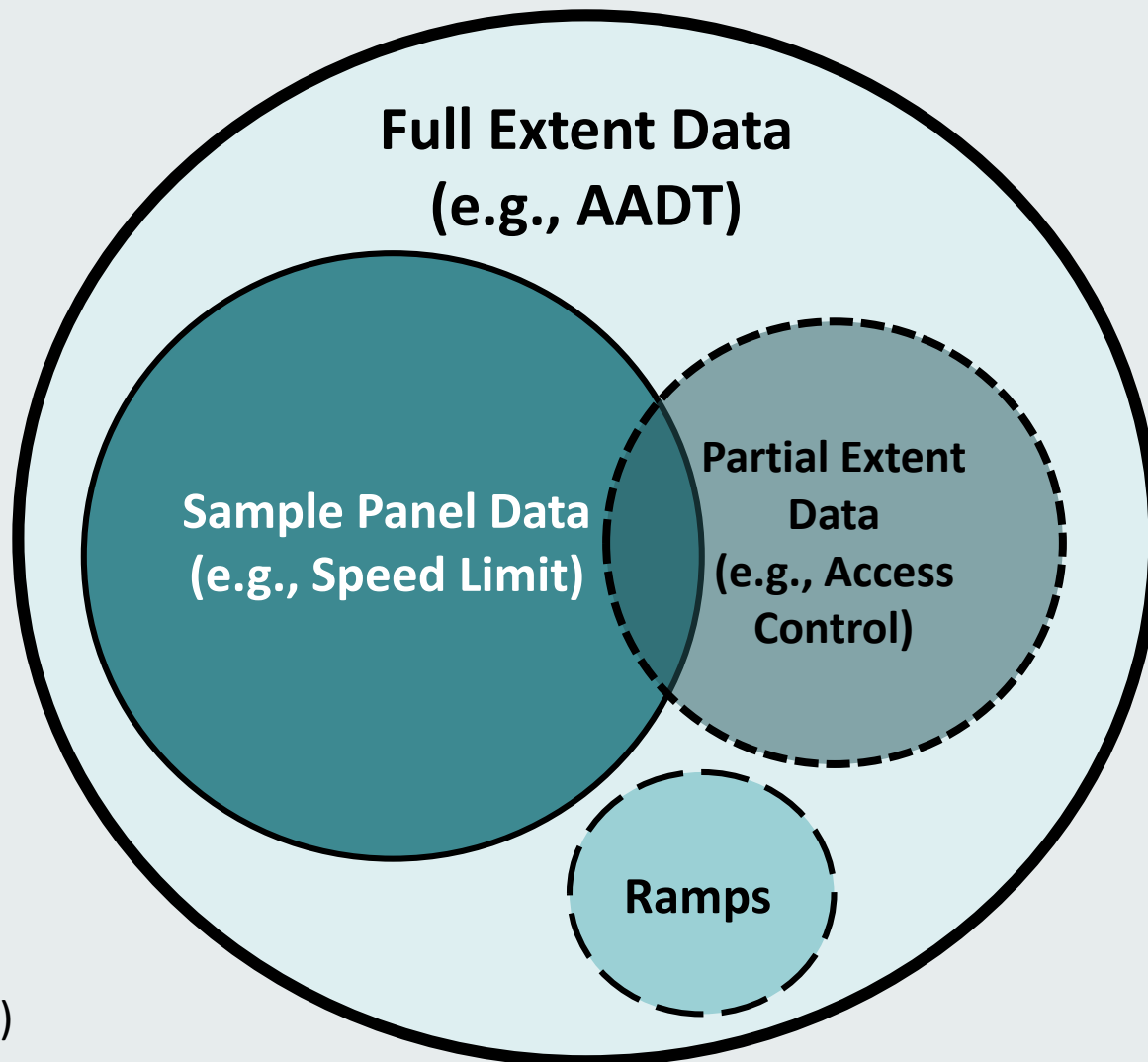
# HPMS Core Data Components



# HPMS Core Data Components (cont'd)

- Full Extent Data
  - Reported for an entire roadway system
  - Reported for ramps at grade-separated interchanges
- Sample Panel Data
  - Reported for randomly selected roadway sections
- Partial Extent Data
  - Reported on a Full Extent basis for certain functional systems and a Sample Panel basis for others

