Alaska Department of Transportation & Public Facilities

Highway Performance Monitoring System (HPMS) – Executive Overview

Our mission is to *Keep Alaska Moving* through service and infrastructure.

What is HPMS?

A national level highway information system that includes data on the extent, condition, performance, use and operating characteristics of the nation's highways.

HPMS Related Statute Regulations

- 23 U.S.C – "Highways"

- Regulations:

    - 23 CFR Sec. 1.5 – Information provided by State highway departments

    - 23 CFR Sec 420.105(b) – provide data to support FHWA's responsibilities to Congress and the public

    - 23 CFR Sec 460.3(b) – Certified Public Road Mileage (CPRM)

    - 23 CFR 470.105(a) – Urban area boundaries

    - 23 CFR 470.107 – Federal Aid Highway (Interstate, NHS)

    - 23 CFR 470.113 – National Highway System (NHS)

    - 23 CFR 490 – National Performance Management Measures

How is HPMS Used?

HPMS Data is used for:

- Federal aid funding apportionment formula
- Conditions and Performance (C&P) Report to Congress
- Highway Economic Requirements System (HERS) Model
- Highway Safety Improvement Plan (HSIP)
- Freight Analysis Framework (FAF)
- Transportation Performance Management (TPM)
- Bureau of Transportation Statistics (BTS)

Important Dates:

- April 15th- Interstate Condition data only due to FHWA from the State Departments of Transportation

- June 1st-   Certified Public Road Mileage (CPRM) due to FHWA

- June 15th- HPMS Submittal Due to FHWA

HPMS Terms

- **Sample Sections** (a.k.a. HPMS Samples, Sample Panel)
  - Reported for randomly selected roadway sections
- **Full Extent Data** (ex. AADT)
  - Reported for an entire roadway system
  - Reported for ramps at grade-separated interchanges
- **Partial Extent Data** (ex. Access Control)
  - Reported on a Full Extent basis for certain functional systems and a Sample Panel basis for others

HPMS – Core Data

- **Summary Data**
  - Reported for lower functional class roads
  - Summarized from State, and local data sources

- **Estimates Data**
  - Reported for various pavement related data elements

- **Metadata**
  - Reported for various traffic and pavement related data elements

HPMS Core Data

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

HPMS Data Fields

Data Item Type	Data Item No.	Database-Specific Data Item Name	Data Item Name	Extent		Due Date	LRS Reporting Req. for Divided Highways
Inventory	1	F_System	Functional System	FE + R		April 15#	I&NI
	2	Urban_Code	Urban Code	FE + R		April 15#	I or I&NI*
	3	Facility_Type	Facility Type	FE + R		April 15#	I&NI
	4	Structure_Type	Structure Type	FE**		April 15#	I or I&NI*
	5	Access_Control	Access Control	FE*	SP*	June 15	I
	6	Ownership	Ownership	FE		June 15	I&NI
	7	Through_Lanes	Through Lanes	FE + R		April 15#	I or I&NI*
	8	HOV_Type	Managed Lane Operations Type	FE**		June 15	I
	9	HOV_Lanes	Managed Lanes	FE**		June 15	I
	10	Peak_Lanes	Peak Lanes		SP	June 15	I
	11	Counter_Peak_ Lanes	Counter Peak Lanes		SP	June 15	I
	12	Turn_Lanes_R	Right Turn Lanes		SP	June 15	I
	13	Turn_Lanes_L	Left Turn Lanes		SP	June 15	I
	14	Speed_Limit	Speed Limit	FE*	SP	June 15	I
	15	Toll_Charged	Toll Charged	FE**		June 15	I
	16	Toll_Type	Toll Type	FE**		June 15	I
Route	17	Route_Number	Route Number	FE*		June 15	I or I&NI*
	18	Route_Signing	Route Signing	FE*		June 15	I
	19	Route_Qualifier	Route Qualifier	FE*		June 15	I
	20	Alternative_Route_Name	Alternative Route Name	FE		June 15	I

