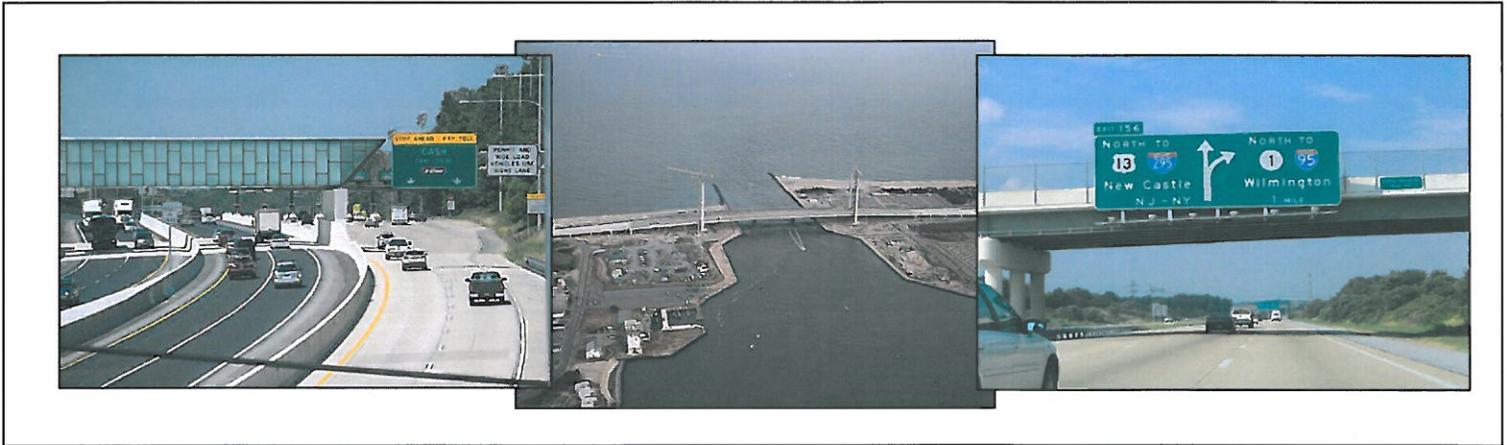


HPMS

Delaware 2012
Annual Review of
2011 Data

Highway Performance Monitoring System

ANNUAL REPORT



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Date: December 12, 2012



U.S. Department
of Transportation

**Federal Highway
Administration**

Delmar- Delaware Division

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I. Purpose and Background of the Review

The Highway Performance Monitoring System (HPMS) was developed in 1978 as a national highway database. It replaced numerous uncoordinated annual State data reports as well as biennial special studies conducted by each State. The HPMS provides data that reflects the extent, condition, performance, use, and operating characteristics of the Nation's highways. It includes limited data on all public roads and detailed data for a sample of the arterial and collector functional systems, and certain statewide summary information.

The HPMS form the basis of the analyses that support the biennial Condition and Performance Reports to Congress. These reports provide a comprehensive, factual background to support development and evaluation of the Administrative, program, and budget options. They provide the rationale for requested Federal-aid Highway Program funding levels, and are used for apportioning Federal-aid funds back to the State.

In addition, the HPMS data is used to assess highway system performance under Federal Highway Administration (FHWA) strategic planning process. Furthermore, the data is the source of a large portion of information included in FHWA's annual Statistics and other media publication.

For the past seven years, the HPMS has undergone undergoing a Reassessment (known as *HPMS Reassessment 2010+*) to ensure it best meets the needs of its users and customers as we move forward. Some of the recommended changes include retaining 59 data items, deletion of 19 data items, and adding 23 new data items. The HPMS Field Manual was updated and the final version was released September 2010. The HPMS changes include, but are not limited to: addition of critical information on pavement conditions; extensive evaluation of safety data needs; new data model - use of Geographic Information System (GIS) which allows for geographic locating, analysis, comparison, and reporting of data; reporting motorcycle travel data; and collecting interchange and ramp data. Beginning in 2013, reporting of functional class changes will be mandatory.

