

The Easy Mobile Inventory Tool (EMIT)

**An Emission Inventory Tool for Rural and
Small Urban Areas**

What is EMIT?

EMIT is a tool to simplify mobile source inventory development in rural and small urban areas, for:

SIP development
Conformity determinations

EMIT does not change MOBILE6, but provides an easy way to—

Enter data into MOBILE6
Calculate speeds in areas without travel models
Calculate and summarize on-road mobile source emissions

What Does It Do?

EMIT provides a graphical user interface for entering commonly-used local data into MOBILE6, including:

External conditions
Fleet characteristics
Vehicle activity parameters
Fuel characteristics
Control programs

EMIT also uses local Highway Performance Monitoring System (HPMS) data to:

Calculate speeds for use in MOBILE6
Calculate total emissions

EMIT Capabilities

Inventories can be produced for CO, VOC/NO_x, PM₁₀, or PM_{2.5}

Inventories can be calculated for January, July, or all 12 months

VMT adjustment factors allow calculation of speeds and inventories by time of year

VMT forecast factors allow calculation of future year inventories

Speeds in EMIT

Most rural and small urban areas do not have travel models, so they need an alternative methodology for calculating present and future speeds

EMIT processes user-provided HPMS data (VMT and lane-miles) to calculate speeds by road type

Speeds can be refined by month, hour, and/or direction of travel

Users can choose between Bureau of Public Road or Texas Transportation Institute speed methodologies, and rely on default speed calculation parameters or input local factors

EMIT Processing Steps

- 1) Speeds are calculated using HPMS data, and a MOBILE6 input file is created incorporating user inputs**
- 2) MOBILE6 runs**
- 3) HPMS VMT data are used to calculate total emissions**
- 4) Reports are generated:**
 - 1) Summary table: travel activity and emissions by HPMS facility and area type
 - 2) Emissions chart
 - 3) MOBILE6 input and output files

EMIT Limitations

Only one calendar year can be modeled at a time

EMIT does not facilitate modeling of some MOBILE6 inputs (many for commands where EPA recommends use of defaults), including:

Air conditioning inputs (peak sun, sunrise/sunset, cloud cover)

Mileage accumulation rate, diesel fractions

Soak and trip length distributions

Anti-tampering programs

Basic MOBILE6.2 Data Managed by EMIT

STEP1: Enter Basic MOBILE6.2 Data | EMIT - Easy MOBILE Inventory Tool

File Edit View Help

Basic M6.2 Monthly M6.2 HPMS Calculate Results File Exit About

Run Description (Optional)

Basic MOBILE6.2 Data

Pollutant(s):	<input type="radio"/> CO <input type="radio"/> HC/NOx <input type="radio"/> PM-10 <input type="radio"/> PM-2.5
Calendar Year:	
Evaluation Month:	<input checked="" type="radio"/> January <input type="radio"/> July <input type="radio"/> Monthly
Altitude:	<input checked="" type="radio"/> Low <input type="radio"/> High
File of Age Distribution of Vehicle Registrations:	REGDATA.D
VMT Fraction by Vehicle Class:	
LDV: <input type="text"/>	LDT1: <input type="text"/> LDT2: <input type="text"/> LDT3: <input type="text"/>
LDT4: <input type="text"/>	HDV2B: <input type="text"/> HDV3: <input type="text"/> HDV4: <input type="text"/>
HDV5: <input type="text"/>	HDV6: <input type="text"/> HDV7: <input type="text"/> HDV8A: <input type="text"/>
HDV8B: <input type="text"/>	HDV8B: <input type="text"/> HDV8B: <input type="text"/> MC: <input type="text"/>
File of VMT Fraction by Hour of the Day:	HVMT.DEF
File of Vehicle Engine Starts per Day:	STPERDAY.D
File of Vehicle Engine Starts by Hour of the Day:	SDIST.D
File of I/M Program Description Records:	

STEP 2 -> Enter Monthly Data

Erase Basic MOBILE6.2 Data

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Federal Highway Administration

Example Input Error Notification from EMIT

The screenshot displays the EMIT software interface during the 'STEP 1: Enter Basic MOBILE6.2 Data' phase. The main window title is 'STEP 1: Enter Basic MOBILE6.2 Data | EMIT - Easy MOBILE Inventory Tool'. The interface includes a menu bar (File, Edit, View, Help) and a toolbar with icons for 'Basic M6.2', 'Monthly M6.2', 'HPMS', 'Calculate', 'Results', 'File', 'Exit', and 'About'. The 'Run Description (Optional)' section contains a text field with 'PM-2.5 Test Case'. The 'Basic MOBILE6.2 Data' section contains a table with the following data:

