

HPMS Field Review Guidelines (FRG)

2017 HIS

Arlington, VA

10/30/18



Introduction

- FRG to be used by FHWA Division HPMS staff– report due each Dec. 15th
 - E-mailed to: HPInfoMail
- Conduct a review of HPMS data
 - Complete?
 - Good quality?
 - Process
 - Meet technical requirements?
 - Assessment and certification forms



FRG – 4 Components

- Status Report and Certification
- HPMS Program Activity Assessment
- Documentation and discussion of review activities findings based on above
- Annual Reporting



FRG

- Broken into topic sections:
 - Submittal
 - SPR work program
 - Quality assurance
 - Sample adequacy
 - GIS/LRS data
 - Traffic/travel data
 - Pavement data*

*Recently updated to include PM2



FRG - Purpose

- Provide direction and focus with flexibility on productive and meaningful detailed review activities for Divisions use in annual reviews.
- Identify and prioritize improvements in preparing the report on findings and recommendations.
- Reviews key HPMS program areas and uses risk assessment matrix.



FRG

- Contains attachments by topic area:
 - Data Submittal Comments
 - SPR Work Program Review Guidelines
 - Quality Assurance Review Guidelines
 - Traffic Data Review Guidelines
 - Review of Traffic Data Submitted for HPMS
 - Pavement Data Review Guidelines
 - Sample Adequacy Review Guidelines
 - Geographical Information System (GIS)/ Linear Referencing System (LRS) Reviews and All Public Roads Geospatial Guidance (ARNOLD).



Status Report & Certification

(State name) FHWA Division Office HPMS Review - Status Report & Certification

(Annually by December 15th, complete and sign this form, the assessment, and attach additional information as necessary.)

STATUS REPORT – Answers (Y/N) to these questions should be reflected in rating each activity on the HPMS Program Activity Assessment form (Page 8).

Geographical Information System (GIS)/Linear Referencing System (LRS) Adequacy

- State maintains an accurate, up-to-date – as driven – GIS/LRS.
- The LRS/GIS represents and correlates with the State's Enterprise Management Systems.
- Federally-Aided Routes are included.
- All Public Roads are included (ARNOLD).

Data Submittal

- State completed its data submittal by June 15 with no major deficiencies.
- State's submittal letter adequately explains recurring conditions, edits, changes and improvements being made in data collection procedures and processing data?

Office of Highway Policy Information (OHPI) memo to Division Office concerning current year HPMS submittal

- The HPPI Data Memo has been fully discussed and understood by both the Division and State?
Dated response forwarded to OHPI including discussion of implementation _____
Resolution of other comments in correspondence and discussions _____

SPR Work Program

- Current levels of SPR funding are adequate.
- State has requested additional resources for data collection, system improvement or staffing.
- Process improvements identified, reflected in an action plan, and fully supported in SPR or State work programs.

Quality Assurance

- The State has a quality assurance program concerning all data provided for HPMS.
- The data reported in HPMS directly reflect current enterprise information systems.
- A Field Inventory Review has been conducted within the past year to verify data is coded properly and reflects current conditions, and all problems/issues have been rectified.

Traffic Data

- Have all the necessary counts taken place on the Federal-Aid System to accurately represent traffic volume for the data year, per the TMG? Do traffic volume trends reasonably reflect CCS data?
- Do the trends in VMT by functional class appear reasonable compared to adjoining functional class groups and prior year's data?
- When was the last time your office did a process review of the State's traffic monitoring program to assure that procedures are adequate and are being applied to all data for HPMS? (This is more than just the TMS/H review; it should follow the guidelines in Attachments D and E.) _____

Pavement Data

- IRI, PSR, Rutting, Faulting, and Cracking data been provided and updated within the last 1 or 2 years as required.
- When was the last time your office did a process review of the State's pavement data program to assure that procedures are adequate and are being applied to all data for HPMS? _____
- Is the State maintaining the locational integrity of pavement data over time?

Sample Adequacy

- The State conducted a sample adequacy review this year, explaining results and changes in number of samples or when last review was conducted.
When was the last time your office did a process review of sample adequacy to assure that procedures are adequate and are being applied to all data for HPMS? _____



Certification:

The following apportionment factors for the Federal-Aid Highway Program are derived from HPMS. They can be found in the HPMS 8.0 software, *Extent and Travel Report*. Please verify this information and enter it below. Each FHWA Division must certify that this information as reported in HPMS is accurate and verified.

FC = Functional Classification

Apportionment Factors:

Interstate Principal Arterial, FC = 1

Lane-miles: _____

Annual VMT: _____

Non-Interstate Principal Arterial FC = 2, 3

Lane-miles: _____

Annual VMT: _____

Principal Arterial FC = 1, 2, 3

Lane-miles: _____

Federal-aid Highway FC = 1, 2, 3, 4, 5, Urban 6

Lane-miles: _____

Annual VMT: _____

ANNUAL CERTIFICATION

I certify that the State's HPMS submittal and the information in this review are true and correct to the best of my knowledge and belief and there is no evidence of submission of false data, which would be in violation of U.S.C., Title 18, Section 1020. Furthermore, I certify that this data is valid and suitable for use in the apportionment of Federal-aid highway funds, performance measurement, and condition and performance reporting to Congress.