The FHWA Division Office annually must provide the results of an annual review of the State's HPMS monitoring activities in a report to the FHWA's Office of Highway Policy Information (OHPI) by December 15. In addition, by June 1, the State must include a certification of public road mileage to FHWA; by June 15th of each year, the State must also report the HPMS data for the previous year to FHWA OHPI using the submittal software.

The requirements outlined in the HPMS Field Manual are authorized under 23 U.S.C. 315, which places the responsibility on the Secretary of Transportation for management decisions which affect transportation. In addition, 23 CFR 1.5 provides the FHWA with authority to request information deemed necessary to administer the Federal-aid highway program.

The FHWA DelMar-Delaware Division has employed a number of strategies and activities for coordinating with Delaware Department of Transportation (DelDOT) in the collection and reporting of quality data. Among these activities include: (1) annually ensuring DelDOT's timely submittal of quality HPMS data to the FHWA's Office of Highway Policy Information; (2)

providing assistance to DelDOT in addressing any “high priority subject areas” that are identified by the FHWA’s OHPI following review of the State’s annual HPMS data; (3) conducting field inventory reviews of several key HPMS data items for a sampling of HPMS sample sections across the State; and (4) providing program and technical support to DelDOT.

The following report summarizes the FHWA DelMar-Delaware Division’s (also referred to as FHWA DelMar) annual stewardship activities related to HPMS which are consistent with the principles reflected in the FHWA’s *HPMS Field Review Guidelines* (2011 version).

II. Scope of the Review

As mentioned earlier, the Division Office must annually document the results of its HPMS monitoring activities in a report to be submitted to the FHWA OHPI by December 15, 2012.

Key components of these annual HPMS monitoring activities include: (1) ensuring the DelDOT’s timely submittal of complete and accurate HPMS data; (2) conducting periodic process-oriented reviews of “high priority subject areas” (3) conducting field inventory reviews of a series of key HPMS data items for a sampling of HPMS sample sections across the State; (4) status report and certification; (5) HPMS program activity assessment; and (6) conducting other associated annual required reviews (e.g., certifying public road mileages and verifying that the State’s certified public road mileage data, highway vehicle miles of travel (VMT), and lane-miles data are valid and suitable for use in the apportionment of Federal-aid Highway Program funds).

The remainder of this report expounds on this year’s status of the aforementioned activities.

III. Status of the 2011 HPMS Data Submittal

DelDOT submitted the 2011 HPMS data package electronically to FHWA OHPI on June 12, 2011. OHPI confirmed receipt of the data on June 12, 2012. On Wednesday, October 3, OHPI hosted a conference call with DelDOT HPMS staff and the FHWA DelMar-Delaware Division as participants.

The formal written comments (which are underlined) made by Ron Vaughn and other in the OHPI are noted below. The respective comments made during and after the call from OHPI & DelDOT are noted in *italics*.

General Comments

Delaware’s data was fairly clean – no major issues.

Mileage total for AADT (336.14) is inconsistent with the OPA mileage control total (337.46); difference of 1.3 miles.

Mileage total for AADT (305.09) is inconsistent with the Minor Arterial mileage control total (307.26); difference of 2.3 miles.

Mileage total for AADT (811.43) is inconsistent with the Major Collector mileage control total (819.99); difference of 8.6 miles.

All functional systems, urban areas, and volume groups are in full compliance w/ sample adequacy requirements.

- *FHWA OHPI comments: We check mileage totals against control totals. All are consistent except AADT as noted above. This is very minor. We want to ensure alignment to control totals as best as possible. We request that DeIDOT staff make its best attempt to report this information in its entirety as part of their 2012 data submittal.*

Extent and Travel Data Comments

Statewide OPA VMT increased by 11.5% despite no change in the system's total mileage.

