

MOBILE6

Day 2 Examples

MOBILE6
On-Road Motor Vehicle
Emissions Model

Training Course

Sierra Research, Inc.
September 2001

Example 1

Generate VOC, CO, and NO_x fleet-average emission rates for 1990 to 2020 in 5-year increments. Plot results.

Temperature: 72°F to 92°F

Fuel RVP: 8.7 psi

Example 1 Input File (Page 1 of 1)

* Filename: Exam_1.in
* This input generates the summer fleet-average VOC, CO and NOx
* emissions from CY1990 to CY2020 using model defaults.

***** Header Section *****
MOBILE6 INPUT FILE
RUN DATA

***** Run Section *****
FUEL RVP : 8.7
MIN/MAX TEMP : 72.0 92.0

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO RECORD : Summer Fleet-Average Emission - CY1990
CALENDAR YEAR : 1990

SCENARIO RECORD : Summer Fleet-Average Emission - CY1995
CALENDAR YEAR : 1995

SCENARIO RECORD : Summer Fleet-Average Emission - CY2000
CALENDAR YEAR : 2000

SCENARIO RECORD : Summer Fleet-Average Emission - CY2005
CALENDAR YEAR : 2005

SCENARIO RECORD : Summer Fleet-Average Emission - CY2010
CALENDAR YEAR : 2010

SCENARIO RECORD : Summer Fleet-Average Emission - CY2015
CALENDAR YEAR : 2015

SCENARIO RECORD : Summer Fleet-Average Emission - CY2020
CALENDAR YEAR : 2020

***** End of This Run *****
END OF RUN

Example 1 Output (Page 1 of 4)

```
*****
* MOBILE6 Draft (17-Aug-2001) *
* Input file: EXAM_1.IN (file 1, run 1). *
*****
```

```
* #####
* Summer Fleet-Average Emission - CY1990
```

```
* File 1, Run 1, Scenario 1.
* #####
```

```
M 48 Warning:
    there are no sales for vehicle class HDGV8b
```

```
Calendar Year: 1990
Month: Jan.
Altitude: Low
Minimum Temperature: 72.0 (F)
Maximum Temperature: 92.0 (F)
Absolute Humidity: 75. grains/lb
Nominal Fuel RVP: 8.7 psi
Weathered RVP: 8.3 psi
Fuel Sulfur Content: 300. ppm
```

```
Exhaust I/M Program: No
Evap I/M Program: No
ATP Program: No
Reformulated Gas: No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:	<6000	<6000	>6000	(All)						
VMT Distribution:	0.6179	0.1782	0.0817		0.0370	0.0105	0.0044	0.0631	0.0073	1.0000

```
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```

Composite Emission Factors (g/mi):										
Composite VOC :	4.69	4.99	7.40	5.75	8.04	0.66	1.54	2.33	3.11	4.871
Composite CO :	47.23	53.13	74.74	59.93	98.76	1.46	2.59	10.45	17.39	49.223
Composite NOX :	2.64	2.43	2.92	2.59	7.02	1.81	2.69	23.98	1.17	4.116

```
-----
```

```
* #####
* Summer Fleet-Average Emission - CY1995
```

```
* File 1, Run 1, Scenario 2.
* #####
```

```
M 48 Warning:
    there are no sales for vehicle class HDGV8b
```

```
Calendar Year: 1995
Month: Jan.
Altitude: Low
Minimum Temperature: 72.0 (F)
Maximum Temperature: 92.0 (F)
Absolute Humidity: 75. grains/lb
Nominal Fuel RVP: 8.7 psi
Weathered RVP: 8.3 psi
Fuel Sulfur Content: 300. ppm
```

```
Exhaust I/M Program: No
Evap I/M Program: No
ATP Program: No
Reformulated Gas: No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:	<6000	<6000	>6000	(All)						
VMT Distribution:	0.5774	0.2225	0.0781		0.0346	0.0041	0.0023	0.0741	0.0069	1.0000

```
-----
```

Composite Emission Factors (g/mi):										
Composite VOC :	3.13	3.30	5.13	3.77	5.31	0.76	1.68	1.30	2.66	3.246
Composite CO :	27.08	33.41	52.17	38.29	62.67	1.66	2.85	6.65	16.83	29.936
Composite NOX :	1.78	1.71	2.17	1.83	6.04	1.88	2.50	20.61	1.18	3.338

```
-----
```

```
* #####
* Summer Fleet-Average Emission - CY2000
```

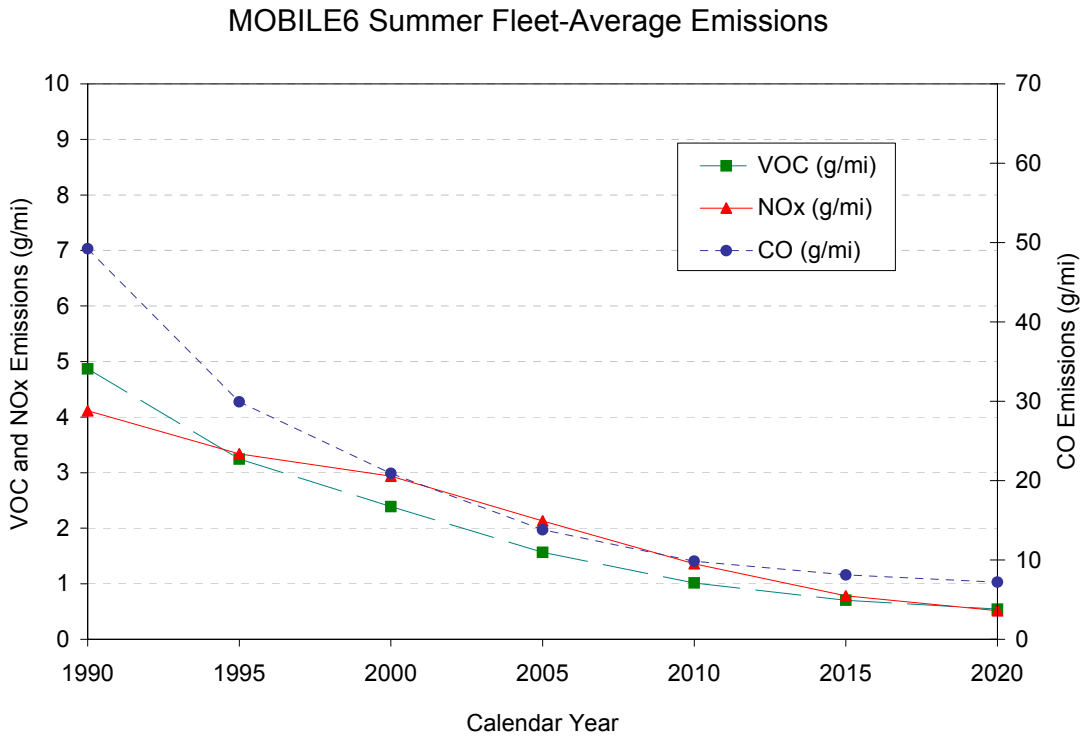
```
* File 1, Run 1, Scenario 3.
* #####
```

```
M 48 Warning:
    there are no sales for vehicle class HDGV8b
```


Example 1 Output (Page 4 of 4)

VMT Distribution:	0.2791	0.4400	0.1500		0.0362	0.0003	0.0022	0.0872	0.0050	1.0000

Composite Emission Factors (g/mi):										
Composite VOC :	0.462	0.519	0.846	0.602	0.630	0.064	0.212	0.268	2.51	0.544
Composite CO :	6.56	7.71	10.55	8.43	7.70	0.735	0.576	0.481	16.74	7.210
Composite NOX :	0.274	0.354	0.672	0.435	0.623	0.064	0.271	1.750	1.16	0.515



Example 2

Generate LDGV VOC and NO_x emission rates for 1990 to 2020 in 5-year increments. For NO_x, plot running versus starting emission rates. For VOC, plot exhaust versus evaporative emission rates. Specify an output file name.

Temperature: 72°F to 92°F

Fuel RVP: 8.7 psi

Example 2 Input File (Page 1 of 1)

```
* Filename: Exam_2.in
* This input generates the VOC and NOx emissions
* from CY1990 to CY2020 using model defaults.

