

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

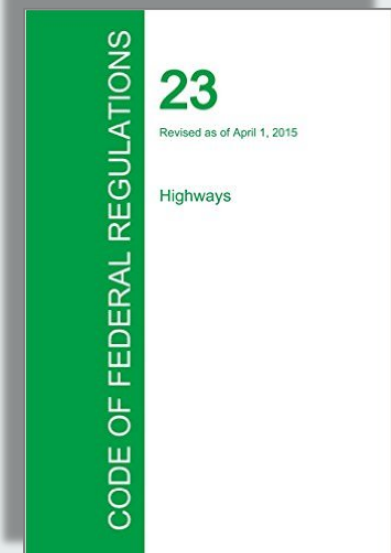
Lesson One



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

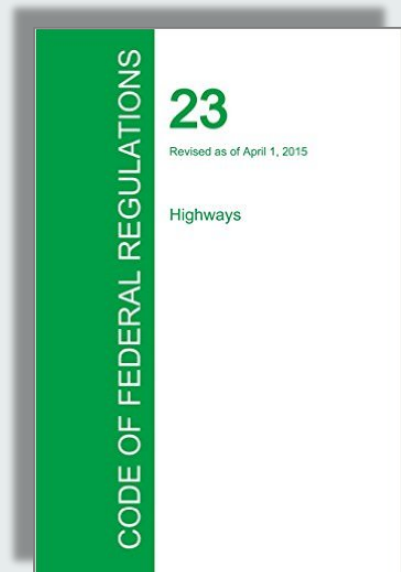


**Denotes key regulatory references*

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)

