

# **HIGHWAY PERFORMANCE MONITORING SYSTEM**

**State of California**

**Department of Transportation**

**Division of Transportation System Information**

# What is HPMS and what is it used for?

The Highway Performance Monitoring System (HPMS) measures and monitors the condition, performance, usage, and operating characteristics of the Nation's highways for use by policy decision makers and Congress in developing and evaluating Federal-aid highway programs and funding levels. Additionally, FHWA provides Congress with assessments of future highway investment needs and investment/performance relationships, using State-furnished HPMS data as input, for budget and program development purposes. The HPMS is a federally mandated program.

# Reasons to submit data for the HPMS

States are required by federal statute (23 USC 460.3) to report public road mileage to the FHWA. Funds for a number of federal highway programs are apportioned and allocated to the states on the basis of public road lane-miles in each state. Arterials and collectors identify streets and roads that are eligible for Surface Transportation Program (STP) projects.

And . . .

The Highway Performance Monitoring System is a federally mandated inventory system and planning study designed to assess the nation's highway system. Its authority is maintained through the following Codes of Federal Regulations: 23 CFR 420.105(b), 23 CFR 500.807(b), 40 CFR 51.452(b)(2), 40 CFR 93.130(b)(2), and EPA Section 187. The HPMS is used as a management tool to determine the allocation of Federal Aid Funds, to assist in setting policies, and to forecast future transportation needs as it analyzes the system's length, condition and performance. Additionally, it is used to provide data to the Environmental Protection Agency (EPA) to assist in monitoring air quality conformity and its data are used in support of the Biennial Report to Congress on the Status of the Nation's Highways.

# Some of the major purposes:

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- ❑ Biennial reports to Congress on the state of the nation's highways
- ❑ A basis for funding allocation to the states
- ❑ VMT for air quality conformity tracking in carbon monoxide and ozone nonattainment areas
- ❑ Planning data to Caltrans, the Regions, and other agencies
- ❑ Input to the California Public Road Data

# State Highway Traffic Data

## Traffic and Vehicle Data Systems Unit

<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm>

**Caltrans traffic counts are summarized annually into three reports:**

- **Traffic Volumes**
- **Annual Average Daily Truck Traffic**
- **Ramp Volumes**

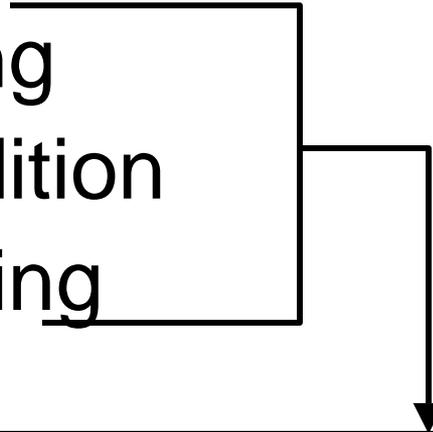
These may be downloaded from this site (PDF or Excel Files).

# Information sought

- Roadway Inventory

All Public Streets and Roads

- Traffic Monitoring
- Pavement Condition
- Travel Forecasting



All principal arterials and a sampling of the minor arterials and collectors.

# Roadway Inventory

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This is captured in the annual maintained mileage report

- Section lengths with number of lanes are reported
  - Function Class and CRS map numbers are added for reference
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# A Public Road

- A public road is any road or street owned and maintained by a public authority and open to public travel. [23 U.S.C. 101(a)].
- ... must be ... passable by four-wheel standard passenger cars, and open to the general public for use without restrictive gates, prohibitive signs, or regulation ...  
[23 CFR 460.2(c)]

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# Traffic Monitoring

Included therein are:

- AADT
- K factor
- D factor
- Truck percentages

The State uses a model to estimate VMT on the non-federal aid routes

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Figure C-1 – FHWA Vehicle Classification Scheme

	Class	Illustration	Description
Passenger Vehicles	1		Motorcycles
	2		Passenger Cars
	3		Pickups/Vans
Single-Unit Trucks	4		Buses
	5		6 tire two-axle single unit trucks
	6		Three axle single unit trucks
	7		Four or more axle single unit trucks
Combination-Unit Trucks	8		Four or fewer axle truck and trailer combinations
	9		Five axle truck and trailer combinations
	10		Six or more axle truck and trailer combinations
	11		Five or fewer axle multis
	12		Six axle multis
	13		Seven or more axle multis
These are negligible	<del>14</del>		Errors/Unknown

# Pavement Condition

- PSR = Present Serviceability Rating

PCI will suffice

Report PCI (if available)

- Year of Surface Improvement

Only report this for the last 7 years

## *Travel Forecasting*

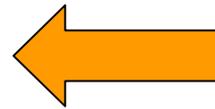
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- **Future AADT**
- **Year of Future AADT**  
18 to 25 years hence, or your model year

# By next year:

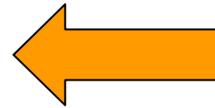
These areas may see some changes

- Roadway Inventory



- Traffic Monitoring

- Pavement Condition



- Travel Forecasting



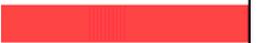


# The new data model

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- ❑ Facilitates dynamic segmentation
- ❑ Urban areas become a GIS layer instead of hard coding
- ❑ Bifurcation of functional classification is eliminated
- ❑ The state will have to account for some 15,740 ramps and connectors

# Functional Classification Conversion Table

Old FC Code		New FC Code
1, 11	 Interstate	1
12	 Other Freeways and Expressways	2
2, 14	 Other Principal Arterial	3
6,16	 Minor Arterial	4
7, 17	 Major Collector	5
8	 Minor Collector	6
9, 19	 Local	7

# Pavement Data Items after 2009

## Data Items remaining the same:

IRI

PSR

Climate\_Zone

Surface\_Type

## Data items either new or requiring a change in information

Rutting

Faulting

Cracking\_Fatigue

Cracking\_Transverse

Year\_Last\_Improv

Year\_Last\_Construction

Last\_Overlay\_Thickness

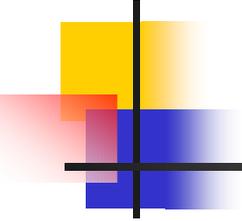
Thickness\_Rigid

Thickness\_Flexible

Base\_Type

Base\_Thickness

Soil\_Type



# For further information on HPMS:

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*FHWA HPMS web page:*

<http://www.fhwa.dot.gov/ohim/hpmspage.htm>

*Caltrans HPMS web page:*

<http://www.dot.ca.gov/hq/tsip/hpms/index.php>

*This presentation is available there for download as a  
.pdf.*

*The Caltrans HPMS instruction manual for  
reviewing and updating data items can be  
downloaded from the Caltrans HPMS web page  
in pdf format.*

# For more information

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