***** Header Section *****
MOBILE6 INPUT FILE
POLLUTANTS       : HC NOX
REPORT FILE      : Example2.out
RUN DATA

***** Run Section *****
FUEL RVP         : 8.7
MIN/MAX TEMP     : 72.0 92.0
EXPAND EXHAUST   :
EXPAND EVAPORATIVE :

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO RECORD  : Summer Fleet-Average Emission - CY1990
CALENDAR YEAR    : 1990

SCENARIO RECORD  : Summer Fleet-Average Emission - CY1995
CALENDAR YEAR    : 1995

SCENARIO RECORD  : Summer Fleet-Average Emission - CY2000
CALENDAR YEAR    : 2000

SCENARIO RECORD  : Summer Fleet-Average Emission - CY2005
CALENDAR YEAR    : 2005

SCENARIO RECORD  : Summer Fleet-Average Emission - CY2010
CALENDAR YEAR    : 2010

SCENARIO RECORD  : Summer Fleet-Average Emission - CY2015
CALENDAR YEAR    : 2015

SCENARIO RECORD  : Summer Fleet-Average Emission - CY2020
CALENDAR YEAR    : 2020

***** End of This Run *****
END OF RUN
```


Example 2 Output (Page 3 of 5)

Refueling Loss:	0.17	0.26	0.26	0.26	0.42					
Total Non-Exhaust:	1.34	1.20	1.67	1.33	2.24	0.00	0.00	0.00	0.87	1.251

* #####
 * Summer Fleet-Average Emission - CY2005

* File 1, Run 1, Scenario 4.

* #####

M 48 Warning:
 there are no sales for vehicle class HDGV8b

Calendar Year: 2005
 Month: Jan.
 Altitude: Low
 Minimum Temperature: 72.0 (F)
 Maximum Temperature: 92.0 (F)
 Absolute Humidity: 75. grains/lb
 Nominal Fuel RVP: 8.7 psi
 Weathered RVP: 8.3 psi
 Fuel Sulfur Content: 92. ppm

Exhaust I/M Program: No
 Evap I/M Program: No
 ATP Program: No
 Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.4225	0.3349	0.1143		0.0357	0.0006	0.0018	0.0844	0.0057	1.0000

Composite Emission Factors (g/mi):										
Composite VOC :	1.52	1.51	2.39	1.74	2.31	0.58	0.82	0.56	2.53	1.568
Composite NOX :	0.96	1.13	1.49	1.22	4.50	1.35	1.43	11.94	1.16	2.132

Exhaust emissions (g/mi):										
VOC Start:	0.23	0.29	0.50	0.34		0.25	0.34		0.40	
VOC Running:	0.28	0.35	0.56	0.40		0.33	0.48		1.27	
VOC Total Exhaust:	0.51	0.64	1.06	0.74	0.67	0.58	0.82	0.56	1.67	0.631
NOx Start:	0.15	0.19	0.24	0.20		0.07	0.07		0.37	
NOx Running:	0.81	0.94	1.25	1.02		1.28	1.36		0.79	
NOx Total Exhaust:	0.96	1.13	1.49	1.22	4.50	1.35	1.43	11.94	1.16	2.132

Non-Exhaust Emissions (g/mi):										
Hot Soak Loss:	0.21	0.17	0.25	0.19	0.27				0.36	
Diurnal Loss:	0.03	0.03	0.05	0.04	0.06				0.12	
Resting Loss:	0.12	0.11	0.19	0.13	0.21				0.39	
Running Loss:	0.55	0.39	0.59	0.44	0.66					
Crankcase Loss:	0.01	0.01	0.01	0.01	0.01				0.00	
Refueling Loss:	0.09	0.16	0.24	0.18	0.41					
Total Non-Exhaust:	1.01	0.88	1.33	1.00	1.63	0.00	0.00	0.00	0.86	0.937

* #####
 * Summer Fleet-Average Emission - CY2010