Statewide Local VMT decreased by 11.2%.

Local VMT in the Dover area (Urban Code = 24580) increased by 14.6%.

Local VMT in the Philadelphia, PA-NJ-DE area (Urban Code = 69076) decreased by 25.4%.

Rural (Urban Code = 99999) Local VMT increased by 8.7% .

- *FHWA OHPI comments: We will make note of DeIDOT's comments. Decrease in Philadelphia area was minimal but wanted to make a note of it. Coverage of samples was fine – fully adequate.
We ask that Delaware further examine their data to ensure that the data is being reported correctly, and that they work with FHWA to address the miscalculation issue.*
- *DeIDOT comments: Change due to a methodology change.*

Missing Data Items (as of 7/30)

Faulting

- *FHWA OHPI comment: Is it correct that there are no plans to collect faulting in the near future?
FHWA staff asks that DeIDOT staff reiterate to its executive management that this information is required to be reported under 23 CFR 420, and that an implementation plan and resources will ultimately need to be designated for purposed of collecting this data. Furthermore, FHWA staff is willing to assist DeIDOT staff in communicating, to its executive management, the programmatic need for this data.*
- *DeIDOT comments: Yes, Marc Dixon, FHWA DelMar, will meet with Drew Boyce, Director of Planning & Jennifer Pinkerton, Chief Materials and Research Engineer, to discuss how to move forward.*

National Highway System

Interstate mileage (41 mi.) is consistent w/ that of which was reported in '08.

Total mileage is consistent w/ that of which was reported in '08 .

- *FHWA OHPI comment: No major issues.*

International Roughness Index

There is roughly 8 miles of the PAS (Principal Arterial System) for which IRI is unreported.

The percentage of Good pavement on the PAS decreased by 9.5%.

The percentage of Fair pavement on the PAS increased by 5.5%.

The percentage of Poor pavement on the PAS increased by 3.9%.

The percentage of Good pavement on the NHS decreased by 12.3%.

The percentage of Fair pavement on the NHS increased by 10.2%.

The percentage of Poor pavement on the NHS increased by 2.1%.

- *FHWA OHPI comment: For PAS unreported, not a big deal – just wanted to make note of it. For other items, PAS & NHS, not major shifts but wanted to point out as we will be tracking for trends. If we don't have IRI data, when we run the model, we will have to use previously reported data if current data is not available.*
- *DeIDOT comments: Mentioned IRI collecting issue.*

VMT by roadway functional class data: OK .

VMT by roadway functional class and vehicle type percentage data - the light truck

.indicates a change from 13.3% to 6.1% on "urban interstate". Please review and resubmit is needed.

- *DeIDOT comments: Re: slide 2 of Patrick's slide, locals decrease, we've been doing projections for so long but did actual counts and found that the projections were too high so it is more of a reflection of a correction. Also, some group factors need to be checked; there is some work that needs to be done to ensure accuracy.*

GIS data check

AADT – good network – see image of missing data.

Ramp AADT – no ramp data!! Linked points are there but AADT 's are all zero.

- *DeIDOT comments: HPMS Coordinator mentioned that Planning Director and Asst. Director agreed that efforts will be made to create a map showing ramps and what was collected.*

K Factor – some really high K's on some roadways when linked to major roadways, seemed odd.

- *FHWA OHPI comments: Steve J. has been asking states to double-check – this issue is somewhat common across the U.S.*

D Factor – looked good, nice ranges.
% Peak SU – all values calculated wrong.
% Peak CU– all values calculated wrong.

- *DelDOT comments: For peak SU & CU, we are outsourcing and nobody gets a chance to review what was counted. Bhai was allowed to modify and update the file with the right calculated data file.*

SU AADT – ranges look good, not all of the NHS routes have SU AADT's, see route ID NC-00438-F.

CU AADT– ranges look good, not all of the NHS routes have SU AADT's, see route ID NC-00438-F.