_____ FHWA Division Administrator _____

_____ Date



Activity Assessment:

Activity	Poor 0 point	Fair 5 points	Good 10 points	Outstanding 20 points	Score (points)
GIS/LRS Adequacy, Met ARNOLD Requirement	GIS/LRS is not adequately maintained and/or does not reflect the entire Federal Aid System. An All Public Road, Dual Carriageway GIS/LRS was not submitted.	GIS/LRS is maintained and does reflect the entire Public Road System. May not be integrated with the DOT Enterprise or completely up to date. Local Road LRS may not be tested or attributed.	GIS/LRS is maintained and does reflect the entire Public Road System. It is integrated with the DOT enterprise but may not be completely up to date. All dual carriageway (divided) roads may not be represented. The Local Road LRS is tested and can be attributed.	GIS/LRS is well maintained and does reflect the entire Public Road System with dual carriageways. It is integrated with the DOT enterprise and is completely up to date. The entire network is used as the primary roadway component to a Statewide geospatial framework.	
Data Submittal	Late with incomplete mileage and VMT data, other major data issues are not explained.	By June 15 th , complete mileage & VMT data, major issues explained or data resubmittal.	By June 15 th , complete data and minor observation comments.	By June 15 th , no negative observations or comments.	
	Submittal comments are brief and general. Many resubmittals have occurred.	Submittal comments are not adequate to explain all issues identified. 1 or 2 resubmittals have occurred.	Submittal comments explain recurring validations and any other issues. No more than one resubmittal.	Submittal comments explain minor issues, edits, and changes in procedures and processes. No resubmittal.	
SPR Work Program	Decreased or inadequate funding, or no priorities for data collection, including staff, training or equipment	Adequate funding, some recognition of needs and new activities, but still no changes in staff, training or equipment.	Adequate or increased funding, more staff and training for selected activities, achieving HPMS Field Manual Data Requirements.	State's data program efforts are well funded, fully supporting all data requirements as described in the HPMS Field Manual.	
Quality Assurance	Minimal quality assurance, off-state system issues, many coding error messages.	Basic quality assurance program for short term solutions including off-state system issues, some coding error messages explained in submittal comments.	Quality assurance program implemented and coordinated with all data providers, minor isolated problems.	Quality assurance program documented, funded, and no major data coding problems found. Data quality is assured prior to loading in the HPMS software.	
Traffic Data	Current year data provided with no statistical or verifiable explanation for anomalies and unusual trends for many locations. Many HPPI comments. Many unusual/unexplained travel/traffic issues.	Current year data provided with acceptable statistical justification for anomalies and unusual trends locations. Local Road summary data is submitted but may have statistical or trend issues. Still have many HPPI comments.	Current year Traffic/Travel data provided for Federally Aided highways, and Local Roads (Summary). Acceptable statistical justification for anomalies and unusual trends. Minor/few HPPI comments.	Current year Traffic/Travel data provided for Federally Aided highways, and Local Roads (Summary). Trends are consistent and the data is statistically accurate. No HPPI comments.	
Pavement Data	Complete data provided, on-state system updated on an infrequent cycle, off-state system data incomplete, and many HPPI noted issues. Does not meet MAP-21/FAST Act based performance measure requirements. SPR focus is necessary.	Complete data provided, on-state system updated on a 2- or more year cycle, plan developed for complete off-state system data, many HPPI noted issues, still does not meet MAP-21/FAST Act based performance measure requirements. SPR focus may be required.	Complete data provided and collected with supporting explanations where data differs from the HPMS Field Manual guidance, all current 1-2- year data. Few OHPI comments. Marginally meets MAP-21/FAST Act based Performance measure requirements. SPR focus not necessary. The appropriate pavement data items are being reported predominantly in 1/10 th of a mile sections.	Complete data provided and collected in accordance with Field Manual, all current 1-2- year data, where required, No OHPI comments. Fully meets the performance measure requirements as intended under MAP-21/FAST Act. The appropriate pavement data items are being reported predominantly in 1/10 th of a mile sections.	
Sample Adequacy	Many samples have not been developed where required (sample adequacy); some volume groups have no samples where at least one is required. Many samples are not populated with the required sections data. Many HPPI comments/ concerns.	An incomplete sample panel has been submitted, the adequacy issues are minor. A few Volume Groups still have no samples developed where at least one is required. Spotty necessary section data has been provided to fill the samples.	A full Sample panel has been developed; e.g., the panel is fully adequate. Still some minor sample populating issues.	Sample revisions not needed or were made addressing all deficiencies and HPPI comments. Samples are fully populated.	
Total Score		(140 max)			
Activity(s) Identified for Review: (Less than 10, more than one activity should be considered)					