* File 1, Run 1, Scenario 5.

* #####

M 48 Warning:
 there are no sales for vehicle class HDGV8b

Calendar Year: 2010
 Month: Jan.
 Altitude: Low
 Minimum Temperature: 72.0 (F)
 Maximum Temperature: 92.0 (F)
 Absolute Humidity: 75. grains/lb
 Nominal Fuel RVP: 8.7 psi
 Weathered RVP: 8.3 psi
 Fuel Sulfur Content: 30. ppm

Exhaust I/M Program: No
 Evap I/M Program: No
 ATP Program: No
 Reformulated Gas: No

Example 2 Output (Page 5 of 5)

Crankcase Loss:	0.01	0.01	0.01	0.01	0.01					0.00
Refueling Loss:	0.02	0.04	0.08	0.05	0.16					
Total Non-Exhaust:	0.38	0.39	0.72	0.48	0.75	0.00	0.00	0.00	0.84	0.417

* #####
 * Summer Fleet-Average Emission - CY2020

* File 1, Run 1, Scenario 7.
 * #####

M 48 Warning:
 there are no sales for vehicle class HDGV8b
 M 48 Warning:
 there are no sales for vehicle class LDDT12

Calendar Year: 2020
 Month: Jan.
 Altitude: Low
 Minimum Temperature: 72.0 (F)
 Maximum Temperature: 92.0 (F)
 Absolute Humidity: 75. grains/lb
 Nominal Fuel RVP: 8.7 psi
 Weathered RVP: 8.3 psi
 Fuel Sulfur Content: 30. ppm

Exhaust I/M Program: No
 Evap I/M Program: No
 ATP Program: No
 Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VTM Distribution:	0.2791	0.4400	0.1500		0.0362	0.0003	0.0022	0.0872	0.0050	1.0000

Composite Emission Factors (g/mi):

Composite VOC :	0.46	0.52	0.85	0.60	0.63	0.06	0.21	0.27	2.51	0.544
Composite NOX :	0.27	0.35	0.67	0.43	0.62	0.06	0.27	1.75	1.16	0.515

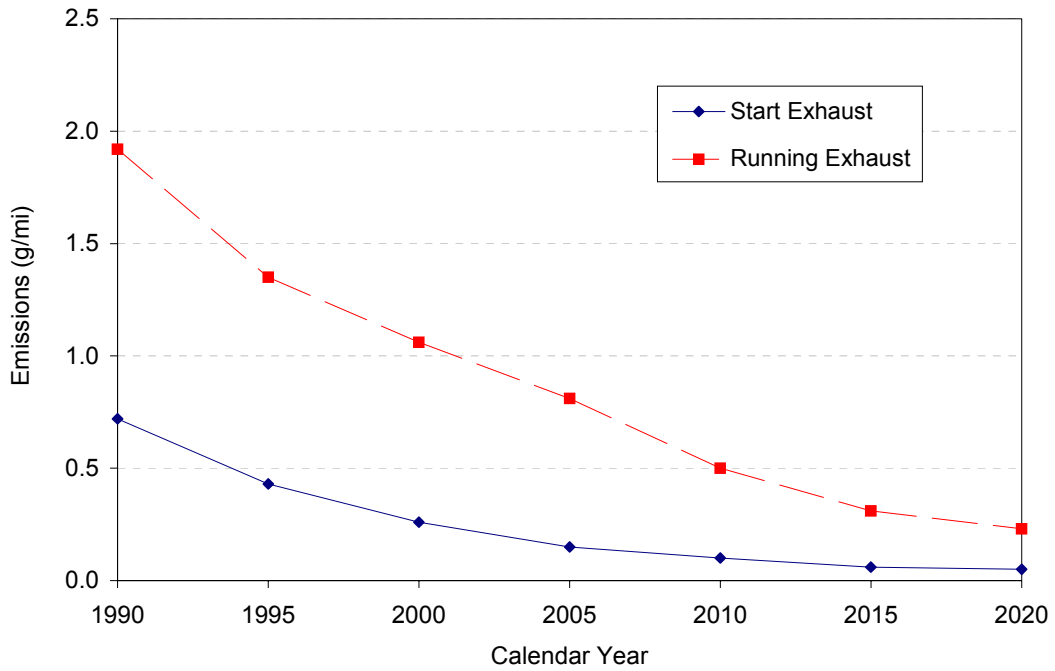
Exhaust emissions (g/mi):

VOC Start:	0.09	0.11	0.19	0.13		0.02	0.08		0.40	
VOC Running:	0.09	0.12	0.20	0.14		0.04	0.13		1.27	
VOC Total Exhaust:	0.18	0.23	0.40	0.27	0.12	0.06	0.21	0.27	1.67	0.247
NOx Start:	0.05	0.07	0.14	0.09		0.00	0.01		0.37	
NOx Running:	0.23	0.28	0.53	0.35		0.06	0.26		0.79	
NOx Total Exhaust:	0.27	0.35	0.67	0.43	0.62	0.06	0.27	1.75	1.16	0.515

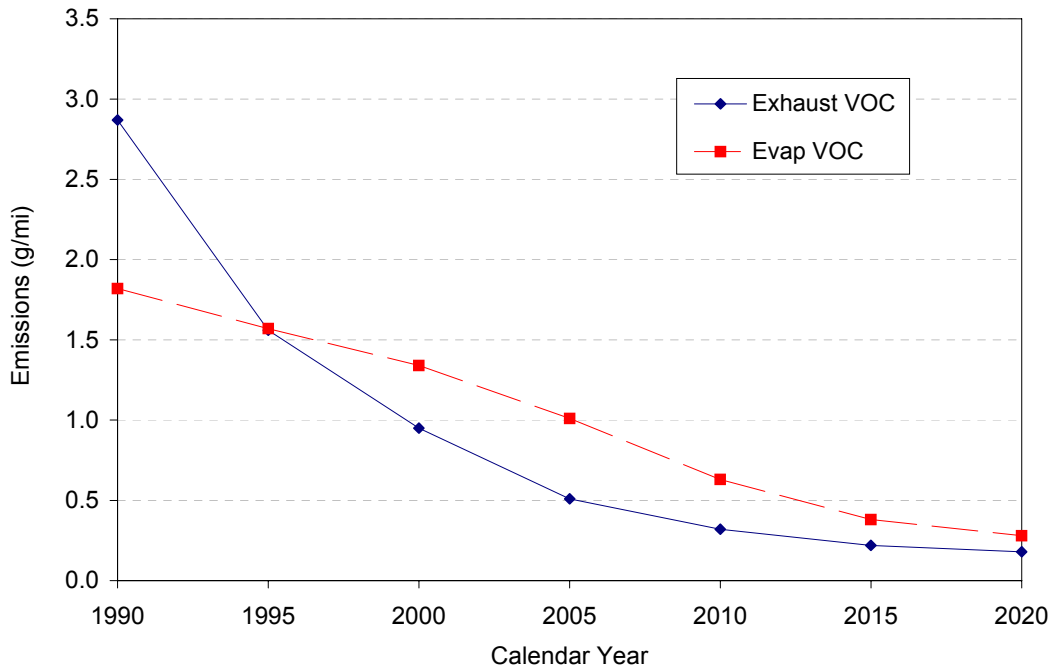
Non-Exhaust Emissions (g/mi):

Hot Soak Loss:	0.06	0.07	0.13	0.09	0.11				0.37	
Diurnal Loss:	0.01	0.01	0.02	0.01	0.02				0.12	
Resting Loss:	0.02	0.03	0.06	0.04	0.05				0.36	
Running Loss:	0.17	0.13	0.18	0.14	0.20					
Crankcase Loss:	0.01	0.01	0.01	0.01	0.01				0.00	
Refueling Loss:	0.01	0.03	0.05	0.04	0.13					
Total Non-Exhaust:	0.28	0.29	0.45	0.33	0.51	0.00	0.00	0.00	0.84	0.297

LDGV NOx Emission Rates



LDGV VOC Emission Rates



Example 3

Using DATABASE commands, find:

- a. Exhaust and evap VOC emission rates of 5-year-old LDGVs from 1970 through 2010 model years.
- b. NO_x emission rates of 10-year old Class 8B HDDVs from 1980 through 2010 model years.

Plot the results.

Temperature: 72°F to 92°F

Fuel RVP: 8.7 psi

Example 3a Input File (Page 1 of 1)