HPMS Data Fields

Traffic	21	AADT	Annual Average Daily Traffic	FE + R		June 15	I
	22	AADT_Single_Unit	Single Unit Truck and Bus AADT	FE*	SP*	June 15	I
	23	Pct_Peak_Single	Percent Peak Single-Unit Trucks and Buses		SP	June 15	I
	24	AADT_Combination	Combination Truck AADT	FE*	SP*	June 15	I
	25	Pct_Peak_Combination	Percent Peak Combination Trucks		SP	June 15	I
	26	K_Factor	K-factor		SP	June 15	I
	27	Dir_Factor	Directional Factor		SP	June 15	I
	28	Future_AADT	Future AADT		SP	June 15	I
	29	Signal_Type	Signal Type		SP	June 15	I
	30	Pct_Green_Time	Percent Green Time		SP	June 15	I
	31	Number_Signals	Number of Signalized Intersections		SP	June 15	I
	32	Stop_Signs	Number of Stop Sign-Controlled Intersections		SP	June 15	I
	33	At_Grade_Other	Number of Intersections, Type - Other		SP	June 15	I

HPMS Data Fields

Geometric	34	Lane_Width	Lane Width		SP	June 15	I
	35	Median_Type	Median Type		SP	June 15	I
	36	Median_Width	Median Width		SP	June 15	I
	37	Shoulder_Type	Shoulder Type		SP	June 15	I
	38	Shoulder_Width_R	Right Shoulder Width		SP	June 15	I
	39	Shoulder_Width_L	Left Shoulder Width		SP	June 15	I
	40	Peak_Parking	Peak Parking		SP	June 15	I
	41	Widening_Obstacle	Widening Obstacle		SP	June 15	I
	42	Widening_Potential	Widening Potential		SP	June 15	I
	43	Curves_A through Curves_F	Curve Classification		SP*	June 15	I
	44	Terrain_Type	Terrain Type		SP	June 15	I
	45	Grades_A through Grades_F	Grade Classification		SP*	June 15	I
	46	Pct_Pass_Sight	Percent Passing Sight Distance		SP	June 15	I

HPMS Data Fields

Pavement	47	IRI	International Roughness Index	FE***	SP*	April 15#	I or I&NI*
	48	PSR	Present Serviceability Rating	FE***#	SP*	April 15#	I or I&NI*
	49	Surface_Type	Surface Type	FE***	SP*	April 15#	I or I&NI*
	50	Rutting	Rutting	FE***	SP*	April 15#	I or I&NI*
	51	Faulting	Faulting	FE***	SP*	April 15#	I or I&NI*
	52	Cracking_Percent	Cracking Percent	FE***	SP*	April 15#	I or I&NI*
	54	Year_Last_Improv	Year of Last Improvement		SP	June 15	I
	55	Year_Last_Construction	Year of Last Construction		SP	June 15	I
	56	Last_Overlay_Thickness	Last Overlay Thickness		SP	June 15	I
	57	Thickness_Rigid	Thickness Rigid		SP	June 15	I
	58	Thickness_Flexible	Thickness Flexible		SP	June 15	I
	59	Base_Type	Base Type		SP	June 15	I
	60	Base_Thickness	Base Thickness		SP	June 15	I
	61	Climate_Zone**	Climate Zone**		SP	June 15	I
	62	Soil_Type**	Soil Type**		SP	June 15	I
Inventory	63	County_Code	County Code	FE		June 15	I

HPMS Data Fields

Special Networks	64	NHS	National Highway System	FE**		April 15#	I&NI
	65	STRAHNET_Type	Strategic Highway Network	FE**		June 15	I
	66	Truck	National Truck Network	FE**		June 15	I
	67	Future_Facility	Future National Highway System	FE**		June 15	I
Inventory	68	Maintenance_Operations	Maintenance & Operations	FE		June 15	I
Traffic	69	Capacity	Capacity		SP	June 15	I
Inventory	70	Dir_Through_Lanes	Directional Through Lanes	FE****#		April 15	I or I&NI*

Travel Time Reliability (TTR)

Travel time reliability (TTR) is the consistency or dependability in travel times, as measured from day to day and/or across different times of day.

Alaska TTR data comes from NPMRDS, with data supplied by Inrix.

What is the NPMRDS?

Procured and sponsored by the Federal Highway Administration (FHWA), the National Performance Management Research Data Set (NPMRDS) is an archived speed and travel time data set (including associated location referencing data) that covers the NHS and additional roadways near 26 key border crossings with Canada (20 crossings) and Mexico (6 crossings).

