

# part IV

## Recommendations for HPMS Changes

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# Recommendations for HPMS Changes

Section 52003 of the Moving Ahead for Progress in the 21st Century Act (MAP-21) added a requirement that this report include recommendations for changing the Highway Performance Monitoring System (HPMS).

The changes are to address:

“(i) improvements to the quality and standardization of data collection on all functional classifications of Federal-aid highways for accurate system length, lane length, and vehicle-mile of travel; and

(ii) changes to the reporting requirements authorized under section 315 to reflect recommendations under this paragraph for collection, storage, analysis, reporting, and display of data for Federal-aid highways and, to the maximum extent practical, all public roads.”

Part IV of this 2015 C&P Report fulfills this requirement. Future report editions will present updates on progress in implementing improvements to HPMS and other potential changes as they are identified.

HPMS is a major data source for the analyses presented in Chapters 2, 3, and 7–10 of this report. Appendices A and D include material that also derives from HPMS.

## Background

Each year, HPMS collects information on the extent, condition, performance, use, and operating characteristics of the Nation’s highways. Jointly developed by the Federal Highway Administration (FHWA) and the States in 1978, the system replaced the States’ numerous uncoordinated annual data reports and special studies. HPMS includes key data on all public roads, detailed data for a sample of the arterial and collector functional systems, full-extent coverage data for the Interstate and other principal arterials, and other statewide summary data.

HPMS provides essential information for apportioning Federal funds to the States and for assessing highway system performance under FHWA’s strategic planning process. Data on pavement condition, congestion, and traffic are used to measure progress in meeting the objectives embodied in the FHWA’s Performance Plan and other strategic goals. HPMS also supports this biennial report to Congress.

In addition, HPMS provides data to the States, metropolitan planning organizations, and local governments for assessing highway condition, performance, air quality trends, and future

investment requirements. The system provides much of the information that FHWA includes in its annual *Highway Statistics Series* and other publications.

HPMS is a collaborative effort between FHWA and the States. The States collect and report the data, and FHWA reviews the data for quality and consistency, provides guidance on data collection, and offers technical support on improving data quality. States strive to use common practices to promote consistency, such as adhering to the standards set by the American Association of State Highway and Transportation Officials and the American Society for Testing and Materials. An ongoing National Cooperative Highway Research Program study (20-24[82]), “Increasing Consistency in the Highway Performance Monitoring System for Pavement Reporting,” is identifying and prioritizing measures to help reduce inconsistencies in pavement performance information.

Periodically, HPMS is reassessed to ensure it is maintaining its role as the repository for national highway performance data and to recommend changes for its improvement. The most recent reassessment began in 2006 and led to the elimination of data items users no longer need and the addition of data items users now require. The assessment resulted in the introduction of a new geospatial data model to improve data processing efficiency and geospatial analysis. After a series of intensive outreach workshops and webinars, FHWA published the final report, *HPMS Reassessment 2010+*, in September 2008.

The HPMS requirements identified in *HPMS Reassessment 2010+* became effective with the submittal of data collected in 2009. A new database management system was developed that incorporates geospatial data from State DOT linear referencing systems and integrates these data into a national dataset. HPMS data are now associated with a State’s highway map, which enables mapping and spatial analysis of the HPMS data.

## **Additional Changes to HPMS**

MAP-21 indirectly made two changes to HPMS by expanding the National Highway System (NHS) to include all principal arterials. This expansion has led to increased data collection for truck travel data in HPMS, as States must report such data for the entire NHS. For non-NHS routes, truck travel data will continue to be required only for a representative sample of highway sections. This expansion also has led to increased data collection of International Roughness Index (IRI) data, as States must collect such data annually for NHS; for non-NHS routes, data collection continues to be required only biennially.

HPMS will serve as the foundation for linking FHWA data systems through spatial relationships. This linkage will enable analyses that are more comprehensive by combining the financial and bridge data with the highway information in HPMS. On August 7, 2012, FHWA notified the States that—starting with the 2014 data submittal—they need to provide geospatial information for their road networks on all public roads. The requirement is referred to as ARNOLD or the All Road Network of Linear Referenced Data. FHWA then will build a national basemap for an integrated

system of highway attributes for analyzing safety, bridge, freight, and planning data. Included is a requirement for States to represent divided facilities as dual carriageways, enabling the States to provide FHWA with data on highway attributes by roadway direction, increasing data accuracy. Many States support this requirement as it more closely mimics their internal systems.

FHWA is considering a possible change to the reporting requirements of the IRI data used for measuring performance of pavement condition.

This change would standardize the section length required for reporting IRI so that comparisons are consistent. Currently, States use various IRI section lengths.



#### What is a dual carriageway?

The geospatial networks, or maps, that States currently submit to HPMS are considered a single centerline network, which means that the networks use only single lines to represent all roads, regardless of whether the roads are two-lane collectors or divided Interstate. In contrast, the dual carriageway has two lines for all divided highways, one for each directional roadway. Using a dual carriageway allows for a more accurate spatial representation of divided highways, improves data quality for these roads, and enhances analysis capabilities.