```
* Filename: Exam_3a.in
* This input generates the VOC emission factors
* for 5-yr old LDGVs from 1970 through 2010 model years
* using the database output commands.

***** Header Section *****
MOBILE6 INPUT FILE :

* Indicate database output
DATABASE OUTPUT      :

* Include field labels with database output
WITH FIELDNAMES     :

* Indicate vehicle age range and vehicles for study
DATABASE AGES       : 5 5
DATABASE VEHICLES   : 21111 11111111 1 111 11111111 111

* Results represent daily rather than hourly averages, which
* greatly reduces the volume of resulting database.
DAILY OUTPUT        :

POLLUTANTS          : HC
RUN DATA

***** Run Section *****
FUEL RVP             : 8.7
MIN/MAX TEMP        : 72.0 92.0

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO REC        : 5-yr Old Vehicle EFs - CY1975
CALENDAR YEAR       : 1975

SCENARIO REC        : 5-yr Old Vehicle EFs - CY1980
CALENDAR YEAR       : 1980

SCENARIO REC        : 5-yr Old Vehicle EFs - CY1985
CALENDAR YEAR       : 1985

SCENARIO REC        : 5-yr Old Vehicle EFs - CY1990
CALENDAR YEAR       : 1990

SCENARIO REC        : 5-yr Old Vehicle EFs - CY1995
CALENDAR YEAR       : 1995

SCENARIO REC        : 5-yr Old Vehicle EFs - CY2000
CALENDAR YEAR       : 2000

SCENARIO REC        : 5-yr Old Vehicle EFs - CY2005
CALENDAR YEAR       : 2005

SCENARIO REC        : 5-yr Old Vehicle EFs - CY2010
CALENDAR YEAR       : 2010

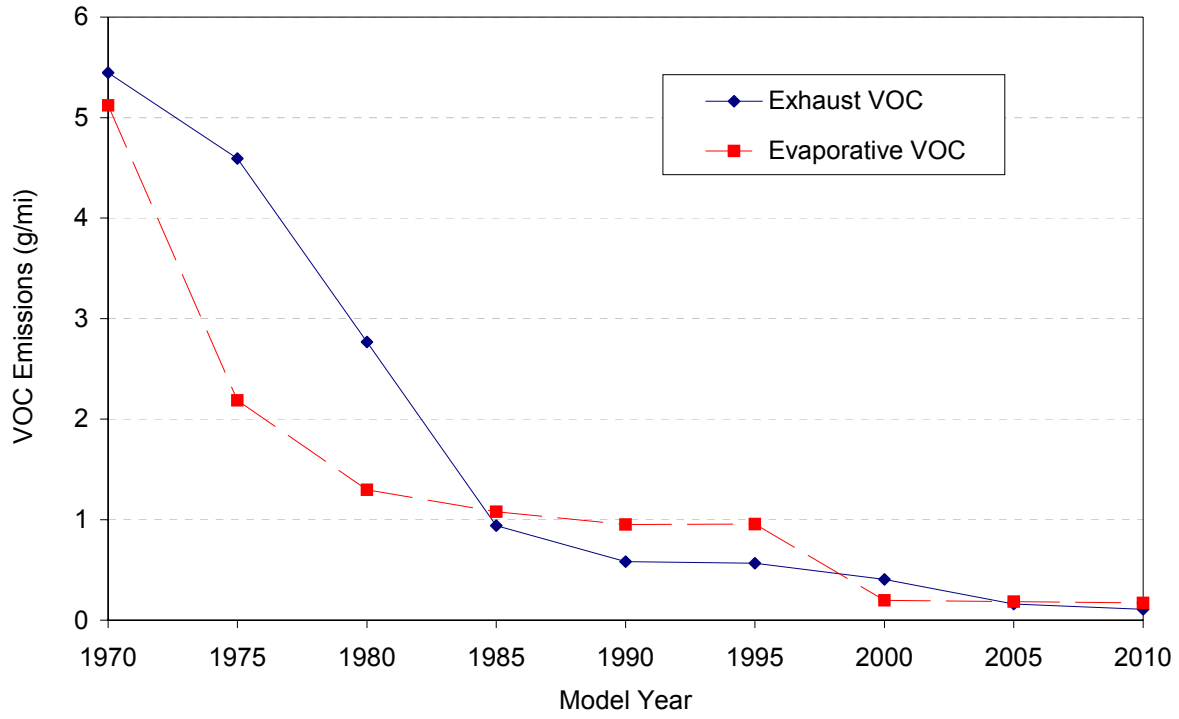
SCENARIO REC        : 5-yr Old Vehicle EFs - CY2015
CALENDAR YEAR       : 2015

***** End of This Run *****
END OF RUN
```

Example 3a Output (Sample Page)

FILE	RUN	SCEN	POL	VTYPE	ETYPE	FTYPE	AGE	GM MILE	GM DAY	STARTS	ENDS	MILES	MPG	FACVMT	REGDIST	
1	1	1	1	1	1	1	1	3.4991	115.315	7.28	5.3783	32.956	12.46	0.3421	0.0724	
1	1	1	1	1	1	2	5	3.966	130.705	7.28	5.3783	32.956	12.46	0.4978	0.0724	
1	1	1	1	1	1	3	5	7.6686	252.725	7.28	5.3783	32.956	12.46	0.1305	0.0724	
1	1	1	1	1	1	4	5	4.4095	145.319	7.28	5.3783	32.956	12.46	0.0297	0.0724	
1	1	1	1	1	2	5	1.1439	37.699	7.28	5.3783	32.956	12.46	1	1	0.0724	
1	1	1	1	1	5	5	0.2163	7.129	7.28	5.3783	32.956	12.46	1	1	0.0724	
1	1	1	1	1	8	5	0.3482	11.474	7.28	5.3783	32.956	12.46	1	1	0.0724	
1	1	1	1	1	3	5	1.3816	45.532	7.28	5.3783	32.956	12.46	1	1	0.0724	
1	1	1	1	1	4	5	0.0676	2.228	7.28	5.3783	32.956	12.46	1	1	0.0724	
1	1	1	1	1	7	5	0.0319	1.05	7.28	5.3783	32.956	12.46	1	1	0.0724	
1	1	1	1	1	6	1	2.7264	89.853	7.28	5.3783	32.956	12.46	0.3421	1	0.0724	
1	1	1	1	1	6	2	2.6572	87.571	7.28	5.3783	32.956	12.46	0.4978	1	0.0724	
1	1	1	1	1	6	3	5.793	190.913	7.28	5.3783	32.956	12.46	0.1305	1	0.0724	
1	1	1	1	1	6	4	2.1598	71.179	7.28	5.3783	32.956	12.46	0.0297	1	0.0724	
1	1	1	1	1	1	1	2.392	78.831	7.28	5.3783	32.956	13.2	0.3421	1	0.072	
1	1	1	2	1	1	1	5	2.6887	88.609	7.28	5.3783	32.956	13.2	0.4978	0.072	
1	1	1	2	1	1	2	5	5.1929	171.138	7.28	5.3783	32.956	13.2	0.1305	0.072	
1	1	1	2	1	1	3	5	3.1105	102.51	7.28	5.3783	32.956	13.2	0.0297	0.072	
1	1	1	2	1	1	4	5	1.667	54.939	7.28	5.3783	32.956	13.2	1	0.072	
1	1	1	2	1	2	5	5	0.2163	7.129	7.28	5.3783	32.956	13.2	1	0.072	
1	1	1	2	1	1	5	5	0.3286	10.831	7.28	5.3783	32.956	13.2	1	0.072	
1	1	1	2	1	1	8	5	0.9429	31.073	7.28	5.3783	32.956	13.2	1	0.072	
1	1	1	2	1	1	3	5	0.0963	3.175	7.28	5.3783	32.956	13.2	1	0.072	
1	1	1	2	1	1	4	5	0.0314	1.033	7.28	5.3783	32.956	13.2	1	0.072	
1	1	1	2	1	1	7	5	0.3887	12.811	7.28	5.3783	32.956	13.2	0.3421	1	0.072
1	1	1	2	1	1	6	5	0.4542	14.969	7.28	5.3783	32.956	13.2	0.4978	0.072	
1	1	1	2	1	1	2	5	1.5336	50.54	7.28	5.3783	32.956	13.2	0.1305	0.072	
1	1	1	2	1	1	6	5	0.3835	12.638	7.28	5.3783	32.956	13.2	0.0297	0.072	
1	1	1	3	1	1	4	5	1.3772	45.386	7.28	5.3783	32.956	19.42	0.3421	0.0711	
1	1	1	3	1	1	1	5	1.5242	50.232	7.28	5.3783	32.956	19.42	0.4978	0.0711	
1	1	1	3	1	1	2	5	2.7725	91.37	7.28	5.3783	32.956	19.42	0.1305	0.0711	
1	1	1	3	1	1	3	5	1.7385	57.294	7.28	5.3783	32.956	19.42	0.0297	0.0711	
1	1	1	3	1	1	4	5	1.1237	37.033	7.28	5.3783	32.956	19.42	1	0.0711	
1	1	1	3	1	1	2	5	0.1334	4.395	7.28	5.3783	32.956	19.42	1	0.0711	
1	1	1	3	1	1	5	5	0.2234	7.362	7.28	5.3783	32.956	19.42	1	0.0711	
1	1	1	3	1	1	8	5			7.28	5.3783					

VOC Emission Rates of 5-Year Old LDVs



Example 3b Input File (Page 1 of 1)

```
* Filename: Exam_3b.in
* This input generates the NOx emission factors
* for 10-yr old HDDVs from 1980 through 2010 model years
* in 5-MY increments using the database output commands.