Pollutant(s):	<input type="radio"/> CO <input type="radio"/> HC/NOx <input type="radio"/> PM-10 <input checked="" type="radio"/> PM-2.5
Calendar Year:	20022
Evaluation Month:	<input checked="" type="radio"/> January <input type="radio"/> July <input type="radio"/> Monthly
Altitude:	<input type="radio"/> Low <input type="radio"/> High
File of VMT Fraction by Hour of the Day:	HVMT.DEF
File of Vehicle Engine Starts per Day:	STPERDAY.D
File of Vehicle Engine Starts by Hour of the Day:	SDIST.D
File of I/M Program Description Records:	

An 'INPUT ERROR' dialog box is overlaid on the interface, displaying a warning icon and the message: 'The Calendar Year Entered is Out of Range - Enter a Value Between 1952 and 2050, Inclusively'. The dialog box has an 'OK' button. In the bottom right corner of the main window, there is a logo for the U.S. Department of Transportation Federal Highway Administration and a button labeled 'Erase Basic MOBILE6.2 Data'.

Monthly MOBILE6.2 Data Managed by EMIT

STEP 2: Enter Month-by-Month MOBILE6.2 Data | EMIT - Easy MOBILE I...

File Edit View Help

Basic M6.2 Monthly M6.2 HPMS Calculate Results File Exit About

Run Description (Optional)

PM-2.5 Test Case

Monthly MOBILE6.2 Data

Calendar Month	Evaluation Month	Calendar Year	Minimum Temp, oF	Maximum Temp, oF	Absolute Humidity, grains/lb	Fuel RVP, psi	Diesel Sulfur, ppm
January	1	1	2002		75.0		
February	2	1	2002		75.0		
March	3	1	2002		75.0		
April	4	7	2002		75.0		
May	5	7	2002		75.0		
June	6	7	2002		75.0		
July	7	7	2002		75.0		
August	8	7	2002		75.0		
September	9	7	2002		75.0		
October	10	1	2003		75.0		
November	11	1	2003		75.0		
December	12	1	2003		75.0		

Step 3 -> Enter HPMS Data

Erase Monthly MOBILE6.2 Data

Enter Hourly MOBILE6.2 Data

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HPMS Data Managed by EMIT

STEP 3: Enter HPMS Data | EMIT - Easy MOBILE Inventory Tool

File Edit View Help

Basic M6.2 Monthly M6.2 HPMS Calculate Results File Exit About

Run Description (Optional)

Vehicle Speed Processing

Bureau of Public Roads (BPR) Formula Texas Transportation Institute (TTI) Method
 Each Hour of the Day Each Month of the Year Each Direction of Travel : Split

HPMS Data by Area Type

Rural Small Urban Urbanized Large Urbanized

Functional Classification	Ramp %	VMT per day	Lane-Miles	VMT Forecast Factor (for Future Year)
Interstate				
Other Principal Arterial				
Minor Arterial				
Major Collector				
Minor Collector				
Local				

VMT Adjustment Factor for Day of Week and/or Season:

STEP 4 -> Calculate Emissions
 Erase Rural HPMS Data
 Change Speed Calculation Parameters

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Changing Speed Calculation Parameters in EMIT

STEP 3: Enter HPMS Data | EMIT - Easy MOBILE Inventory Tool

File Edit View Help

Basic M6.2 Monthly M6.2 HPMS Calculate Results File Exit About

Run Description (Optional)

STEP 4 -> Calculate

Change Speed Calculation Parameters (TTI Method) | EMIT - Easy MOBI...

TTI Method Speed Calculation Parameters by Area Type

Rural Small Urban Urbanized Large Urbanized

Functional Classification	Sf (mph)	C (vphpl)	M (min/mi)	A	B
Interstate	70	2200	5	0.015	4.2
Other Principal Arterial	55	1003	6	0.05	3.9
Minor Arterial	50	920	6	0.05	3.9
Major Collector	40	836	6	0.05	3.9
Minor Collector	35	669	6	0.05	3.9
Local	30	502	6	0.05	3.9

Erase Speed Parameters
Restore Defaults
Close

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VMT Adjustment Factor for Day of Week and/or Season:

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Summary Table of Results in EMIT

STEP 5: View Results Table | EMIT - Easy Mobile Inventory Tool

File Edit View Help

Basic M6.2 Monthly M6.2 HPMS Calculate Results File Exit About

Run Description

Emission Inventory Results

HC NOx

Area	Type	Functional Classification	VMT/day	Lane-Miles	AADT/ lane	Peak-hr VPH/lane	Peak-hr Spd mph	24-hr EF g/VMT	Emissions lb/day
Rural		Interstate							
		Other Principal Arterial							
		Minor Arterial							
		Major Collector							
		Minor Collector							
Small Urban		Local							
		Interstate							
		Other Freeway							
		Other Principal Arterial							
Urbanized		Minor Arterial							
		Collector							
		Local							
		Interstate							
Large Urbanized		Other Freeway							
		Other Principal Arterial							
		Minor Arterial							
		Collector							
	Local								
TOTAL =									

Results Chart

MOBILE6.2 Printout

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Software Availability

Basic capabilities have been defined, coding is in process

Beta version should be available in mid-June

FHWA will distribute free of charge when complete

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