- *FHWA OHPI response: Make sure coverage is where it is required.*

FAADT – many values set to just under the 300% range HPMS automated check.

Route ID NC-00247-F milepost 0.00 to 0.49 AADT = 978, FAADT = 2980 almost 300%, the k value is also very high at K=16.

Other Comments:

1. Question from DelDOT: When we take samples of road with counts below 1000, do you use those?

Response from FHWA OHPI: That seems like low volume for a fed-aid highway. In sample adequacy, you might be reporting for rural minor collectors, which should not be collected. Tom R. was talking about taking some out of [indiscernible]. The point is that you need to evaluate if roads with low AADTs should be a federal-aid highway. Perhaps you need to review that during your functional classification update.

2. FHWA OHPI: Training talks with DelDOT are still underway.
3. FHWA OHPI: Faulting and IRI are required. We can clearly convey this more during the training workshop.

IV. Field Inventory Review

The FHWA DelMar—Delaware Division's annual field review of HPMS sample section data took place on September 25 & 26, 2012. Marc Dixon, *FHWA DelMar-Delaware Division Community Planner*, Subhash Bhai, *DelDOT HPMS Coordinator*, Kevin Gustafson, *DelDOT Road Inventory Supervisor*, and Jason Vogl, *Engineering Technician II*, participated in the field review. Some of the objectives of this joint review process were to foster additional partnering between the State and FHWA, reduce duplicative FHWA and DelDOT review efforts, and provide DelDOT and FHWA staffs with a greater mutual understanding of each other's programs. Marc Dixon selected three areas in New Castle County based on functional class; DelDOT selected 27 samples that were within the three areas. Table 1 provides more information about the samples.

Table 1. Samples Reviewing during 2012 Field Review

No.	Sample ID	Roadway ID	Road Name	Section Length	Functional System	County
1	424	440	Thomas Landing Road	0.81	5	New Castle
2	28	429	Marl Pit Road	0.68	5	New Castle
3	184	16	Summit Bridge Road	0.64	3	New Castle
4	314	14	Summit Bridge Road	1.49	4	New Castle
5	182	14	Broad Street	0.34	4	New Castle
6	307	438	Main Street	1.35	4	New Castle
7	329	438	Main Street	0.48	4	New Castle
8	1012	80	State Route 1	2.29	3	New Castle
9	447	34	U.S. 13/DuPont Parkway	1.4	4	New Castle
10	312	5	Bear Corbitt Road	1.34	5	New Castle
11	386	67	State Route 1	1.24	2	New Castle
12	303	366	E. Chestnut Hill Road	1.16	3	New Castle
13	74	56	I-95/JFK Memorial Hwy	0.75	1	New Castle
14	234	56	I-95/JFK Memorial Hwy	0.67	1	New Castle
15	539	3	Christiana Road	1.03	3	New Castle
16	360	33	U.S. 13/DuPont Parkway	0.65	3	New Castle
17	1017	49	N Union Street	0.32	4	New Castle
18	471	203	Foulk Road	0.75	4	New Castle
19	55	225	Montchanin Road	0.7	5	New Castle
20	550	9	Kennett Pike	0.72	3	New Castle
21	411	247	Snuff Mill Road	0.49	5	New Castle
22	584	274	Brackenville Road	0.69	5	New Castle
23	352	270	Faulkland Road	1.17	4	New Castle
24	178	21	Newport Gap Pike	0.9	3	New Castle
25	56	276	Loveville Road	0.43	4	New Castle
26	418	309	Cleveland Avenue	0.61	4	New Castle
27	586	321	New Linden Hill Road	1.37	4	New Castle

Table 2 shows the data items that were reviewed while in the field. Nineteen data items were reviewed.