***** Header Section *****
MOBILE6 INPUT FILE :

* Indicate database output
DATABASE OUTPUT    :

* Include field labels with database output
WITH FIELDNAMES   :

* Indicate vehicle age range and vehicles for study
DATABASE AGES     : 10 10
DATABASE VEHICLES : 11111 11111111 1 111 11111112 111

* Results represent daily rather than hourly averages, which
* greatly reduces the volume of resulting database.
DAILY OUTPUT      :

POLLUTANTS        : NOX
RUN DATA

***** Run Section *****
FUEL RVP           : 8.7
MIN/MAX TEMP      : 72.0 92.0

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO REC      : 5-yr Old Vehicle EFs - CY1990
CALENDAR YEAR     : 1990

SCENARIO REC      : 5-yr Old Vehicle EFs - CY1995
CALENDAR YEAR     : 1995

SCENARIO REC      : 5-yr Old Vehicle EFs - CY2000
CALENDAR YEAR     : 2000

SCENARIO REC      : 5-yr Old Vehicle EFs - CY2005
CALENDAR YEAR     : 2005

SCENARIO REC      : 5-yr Old Vehicle EFs - CY2010
CALENDAR YEAR     : 2010

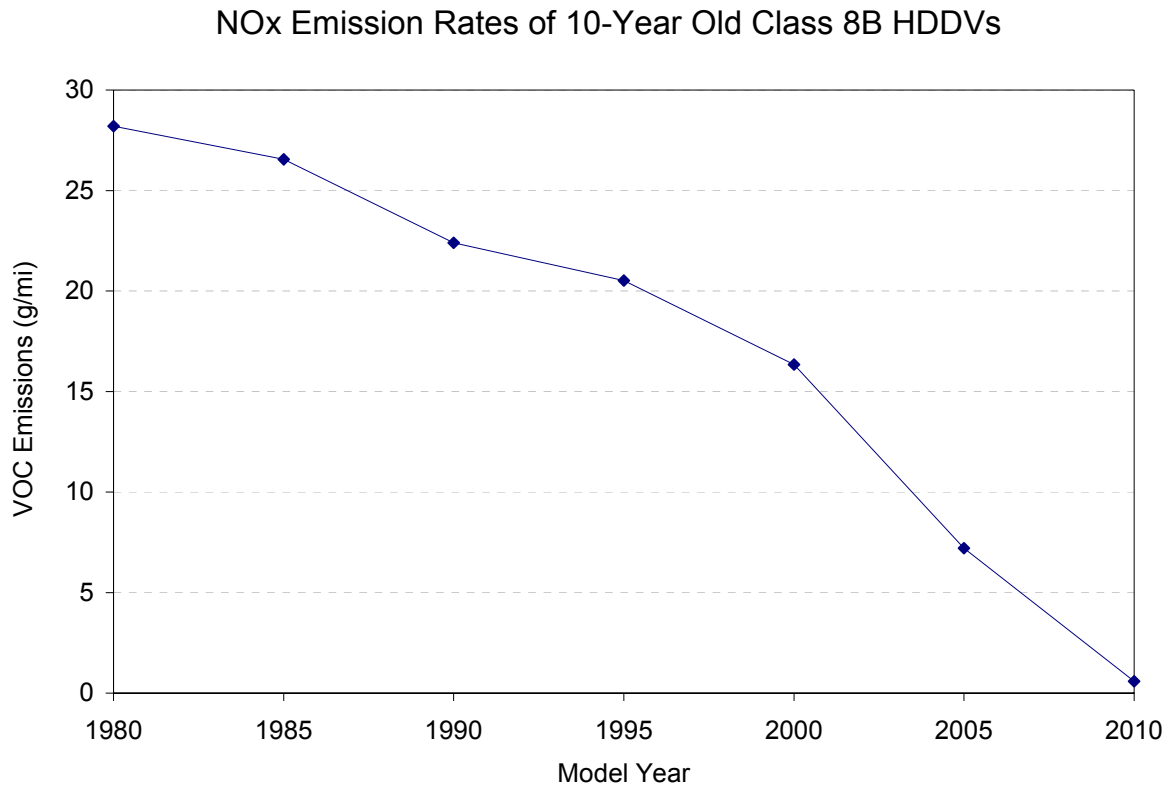
SCENARIO REC      : 5-yr Old Vehicle EFs - CY2015
CALENDAR YEAR     : 2015

SCENARIO REC      : 5-yr Old Vehicle EFs - CY2020
CALENDAR YEAR     : 2020

***** End of This Run *****
END OF RUN
```

Example 3b Output (Page 1 of 1)

FILE	RUN	SCEN	POL	VTYPE	ETYPE	FTYPE	AGE	GM MILE	GM DAY	STARTS	ENDS	MILES	MPG	FACVMT	REGDIST	VCOUNT	MYR
1	1	1	3	23	1	1	10	32.5536	4577.938	6.65	4.7467	140.6278	0	0.3421	0.0414	1.1605	1980
1	1	1	3	23	1	2	10	24.6396	3465.007	6.65	4.7467	140.6278	0	0.4978	0.0414	1.1605	1980
1	1	1	3	23	1	3	10	31.4712	4425.722	6.65	4.7467	140.6278	0	0.1305	0.0414	1.1605	1980
1	1	1	3	23	1	4	10	23.0878	3246.787	6.65	4.7467	140.6278	0	0.0297	0.0414	1.1605	1980
1	1	2	3	23	1	1	10	30.6573	4311.268	6.65	4.7467	140.6278	0	0.3421	0.0414	1.315	1985
1	1	2	3	23	1	2	10	23.2043	3263.165	6.65	4.7467	140.6278	0	0.4978	0.0414	1.315	1985
1	1	2	3	23	1	3	10	29.6379	4167.918	6.65	4.7467	140.6278	0	0.1305	0.0414	1.315	1985
1	1	2	3	23	1	4	10	21.7429	3057.658	6.65	4.7467	140.6278	0	0.0297	0.0414	1.315	1985
1	1	3	3	23	1	1	10	27.9431	3923.579	6.65	4.7467	140.6278	0	0.3421	0.0414	1.5585	1990
1	1	3	3	23	1	2	10	19.5882	2754.641	6.65	4.7467	140.6278	0	0.4978	0.0414	1.5585	1990
1	1	3	3	23	1	3	10	20.3867	2866.939	6.65	4.7467	140.6278	0	0.1305	0.0414	1.5585	1990
1	1	3	3	23	1	4	10	14.4813	2036.477	6.65	4.7467	140.6278	0	0.0297	0.0414	1.5585	1990
1	1	4	3	23	1	1	10	26.6032	3741.156	6.65	4.7467	140.6278	0	0.3421	0.0414	1.749	1995
1	1	4	3	23	1	2	10	17.4362	2452.009	6.65	4.7467	140.6278	0	0.4978	0.0414	1.749	1995
1	1	4	3	23	1	3	10	18.0812	2542.717	6.65	4.7467	140.6278	0	0.1305	0.0414	1.749	1995
1	1	4	3	23	1	4	10	12.9521	1821.422	6.65	4.7467	140.6278	0	0.0297	0.0414	1.749	1995
1	1	5	3	23	1	1	10	21.2299	2985.513	6.65	4.7467	140.6278	0	0.3421	0.0414	1.8675	2000
1	1	5	3	23	1	2	10	13.8548	1948.374	6.65	4.7467	140.6278	0	0.4978	0.0414	1.8675	2000
1	1	5	3	23	1	3	10	14.3372	2016.205	6.65	4.7467	140.6278	0	0.1305	0.0414	1.8675	2000
1	1	5	3	23	1	4	10	10.3803	1459.753	6.65	4.7467	140.6278	0	0.0297	0.0414	1.8675	2000
1	1	6	3	23	1	1	10	8.3225	1170.374	6.65	4.7467	140.6278	0	0.3421	0.0414	1.9435	2005
1	1	6	3	23	1	2	10	6.2932	885.847	6.65	4.7467	140.6278	0	0.4978	0.0414	1.9435	2005
1	1	6	3	23	1	3	10	8.0458	1131.459	6.65	4.7467	140.6278	0	0.1305	0.0414	1.9435	2005
1	1	6	3	23	1	4	10	5.9025	830.058	6.65	4.7467	140.6278	0	0.0297	0.0414	1.9435	2005
1	1	7	3	23	1	1	10	0.6728	94.608	6.65	4.7467	140.6278	0	0.3421	0.0414	2.016	2010
1	1	7	3	23	1	2	10	0.5092	71.608	6.65	4.7467	140.6278	0	0.4978	0.0414	2.016	2010
1	1	7	3	23	1	3	10	0.6504	91.463	6.65	4.7467	140.6278	0	0.1305	0.0414	2.016	2010
1	1	7	3	23	1	4	10	0.4771	67.099	6.65	4.7467	140.6278	0	0.0297	0.0414	2.016	2010



Example 4

Perform CY2000 and CY2010 runs with:

- a. MOBILE5-based registration fractions,
- b. MOBILE5-based VMT mix, and
- c. a. and b.

Prepare a bar-chart of the fleet-average VOC results.
Compare these results to Example 1.

Temperature: 72°F to 92°F
RVP: 8.7 psi

Example 4a Input File (Page 1 of 1)