# Extent-Data Relationship



NOTE: Select Full Extent attribute data is required to be reported on ramps (e.g., Functional System)

# HPMS Core Data Components (cont'd)

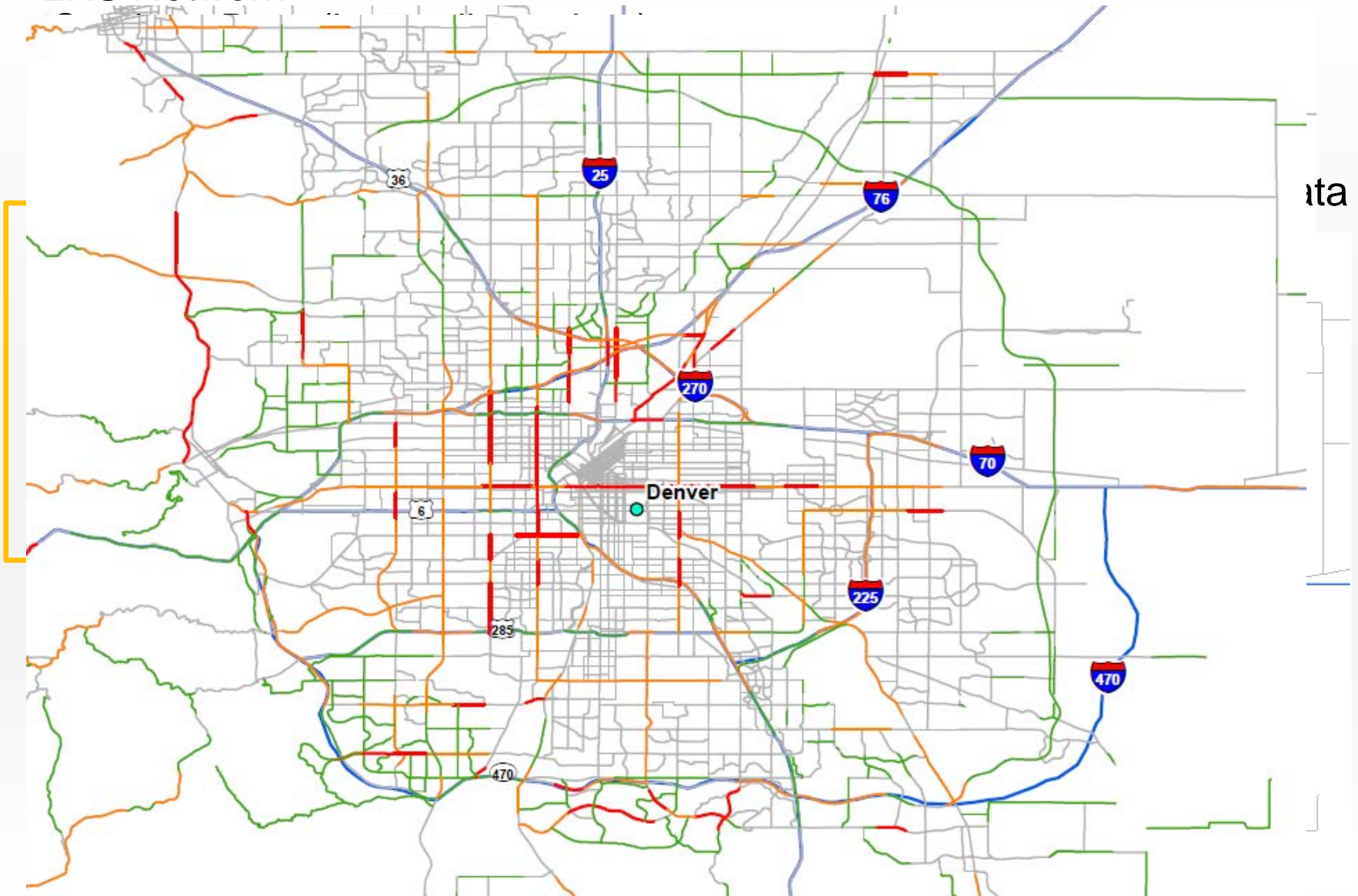
- Summary Data
  - Reported for lower functional system roads
  - Summarized from State, and local data sources
- Estimates Data
  - Reported for various pavement-related data elements
- Metadata
  - Reported various traffic and pavement-related data elements