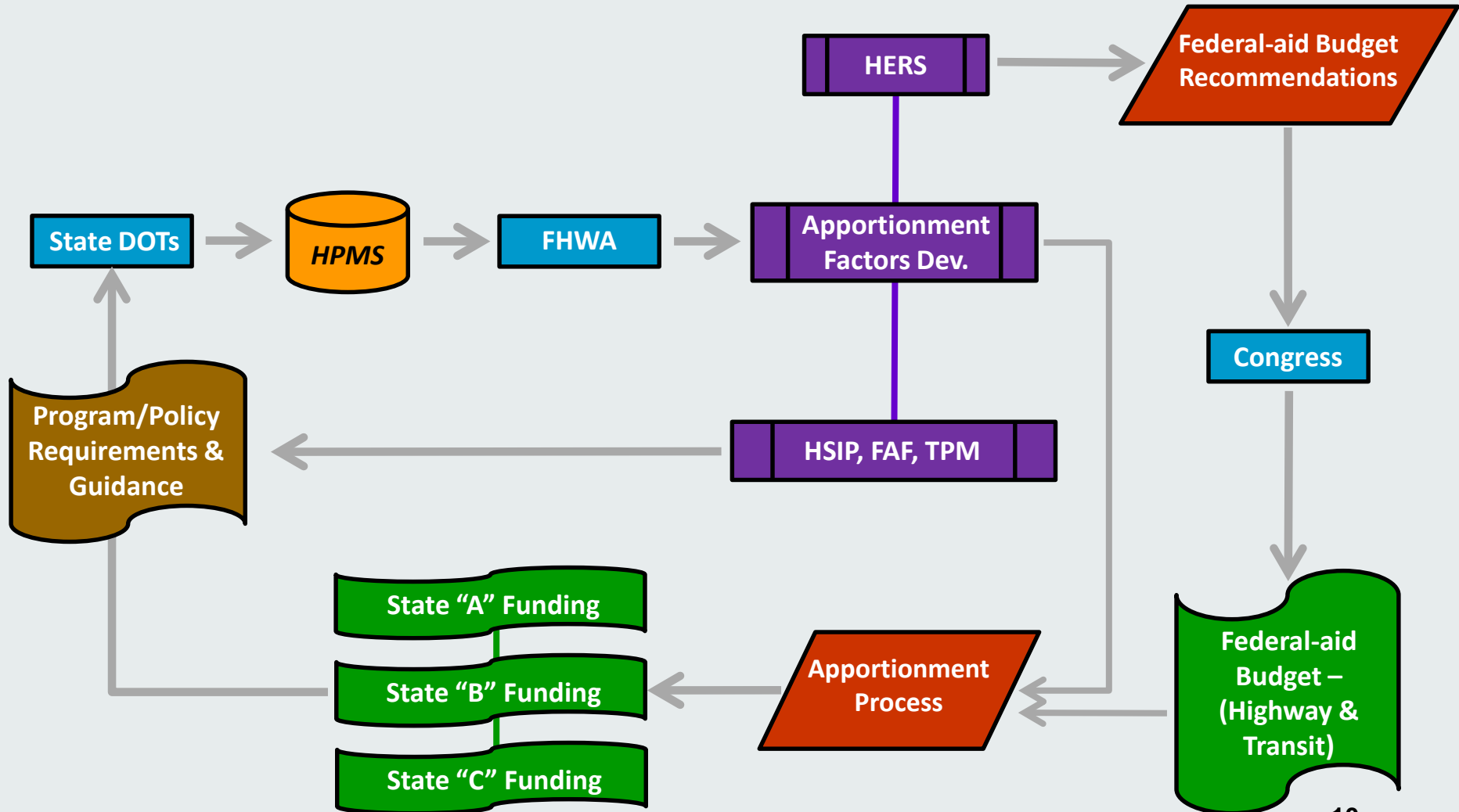


Uses of HPMS Data (cont'd)

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



HPMS.....Why It Matters

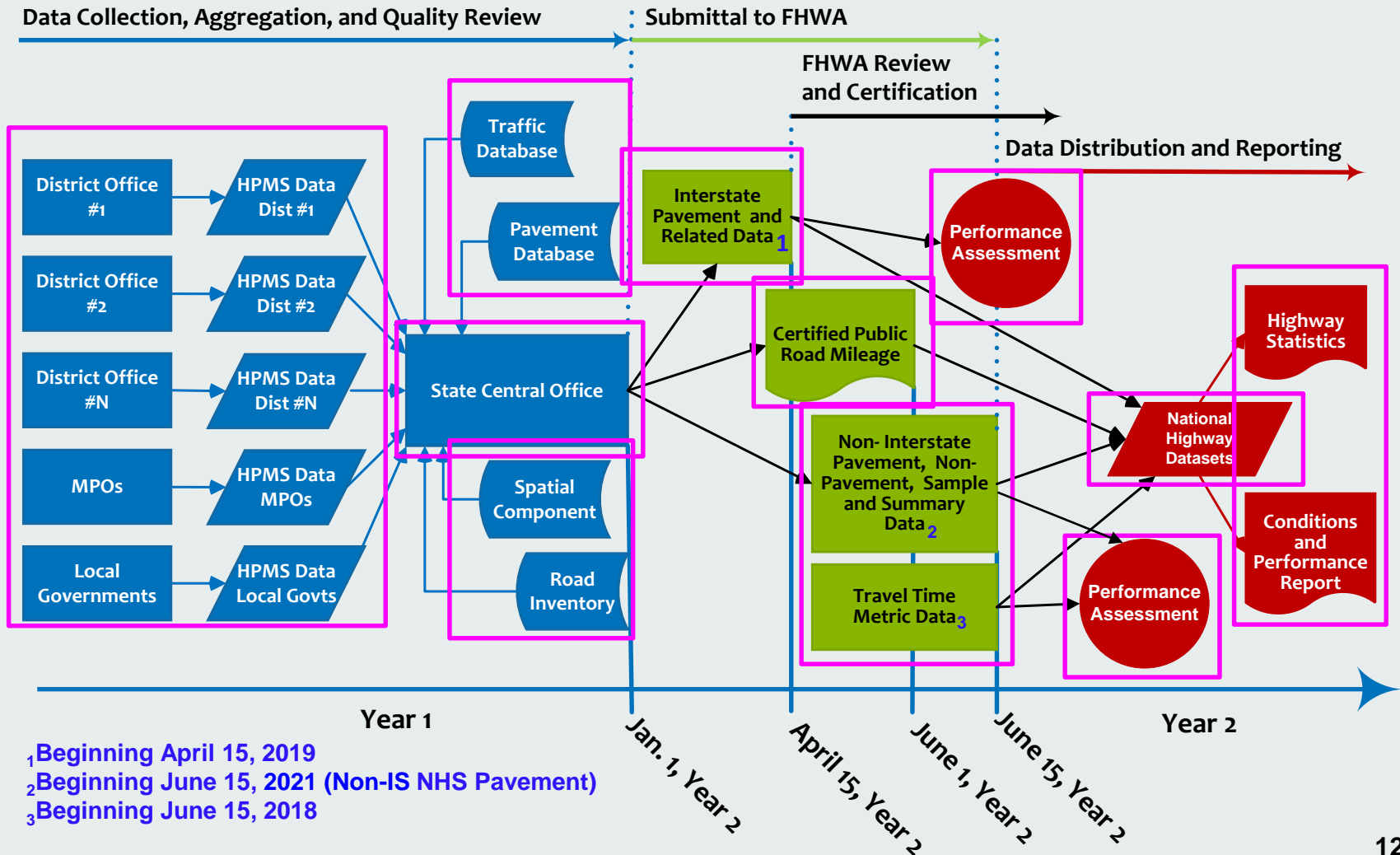


HPMS Reporting Requirements

- Key annual HPMS submittal dates
 - April 15th and June 15th
- 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 15th and June 15th
- HPMS involves a coordinated effort between FHWA and the States

Questions???