```
* Filename: Exam_4a.in
* This input uses MOBILE5-based registration fractions
* and generates the fleet-average VOC emissions for
* calendar years 2000 and 2010.

***** Header Section *****
MOBILE6 INPUT FILE
POLLUTANTS      : HC
RUN DATA

***** Run Section #1 *****
* A separate run section is needed for each set of
* registration distribution data, which is calendar year
* dependent.

FUEL RVP        : 8.7
MIN/MAX TEMP    : 72.0 92.0

REG DIST        : Reg2000.ex4

***** Scenario Section *****
SCENARIO RECORD : Summer Fleet-Average Emission - CY2000
CALENDAR YEAR   : 2000

***** End of Run #1/Begin Run #2 *****
END OF RUN

FUEL RVP        : 8.7
MIN/MAX TEMP    : 72.0 92.0

REG DIST        : Reg2010.ex4

***** Scenario Section *****
SCENARIO RECORD : Summer Fleet-Average Emission - CY2010
CALENDAR YEAR   : 2010

***** End of Run #2 *****
END OF RUN
```

Example 4a File Inputs: Reg2000.ex4 (Page 1 of 2)

```

*Filename: Reg2000.ex4
*Convert MOBILE5 Registration Fractions to MOBILE6-Based Registration Fractions
*
*Calendar Year:          2000   User-Input
*
*MOBILE5b Reg Fractions
*   0.049  0.079  0.083  0.082  0.084  0.081  0.077  0.056  0.050  0.051
*   0.050  0.054  0.047  0.037  0.024  0.019  0.014  0.015  0.011  0.008
*   0.006  0.005  0.004  0.003  0.010
*   0.063  0.084  0.084  0.084  0.084  0.069  0.059  0.044  0.036  0.031
*   0.030  0.053  0.047  0.046  0.036  0.028  0.017  0.022  0.017  0.014
*   0.009  0.008  0.008  0.005  0.025
*   0.054  0.072  0.072  0.072  0.072  0.052  0.050  0.034  0.054  0.031
*   0.028  0.080  0.084  0.049  0.039  0.030  0.018  0.023  0.018  0.015
*   0.009  0.008  0.009  0.006  0.026
*   0.023  0.047  0.047  0.047  0.047  0.038  0.033  0.021  0.026  0.029
*   0.034  0.064  0.054  0.058  0.051  0.038  0.043  0.041  0.035  0.029
*   0.021  0.022  0.022  0.014  0.117
*   0.049  0.079  0.083  0.082  0.084  0.081  0.077  0.056  0.050  0.051
*   0.050  0.054  0.047  0.037  0.024  0.019  0.014  0.015  0.011  0.008
*   0.006  0.005  0.004  0.003  0.010
*   0.063  0.084  0.084  0.084  0.084  0.069  0.059  0.044  0.036  0.031
*   0.030  0.053  0.047  0.046  0.036  0.028  0.017  0.022  0.017  0.014
*   0.009  0.008  0.008  0.005  0.025
*   0.034  0.067  0.067  0.067  0.067  0.073  0.061  0.040  0.041  0.051
*   0.053  0.066  0.055  0.057  0.045  0.019  0.023  0.028  0.024  0.016
*   0.011  0.009  0.007  0.005  0.016
*   0.144  0.168  0.135  0.109  0.088  0.070  0.056  0.045  0.036  0.029
*   0.023  0.097  0.000  0.000  0.000  0.000  0.000  0.000  0.000  0.000
*   0.000  0.000  0.000  0.000  0.000
*
*
* MOBILE6 Vehicle Classes:
* 1 LDV Light-Duty Vehicles (Passenger Cars)
* 2 LDT1 Light-Duty Trucks 1 (0-6,000 lbs. GVWR, 0-3750 lbs. LVW)
* 3 LDT2 Light Duty Trucks 2 (0-6,000 lbs. GVWR, 3751-5750 lbs. LVW)
* 4 LDT3 Light Duty Trucks 3 (6,001-8500 lbs. GVWR, 0-3750 lbs. LVW)
* 5 LDT4 Light Duty Trucks 4 (6,001-8500 lbs. GVWR, 3751-5750 lbs. LVW)
* 6 HDV2B Class 2b Heavy Duty Vehicles (8501-10,000 lbs. GVWR)
* 7 HDV3 Class 3 Heavy Duty Vehicles (10,001-14,000 lbs. GVWR)
* 8 HDV4 Class 4 Heavy Duty Vehicles (14,001-16,000 lbs. GVWR)
* 9 HDV5 Class 5 Heavy Duty Vehicles (16,001-19,500 lbs. GVWR)
* 10 HDV6 Class 6 Heavy Duty Vehicles (19,501-26,000 lbs. GVWR)
* 11 HDV7 Class 7 Heavy Duty Vehicles (26,001-33,000 lbs. GVWR)
* 12 HDV8A Class 8a Heavy Duty Vehicles (33,001-60,000 lbs. GVWR)
* 13 HDV8B Class 8b Heavy Duty Vehicles (>60,000 lbs. GVWR)
* 14 HDBS School Busses
* 15 HDBT Transit and Urban Busses