Pavement Data Review Guidelines

Data Reporting

1. Is pavement roughness (IRI) data being collected on an annual/biennial cycle for highways designated as part of the Interstate system and NHS? Likewise, are the pavement distress items PSR, Rutting, Faulting, and Cracking data being collected on an annual/biennial cycle for these systems? If not, is a Plan of Corrective Action in place to correct? Is the collection method different for State versus non-State owned facilities?
2. Are the appropriate pavement related HPMS data items being reported in nominal 0.10 (up to 0.11 maximum allowed) mile segments as required in the current *HPMS Field Manual*? Are Cracking, Rutting, and Faulting reporting sections spatially aligned to the IRI reporting sections?
3. Is pavement metadata collected and reported as a byproduct of the roughness and distress data collection effort as specified in the *HPMS Field Manual*?
4. Is old (outside of guidelines) pavement data retained and reported until it is replaced by new measured data?
5. Do all sample sections include Surface Type coding and do all paved sample sections include IRI/PSR, Rutting or Faulting, and Cracking as appropriate? Also, are all paved NHS (including Interstate) full extent sections coded with these items? If not, is a Plan of Corrective Action in place to correct?



Pavement Data Review Guidelines

Equipment

1. What is the type, brand, and model number of the data collection equipment used to collect the HPMS IRI and distress data? If multiple equipment types are used, list all equipment used during the current collection cycle.
2. Is the equipment State or vendor owned?
3. Is the equipment and operator(s) certified? Describe details.



Pavement Data Review Guidelines

Collection

1. Is the average of two wheel paths (quarter-car) data reported for HPMS? (MRI, Mean Roughness Index)
2. Does the State use one consistent inventory direction for reporting pavement roughness and distress in HPMS? (Example: east to west or south to north)
3. On multi-lane facilities, which lane(s) does the State use to collect roughness and distress data?

For HPMS, it is required that data be collected in the rightmost through lane or one consistent lane for all data if the rightmost through lane carries traffic that is not representative of the remainder of the lanes or is not accessible due to closure, excessive congestion, or other events impacting access.

4. Are bridges and railroad crossings included in pavement roughness data reported in HPMS? If not, is a Plan of Corrective Action in place to correct?
 - a. Bridges and railroad crossing pavement sections are required to be reported in HPMS.
 - b. Are bridges accurately located and reported in HPMS and are they checked against the National Bridge Inventory (NBI)?
5. Are the following conditions followed when measuring pavement roughness and distresses?
 - a. Pavement in stable condition
 - b. Good weather conditions
 1. Wind conditions do not affect equipment stability
 2. Not during wet conditions
 3. Not during winter conditions - frost/freeze or freeze/thaw
 - c. Speed conditions specified by manufacturer, constant speeds within specified ranges
 - d. Minimum run-in length required prior to measurement, if not possible, is consistent.

Pavement Data Review Guidelines

Program

1. Does the State collect pavement data for off-State system roadways?
 - a. How is this data collected?
 - b. If collected by a contractor or other non-State agency, how does the State confirm the accuracy of data?

2. Do pavement roughness and distress reports list all available information necessary to locate the section using agency's current referencing system?

3. Is the State using the pavement reports in the HPMS software to review the submitted HPMS data and improve data quality (if needed)?

4. Are the latest HPMS data collection requirements as specified in the *HPMS Field Manual* along with the associated AASTO, ASTM, and LTPP specifications being met?
 - a. Is Rutting being captured and if so describe the methodology
 - b. Is Faulting being captured and if so describe the methodology
 - c. Is Percent Cracking being captured and if so describe the methodology
 - d. If the required pavement data items are not being captured or are out of the reporting cycle, a plan must be prepared address these deficiencies.
 - e. Does the submitted HPMS metadata accurately reflect methods used to collect, calculate, and report the IRI and distress data items?

5. How is data transferred from collection to the State's pavement management system and locals to the HPMS coordinator for uploading to FHWA?
 - a. What checks are in place to ensure the integrity of the data during this process?
 - b. Is there a data quality check process that is documented?

Pavement Data Review Guidelines

Quality Assurance

1. Is pavement data verified in the field, especially where improvements are made? Where validation warnings exist?
2. If and when an improvement is made, how is it captured in HPMS?
3. Is there a Division-approved quality assurance plan in place? The plan should include daily quality control equipment procedures (accelerometers & non-contact sensors), a schedule for accuracy checks of roughness /distress equipment, pavement roughness survey personnel training records, and a schedule for the regular calibration of roughness equipment. (Reference *Practical Guide for Quality Management of Pavement Condition Data Collection*)
 - a. Are there verification sections?
 - b. Are there quality checks?
 - c. Real-time data checks
 - d. Internal validity checks
 - e. Quality checks during data reduction
 - f. Corrective action



Conclusion

- FRG to be found/posted at:

<https://www.fhwa.dot.gov/policyinformation/hpms/reviewguide.cfm>

- Questions?



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