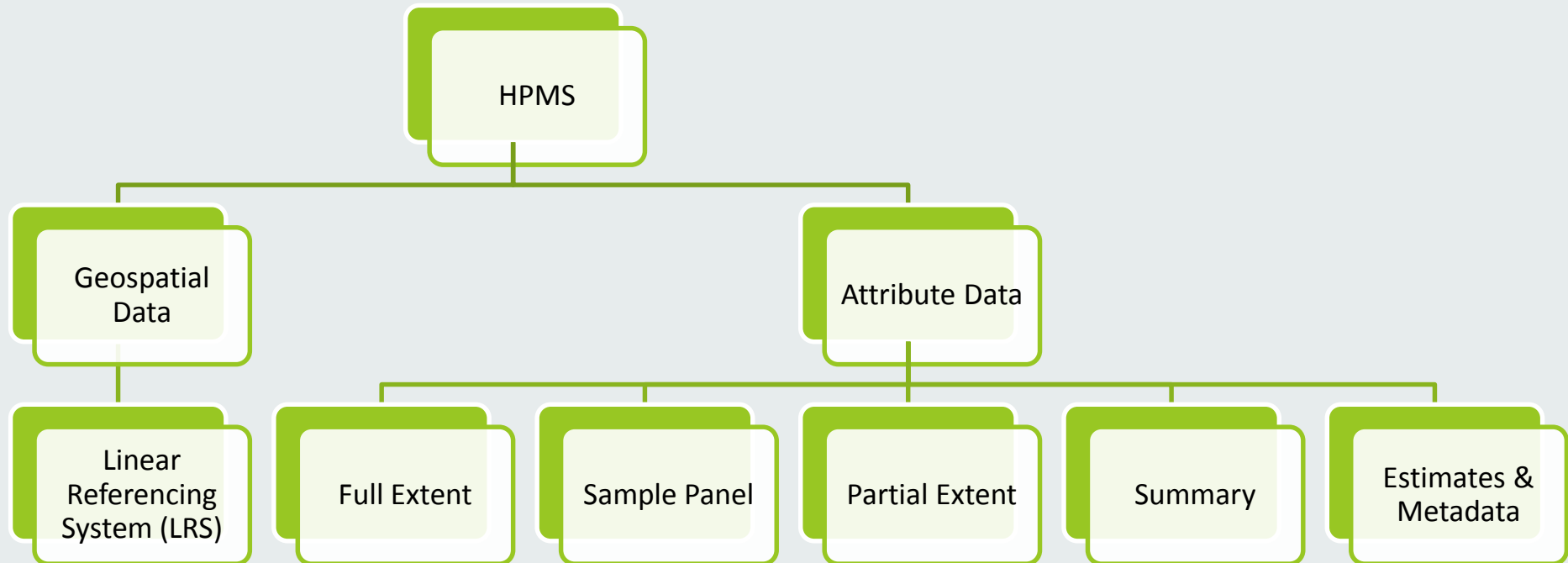


Lesson Two



HPMS Core Components Overview

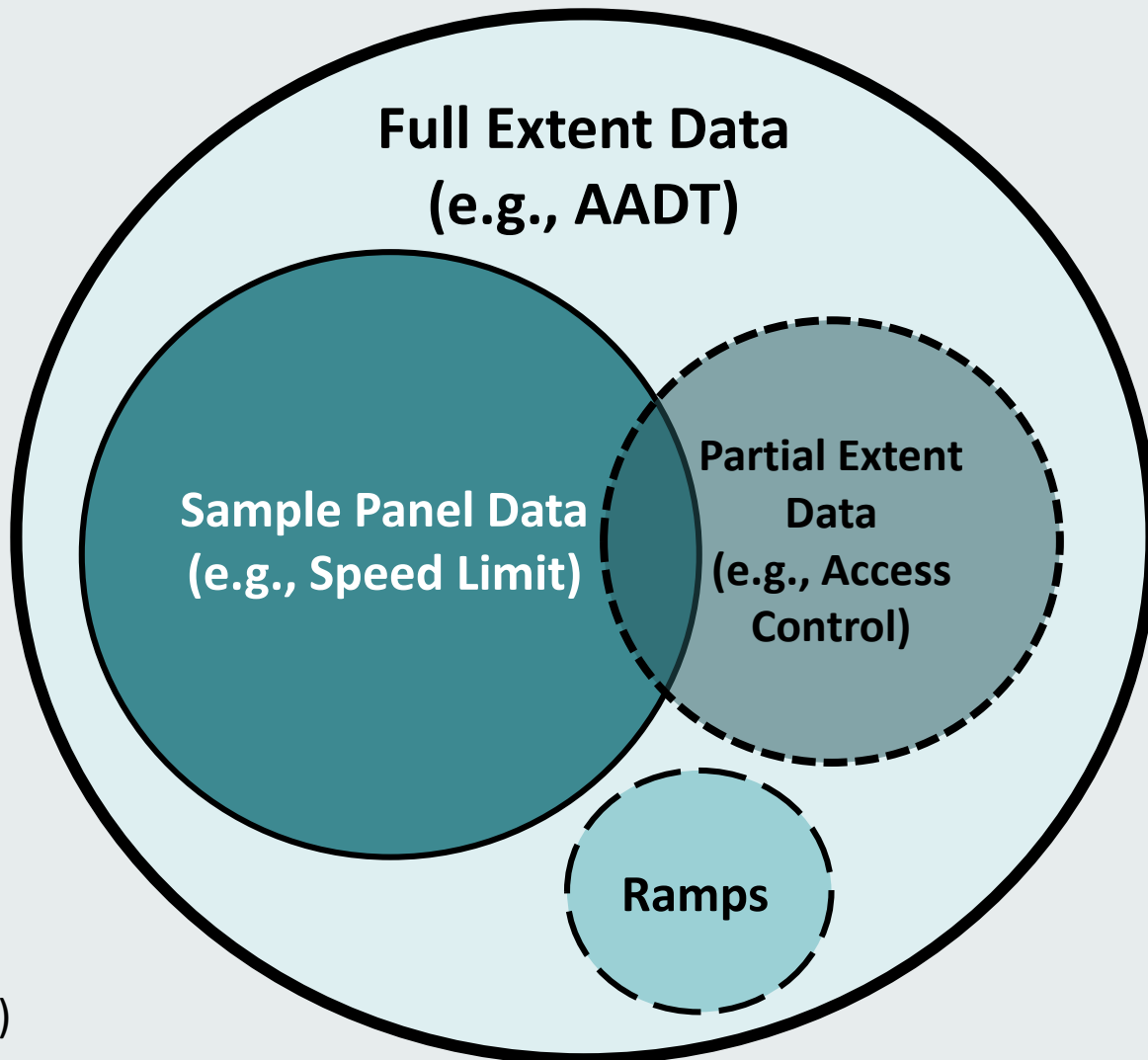
HPMS Core Data Components



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)