* 16 MC Motorcycles (All)
*
REG DIST
*
* RESULTING MOBILE6-BASED REGISTRATION FRACTIONS
*
*MOBILE6 REGISTRATION FRACTIONS BY VEHICLE CLASS AND AGE
* LDV M5 LDGV
* 1 0.049 0.079 0.083 0.082 0.084 0.081 0.077 0.056 0.050 0.051
* 0.050 0.054 0.047 0.037 0.024 0.019 0.014 0.015 0.011 0.008
* 0.006 0.005 0.004 0.003 0.010
* LDT1 M5 LDGT1
* 2 0.063 0.084 0.084 0.084 0.084 0.069 0.059 0.044 0.036 0.031
* 0.030 0.053 0.047 0.046 0.036 0.028 0.017 0.022 0.017 0.014
* 0.009 0.008 0.008 0.005 0.025
* LDT2 M5 LDGT1
* 3 0.063 0.084 0.084 0.084 0.084 0.069 0.059 0.044 0.036 0.031
* 0.030 0.053 0.047 0.046 0.036 0.028 0.017 0.022 0.017 0.014
* 0.009 0.008 0.008 0.005 0.025
* LDT3 M5 LDGT2
* 4 0.054 0.072 0.072 0.072 0.072 0.052 0.050 0.034 0.054 0.031
* 0.028 0.080 0.084 0.049 0.039 0.030 0.018 0.023 0.018 0.015
* 0.009 0.008 0.009 0.006 0.026
* LDT4 M5 LDGT2
* 5 0.054 0.072 0.072 0.072 0.072 0.052 0.050 0.034 0.054 0.031
* 0.028 0.080 0.084 0.049 0.039 0.030 0.018 0.023 0.018 0.015
* 0.009 0.008 0.009 0.006 0.026
* HDV2B M5 HDVs (Combined HDGV and HDDV)
* 6 0.028 0.056 0.056 0.056 0.056 0.054 0.046 0.030 0.033 0.039

```

Example 4a File Inputs: Reg2000.ex4 (Page 2 of 2)

		0.043	0.065	0.054	0.058	0.048	0.029	0.034	0.035	0.030	0.023	
		0.016	0.016	0.015	0.010	0.070						
* HDV3		M5 HDVs (Combined HDGV and HDDV)										
	7	0.028	0.056	0.056	0.056	0.056	0.054	0.046	0.030	0.033	0.039	
		0.043	0.065	0.054	0.058	0.048	0.029	0.034	0.035	0.030	0.023	
		0.016	0.016	0.015	0.010	0.070						
* HDV4		M5 HDVs (Combined HDGV and HDDV)										
	8	0.028	0.056	0.056	0.056	0.056	0.054	0.046	0.030	0.033	0.039	
		0.043	0.065	0.054	0.058	0.048	0.029	0.034	0.035	0.030	0.023	
		0.016	0.016	0.015	0.010	0.070						
* HDV5		M5 HDVs (Combined HDGV and HDDV)										
	9	0.028	0.056	0.056	0.056	0.056	0.054	0.046	0.030	0.033	0.039	
		0.043	0.065	0.054	0.058	0.048	0.029	0.034	0.035	0.030	0.023	
		0.016	0.016	0.015	0.010	0.070						
* HDV6		M5 HDVs (Combined HDGV and HDDV)										
	10	0.028	0.056	0.056	0.056	0.056	0.054	0.046	0.030	0.033	0.039	
		0.043	0.065	0.054	0.058	0.048	0.029	0.034	0.035	0.030	0.023	
		0.016	0.016	0.015	0.010	0.070						
* HDV7		M5 HDVs (Combined HDGV and HDDV)										
	11	0.028	0.056	0.056	0.056	0.056	0.054	0.046	0.030	0.033	0.039	
		0.043	0.065	0.054	0.058	0.048	0.029	0.034	0.035	0.030	0.023	
		0.016	0.016	0.015	0.010	0.070						
* HDV8a		M5 HDVs (Combined HDGV and HDDV)										
	12	0.028	0.056	0.056	0.056	0.056	0.054	0.046	0.030	0.033	0.039	
		0.043	0.065	0.054	0.058	0.048	0.029	0.034	0.035	0.030	0.023	
		0.016	0.016	0.015	0.010	0.070						
* HDV8b		M5 HDVs (Combined HDGV and HDDV)										
	13	0.028	0.056	0.056	0.056	0.056	0.054	0.046	0.030	0.033	0.039	
		0.043	0.065	0.054	0.058	0.048	0.029	0.034	0.035	0.030	0.023	
		0.016	0.016	0.015	0.010	0.070						
* HDBS		M5 HDVs (Combined HDGV and HDDV)										
	14	0.028	0.056	0.056	0.056	0.056	0.054	0.046	0.030	0.033	0.039	
		0.043	0.065	0.054	0.058	0.048	0.029	0.034	0.035	0.030	0.023	
		0.016	0.016	0.015	0.010	0.070						
* HDBT		M5 HDDVs										
	15	0.034	0.067	0.067	0.067	0.067	0.073	0.061	0.040	0.041	0.051	
		0.053	0.066	0.055	0.057	0.045	0.019	0.023	0.028	0.024	0.016	
		0.011	0.009	0.007	0.005	0.016						
* Motorcycles		M5 MC										
	16	0.144	0.168	0.135	0.109	0.088	0.070	0.056	0.045	0.036	0.029	
		0.023	0.097	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
		0.000	0.000	0.000	0.000	0.000						

Example 4a File Inputs: Reg2010.ex4 (Page 1 of 2)