Table 2. Field Review HPMS Data Items Verified

Item #	Data Item	Item #	Data Item
3	Facility Type	35	Median Type
5	Access Control	36	Median Width
7	Through Lanes	37	Shoulder Type
10	Peak Lanes	38	Right Shoulder Width
12	Left Turn Lane	39	Left Shoulder Width
13	Right Turn Lane	40	Peak Parking
14	Speed Limit	41	Widening Obstacles
31	Number of signals	42	Widening Potential
33	At-grade other ((# of intersections w/o signal controls or stop sign)	49	Surface Type
34	Lane Width		

The results show that DelDOT continues to have a quality HPMS data program that consists of few errors. During the field review, the following items need to be verified or corrected:

- Sample ID 329: Surface type should be 2 or 6; only the overpass section was concrete pavement.
- Sample ID 386: Shoulder type should be rechecked – database shows '3' (Portland cement concrete) but we observed bituminous concrete.
- Number of signals should be verified on sample IDs 539 (database shows 3 but we observed 2) and 55 (one new signal may not have been accounted for).
- Sample ID 586: At_Grade_Other (number of intersections without stop signs or signal controls) should be rechecked. Database shows 5 but we observed 6.

V. Review of “Highway Priority Subject Areas”

The current *HPMS Field Review Guidelines* identifies six subject areas that are to be examined at least every three years cooperatively by the FHWA Division Offices and the State DOTs. These “high priority” data are: (1) traffic data submittal; (2) State Planning Research (SPR) Work Program ; (3) Quality Assurance; (4) Traffic Data; (5) Sample Adequacy; and (6) Pavement Data. For this HPMS cycle, the FHWA Division did not conduct a review of any subject area.

VI. DELAWARE FHWA Division Office HPMS Review - Status Report & Certification

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

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

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

Data Submittal

Yes, they submitted June 12 & no deficiencies State completed their data submittal by June 15 with no major deficiencies

Y State's submittal letter adequately explains recurring conditions, edits, changes, and improvements being made in data collection procedures and processing data?

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

Y – conference call on Oct. 3, 2012; memo was sent in 8/27, revised version sent 9/5 The memo has been fully discussed and understood by both the Division and State?

Date response forwarded to OHPI including discussion of implementation DelDOT sent response to OHPI on 9/7

Resolution of other comments in correspondence and discussions No major comments from OHPI, but comments were addressed with some resolution during the conference call.

SPR Work Program

Y Current levels of SPR funding are adequate.

Y State has requested additional resources for data collection, system improvement or staffing

N Process improvements identified, reflected in an action plan, and fully supported in SPR or State work programs

Quality Assurance

Y The State has a quality assurance program concerning all data provided for HPMS

Y The data reported in HPMS directly reflect current enterprise information systems

Y 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

Y 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 ATR data?

Y 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 HPMS data? (This is more than just the TMS/H review; it should follow the guidelines in Attachments F and G.) Summer/Fall 2010

Pavement Data

Y IRI 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 HPMS data? October 2011

Sample Adequacy

Y 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 HPMS data? September 2007

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: 256.14

Annual VMT: 9,478.16

Non-Interstate Principal Arterial FC =2, 3

Lane-miles: 1,393.51

Annual VMT: 28,223.80

Principal Arterial FC = 1, 2, 3

Lane-miles: 1,649.65

Annual VMT: 37,701.96

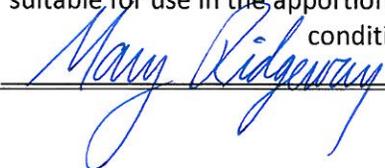
Federal-aid Highway FC = 1, 2, 3, 4, 5, Urban 6

Lane-miles: 4,125.6

Annual VMT: 57,496.09

ANNUAL CERTIFICATION

I certify that the State's HPMS data 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 HPMS 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