# HPMS Core Data Components (cont'd)

- Linear Referencing System (LRS)
  - Provides a geospatial representation of a road network
  - Retains record of linear measures along roadways
  - Measured using milepoint, milepost, reference point, etc.
  - Provides the framework for analysis and reporting

# Dynamic Segmentation Process

LRS Network      Dynamically-Segmented LRS Network



# Lesson 2 Summary

- Full Extent, Sample Panel, and Partial Extent Data are reported for roadway sections
- Summary Data is reported as area-wide totals
- Estimates and Metadata provide supplemental descriptive information
- LRS networks provide the framework for geospatial analysis/reporting in HPMS



# Questions???



# Module One Quiz

1) In what year was the HPMS developed?

- a. 1956
- b. 1978
- c. 2010
- d. 1776



# Module One Quiz

2) The HPMS program was established for the purpose of monitoring the condition and performance of the nation's roadway system.

- a. True
- b. False



# Module One Quiz

3) HPMS data is primarily used to determine which of the following?

- a. Federal authorization legislation
- b. Highway Trust Fund development
- c. Apportionment of Federal-aid highway funds
- d. Both b and c



# Module One Quiz

4) HPMS encompasses all roads that are open to public travel, excluding privately-owned roads.

- a. True
- b. False



# Module One Quiz

5) The due date for the annual submittal of HPMS data to FHWA is which of the following?

- a. April 15<sup>th</sup>
- b. July 4<sup>th</sup>
- c. December 25<sup>th</sup>
- d. June 15<sup>th</sup>
- e. Both a and d



# Module One Quiz

6) HPMS is the primary source of roadway and bridge condition and performance data as it pertains to the Federal-aid system.

- a. True
- b. False





# Module One Quiz

7) A State's Certified Public Road Mileage is due to be submitted to FHWA before the annual HPMS submittal.

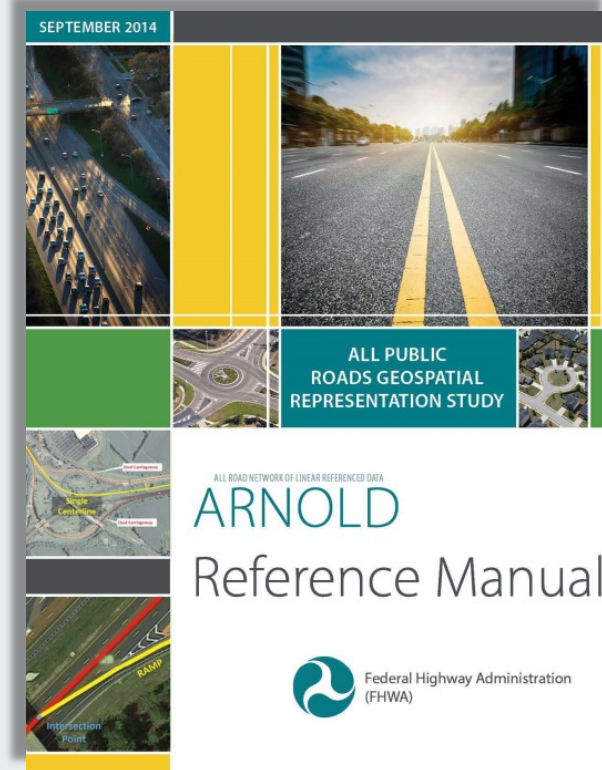
- a. True
- b. False



# Module One Quiz

8) The scope of roads reported into HPMS is to include roads located on Indian Reservations, where applicable.

- a. True
- b. False



# Module One Quiz

9) Full Extent Data is reported for portions of a given roadway system.

- a. True
- b. False



# Module One Quiz

10) Sample Panel Data is reported for randomly selected sections of road.

- a. True
- b. False



# Module One Quiz

11) Partial Extent Data encompasses which of the following?

- a. Full Extent Data
- b. Metadata
- c. Sample Panel Data
- d. Both a and c



# Module One Quiz

12) Which of the following types of data is to consist of information for the lower functional system roads (.e.g. local roads)?

- a. Summary Data
- b. Metadata
- c. Estimates Data
- d. Composite Data