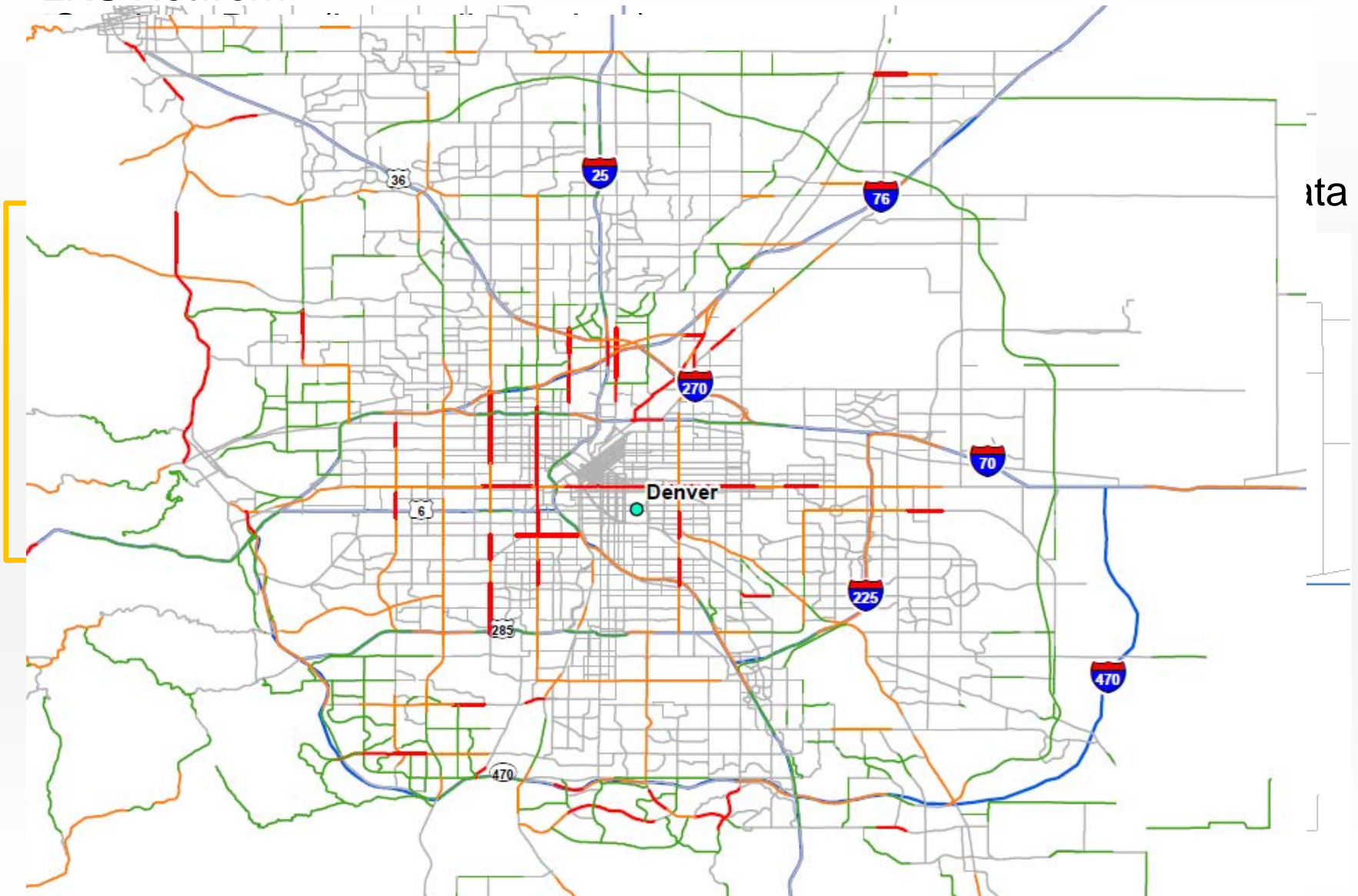
- Summary Data
 - Reported for lower functional system roads
 - Summarized from State, and local data sources
- Estimates Data
 - Reported for various pavement-related data elements
- Metadata
 - Reported various traffic and pavement-related data elements

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 15th
- b. July 4th
- c. December 25th
- d. June 15th
- 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.

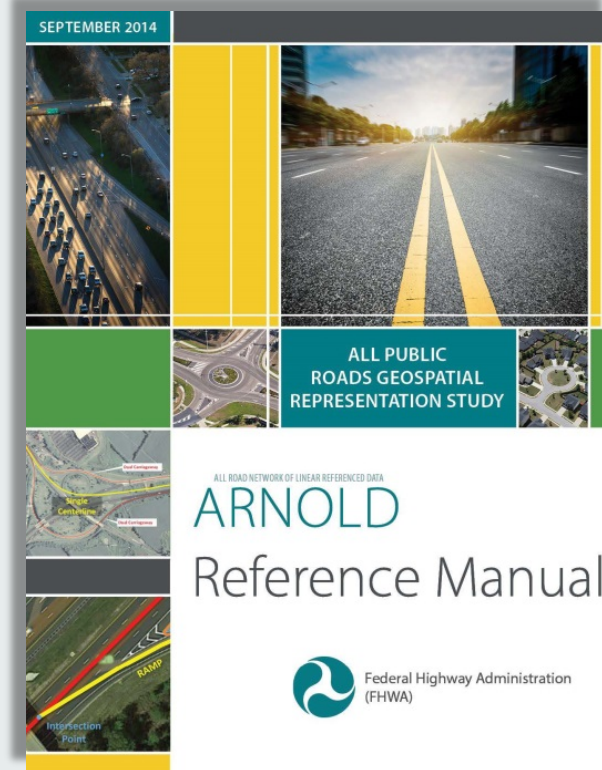
- a. True
- b. False



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