12/12/12

Date

HPMS Program Activity Assessment

Activity	Poor 0 point	Fair 5 points	Good 10 points	Outstanding 20 points	Score (points)
GIS/LRS Adequacy	GIS/LRS is not maintained and/or does not reflect the entire Federal Aid System	GIS/LRS is maintained and does reflect the entire Federal Aid System. May not be integrated with the DOT Enterprise or completely up to date	GIS/LRS is maintained and does reflect the entire Federal Aid System. It is integrated with the DOT enterprise but may not be completely up to date.	GIS/LRS is maintained and does reflect the entire Federal Aid System. It is integrated with the DOT enterprise and is completely up to date.	17
Data Submittal	Late with complete mileage and VMT data, other major data issues not explained	By June 15 th , complete mileage & VMT data, major issues explained or data resubmittal	By June 15 th , complete data and minor comments	By June 15 th , no comments	12
	Submittal letter brief and general comments	Submittal letter explains only recurring comments	Submittal letter explains recurring comments and edits	Submittal letter explains recurring comments, edits, and changes in procedures and processes	15
SPR Work Program or State Planning Work Program	Decrease 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	Adequate or increased funding for process review (or action plan) recommendations included in work program	7
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 letter	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	14
Traffic Data	Current year data provided with non verifiable explanation for anomalies and unusual trends for F.C. or H.V. locations, Primary OHPI comments.	Current year data provided for all PAS, acceptable statistical justification for anomalies and unusual trends for F.C. or H.V. locations, Primary OHPI comments.	Current year data provided for all F.C., acceptable statistical justification for anomalies and unusual trends for F.C. or H.V. locations, Secondary OHPI comments.	Current year data provided for all F.C., no unusual trends by F.C. or H.V. locations, no OHPI comments.	12
Pavement Data	Complete data provided on-state system updated on an infrequent cycle, off-state system data incomplete, Primary OHPI comments	Complete data provided on-state system updated on a 2 year cycle, plan developed for complete off-state system data, Primary OHPI comments	Complete data provided and collected with supporting explanations that differ from Field Manual, all current 1-2 year data, Secondary OHPI comments	Complete data provided and collected in accordance with Field Manual, all current 1-2 year data, no OHPI comments	10
Sample Adequacy	Sample revisions needed, identified, but not made. Primary OHPI comments	Some sample revisions were made, sample adequacy assessed. Primary OHPI comments	Most sample revisions were made, sample adequacy assessed. Secondary OHPI comments	Sample revisions not needed or were made addressing all deficiencies and OHPI comments	18
Total Score (140 max)			105		
Activity(s) Identified for Review: (Less than 10, more than one activity should be considered)					

State: Delaware Date Year: 2012 (Attach to your Status Report & Certification) Date of Assessment: Nov. 27, 2012

VIII. Conclusions and Follow-up

The FHWA DelMar will continue to work and coordinate with DelDOT's HPMS Team in developing and providing quality HPMS data. For their 2011 submittal, DelDOT is to be commended for the quality and timely submittal of data to headquarters for review and comments.

During the 2012-2013 functional classification system update process, DelDOT, MPOs, and FHWA DelMar need to review the forecast transportation and land use network program to ensure proper functional classification designation for very low volume roads which may not be eligible for federal funding.

Also, FHWA DelMar will cooperatively assist DelDOT in seeking out options to collect faulting and IRI data. FHWA will meet with DelDOT Planning leadership to determine how to assist DelDOT in meeting the requirements. The following is a recap of DelDOT's dilemma with IRI reporting:

It is cheaper to hire a consultant than to buy a van (approx. \$2 million) and hire staff. Due to the cost of using the consultant (approx. \$1 million) combined with the fact that DelDOT doesn't use IRI for internal needs, they would have to significantly increase their annual budget just for IRI reporting, and, therefore, find it impractical under these circumstances.

Lastly, we also recommend that DelDOT create standard operating procedures and a succession plan for the HPMS Coordinator position before the incumbent leaves.

IX. Acknowledgments

The FHWA Division Office acknowledges and appreciates the cooperation and involvement of the staffs from DelDOT Planning, the Traffic Data Section, and the Pavement Section throughout the various elements of this year's HPMS annual review.