Travel Time Reliability (TTR)

Two types of TTR data are reported in Alaska:

1. All vehicles- Interstate & Non-Interstate NHS
   - $80^{th}/50^{th}$ percentile
   - Anything 1.5 times or higher is Not Reliable
   - Reported as percentage – 95.6% reliable on Interstate; 74.1% reliable on Non-Interstate NHS

2. Trucks – Interstate only
   - $95^{th}/50^{th}$ percentile
   - Reported as index, Ex. 1.84

HPMS Applications

- HPMS V.8
  - FHWA's authorized user web application

- HPMSAnalyst
  - Developed by GeoDecisions
  - Used to
    - integrate HPMS data
    - review data
    - remove and correct data errors
    - generates formatted output files to upload to HPMS V.8

HPMS Report Card

HPMS Score Card (by Submittal Year)

Target = 50

- 2017: 23.3
- 2018: 41.9
- 2019: 43.1
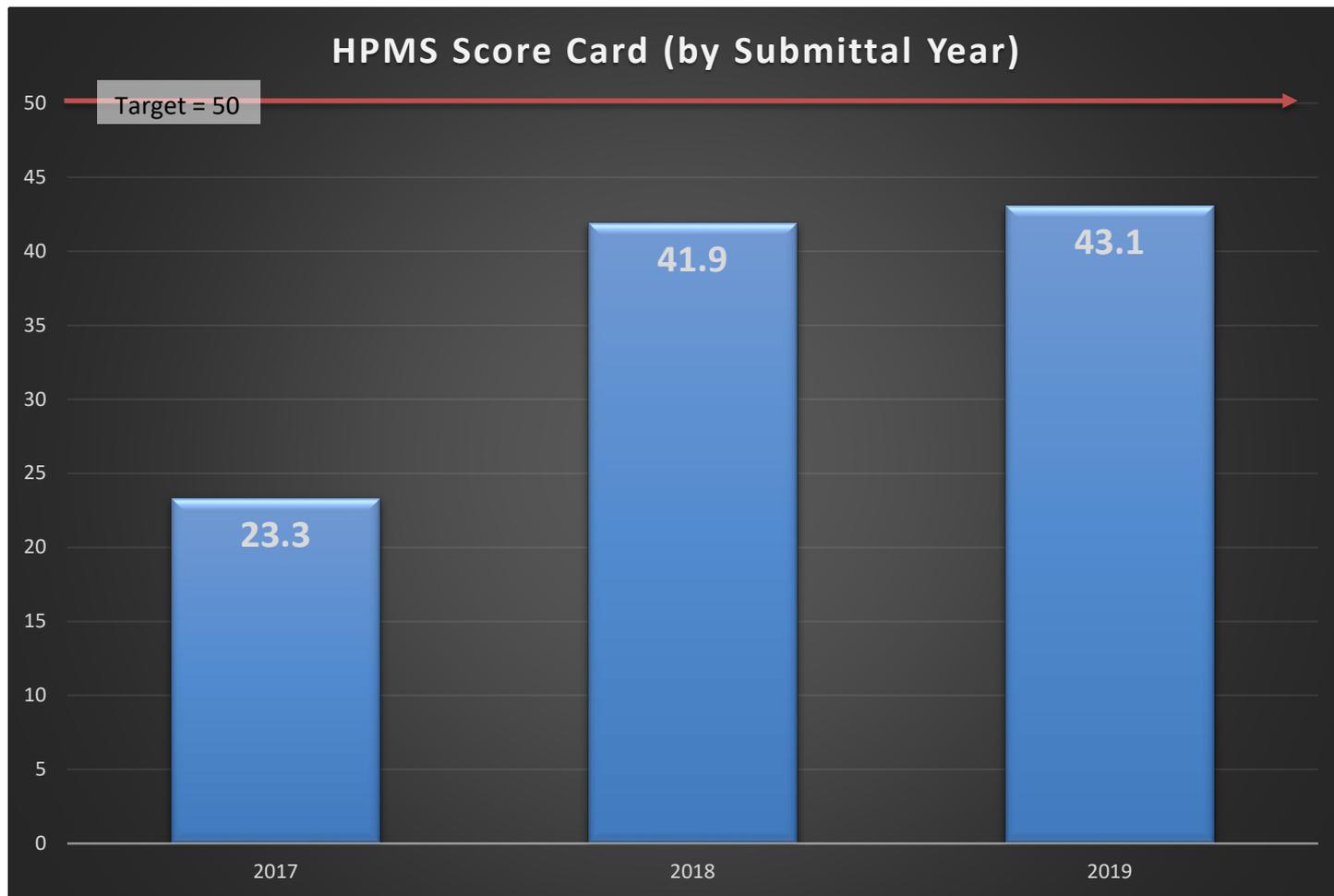
Questions?

Contact:

lisa.idell-sassi@alaska.gov

P. 907-465-4109

erik.mason@alaska.gov

P. 907-465-4151