```

*Filename: Reg2010.ex4
*Convert MOBILE5 Registration Fractions to MOBILE6-Based Registration Fractions
*
*Calendar Year:          2010   User-Input
*
*MOBILE5b Reg Fractions
*   0.049  0.079  0.083  0.082  0.084  0.081  0.077  0.056  0.050  0.051
*   0.050  0.054  0.047  0.037  0.024  0.019  0.014  0.015  0.011  0.008
*   0.006  0.005  0.004  0.003  0.010
*   0.063  0.084  0.084  0.084  0.084  0.069  0.059  0.044  0.036  0.031
*   0.030  0.053  0.047  0.046  0.036  0.028  0.017  0.022  0.017  0.014
*   0.009  0.008  0.008  0.005  0.025
*   0.054  0.072  0.072  0.072  0.072  0.052  0.050  0.034  0.054  0.031
*   0.028  0.080  0.084  0.049  0.039  0.030  0.018  0.023  0.018  0.015
*   0.009  0.008  0.009  0.006  0.026
*   0.023  0.047  0.047  0.047  0.047  0.038  0.033  0.021  0.026  0.029
*   0.034  0.064  0.054  0.058  0.051  0.038  0.043  0.041  0.035  0.029
*   0.021  0.022  0.022  0.014  0.117
*   0.049  0.079  0.083  0.082  0.084  0.081  0.077  0.056  0.050  0.051
*   0.050  0.054  0.047  0.037  0.024  0.019  0.014  0.015  0.011  0.008
*   0.006  0.005  0.004  0.003  0.010
*   0.063  0.084  0.084  0.084  0.084  0.069  0.059  0.044  0.036  0.031
*   0.030  0.053  0.047  0.046  0.036  0.028  0.017  0.022  0.017  0.014
*   0.009  0.008  0.008  0.005  0.025
*   0.034  0.067  0.067  0.067  0.067  0.073  0.061  0.040  0.041  0.051
*   0.053  0.066  0.055  0.057  0.045  0.019  0.023  0.028  0.024  0.016
*   0.011  0.009  0.007  0.005  0.016
*   0.144  0.168  0.135  0.109  0.088  0.070  0.056  0.045  0.036  0.029
*   0.023  0.097  0.000  0.000  0.000  0.000  0.000  0.000  0.000  0.000
*   0.000  0.000  0.000  0.000  0.000
*
*
* MOBILE6 Vehicle Classes:
* 1 LDV      Light-Duty Vehicles (Passenger Cars)
* 2 LDT1     Light-Duty Trucks 1 (0-6,000 lbs. GVWR, 0-3750 lbs. LVW)
* 3 LDT2     Light Duty Trucks 2 (0-6,000 lbs. GVWR, 3751-5750 lbs. LVW)
* 4 LDT3     Light Duty Trucks 3 (6,001-8500 lbs. GVWR, 0-3750 lbs. LVW)
* 5 LDT4     Light Duty Trucks 4 (6,001-8500 lbs. GVWR, 3751-5750 lbs. LVW)
* 6 HDV2B    Class 2b Heavy Duty Vehicles (8501-10,000 lbs. GVWR)
* 7 HDV3     Class 3 Heavy Duty Vehicles (10,001-14,000 lbs. GVWR)
* 8 HDV4     Class 4 Heavy Duty Vehicles (14,001-16,000 lbs. GVWR)
* 9 HDV5     Class 5 Heavy Duty Vehicles (16,001-19,500 lbs. GVWR)
* 10 HDV6    Class 6 Heavy Duty Vehicles (19,501-26,000 lbs. GVWR)
* 11 HDV7    Class 7 Heavy Duty Vehicles (26,001-33,000 lbs. GVWR)
* 12 HDV8A   Class 8a Heavy Duty Vehicles (33,001-60,000 lbs. GVWR)
* 13 HDV8B   Class 8b Heavy Duty Vehicles (>60,000 lbs. GVWR)
* 14 HDBS    School Busses
* 15 HDBT    Transit and Urban Busses
* 16 MC      Motorcycles (All)
*
REG DIST
*
* RESULTING MOBILE6-BASED REGISTRATION FRACTIONS
*
*MOBILE6 REGISTRATION FRACTIONS BY VEHICLE CLASS AND AGE
* LDV      M5 LDGV
*   1   0.049  0.079  0.083  0.082  0.084  0.081  0.077  0.056  0.050  0.051
*       0.050  0.054  0.047  0.037  0.024  0.019  0.014  0.015  0.011  0.008
*       0.006  0.005  0.004  0.003  0.010
* LDT1     M5 LDGT1
*   2   0.063  0.084  0.084  0.084  0.084  0.069  0.059  0.044  0.036  0.031
*       0.030  0.053  0.047  0.046  0.036  0.028  0.017  0.022  0.017  0.014
*       0.009  0.008  0.008  0.005  0.025
* LDT2     M5 LDGT2
*   3   0.063  0.084  0.084  0.084  0.084  0.069  0.059  0.044  0.036  0.031
*       0.030  0.053  0.047  0.046  0.036  0.028  0.017  0.022  0.017  0.014
*       0.009  0.008  0.008  0.005  0.025
* LDT3     M5 LDGT3
*   4   0.054  0.072  0.072  0.072  0.072  0.052  0.050  0.034  0.054  0.031
*       0.028  0.080  0.084  0.049  0.039  0.030  0.018  0.023  0.018  0.015
*       0.009  0.008  0.009  0.006  0.026
* LDT4     M5 LDGT4
*   5   0.054  0.072  0.072  0.072  0.072  0.052  0.050  0.034  0.054  0.031
*       0.028  0.080  0.084  0.049  0.039  0.030  0.018  0.023  0.018  0.015
*       0.009  0.008  0.009  0.006  0.026
* HDV2B    M5 HDVs (Combined HDGV and HDDV)
*   6   0.029  0.057  0.057  0.057  0.057  0.056  0.047  0.031  0.034  0.040

```

Example 4a File Inputs: Reg2010.ex4 (Page 2 of 2)

		0.044	0.065	0.055	0.057	0.048	0.028	0.033	0.034	0.029	0.022	
		0.016	0.015	0.014	0.009	0.065						
* HDV3		M5 HDVs (Combined HDGV and HDDV)										
	7	0.029	0.057	0.057	0.057	0.057	0.056	0.047	0.031	0.034	0.040	
		0.044	0.065	0.055	0.057	0.048	0.028	0.033	0.034	0.029	0.022	
		0.016	0.015	0.014	0.009	0.065						
* HDV4		M5 HDVs (Combined HDGV and HDDV)										
	8	0.029	0.057	0.057	0.057	0.057	0.056	0.047	0.031	0.034	0.040	
		0.044	0.065	0.055	0.057	0.048	0.028	0.033	0.034	0.029	0.022	
		0.016	0.015	0.014	0.009	0.065						
* HDV5		M5 HDVs (Combined HDGV and HDDV)										
	9	0.029	0.057	0.057	0.057	0.057	0.056	0.047	0.031	0.034	0.040	
		0.044	0.065	0.055	0.057	0.048	0.028	0.033	0.034	0.029	0.022	
		0.016	0.015	0.014	0.009	0.065						
* HDV6		M5 HDVs (Combined HDGV and HDDV)										
	10	0.029	0.057	0.057	0.057	0.057	0.056	0.047	0.031	0.034	0.040	
		0.044	0.065	0.055	0.057	0.048	0.028	0.033	0.034	0.029	0.022	
		0.016	0.015	0.014	0.009	0.065						
* HDV7		M5 HDVs (Combined HDGV and HDDV)										
	11	0.029	0.057	0.057	0.057	0.057	0.056	0.047	0.031	0.034	0.040	
		0.044	0.065	0.055	0.057	0.048	0.028	0.033	0.034	0.029	0.022	
		0.016	0.015	0.014	0.009	0.065						
* HDV8a		M5 HDVs (Combined HDGV and HDDV)										
	12	0.029	0.057	0.057	0.057	0.057	0.056	0.047	0.031	0.034	0.040	
		0.044	0.065	0.055	0.057	0.048	0.028	0.033	0.034	0.029	0.022	
		0.016	0.015	0.014	0.009	0.065						
* HDV8b		M5 HDVs (Combined HDGV and HDDV)										
	13	0.029	0.057	0.057	0.057	0.057	0.056	0.047	0.031	0.034	0.040	
		0.044	0.065	0.055	0.057	0.048	0.028	0.033	0.034	0.029	0.022	
		0.016	0.015	0.014	0.009	0.065						
* HDBS		M5 HDVs (Combined HDGV and HDDV)										
	14	0.029	0.057	0.057	0.057	0.057	0.056	0.047	0.031	0.034	0.040	
		0.044	0.065	0.055	0.057	0.048	0.028	0.033	0.034	0.029	0.022	
		0.016	0.015	0.014	0.009	0.065						
* HDBT		M5 HDDVs										
	15	0.034	0.067	0.067	0.067	0.067	0.073	0.061	0.040	0.041	0.051	
		0.053	0.066	0.055	0.057	0.045	0.019	0.023	0.028	0.024	0.016	
		0.011	0.009	0.007	0.005	0.016						
* Motorcycles		M5 MC										
	16	0.144	0.168	0.135	0.109	0.088	0.070	0.056	0.045	0.036	0.029	
		0.023	0.097	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
		0.000	0.000	0.000	0.000	0.000						

Example 4a Output (Page 1 of 2)

```

*****
* MOBILE6 Draft (24-July-2001)
* Input file: EXAM_4A.IN (file 1, run 1).
*****

* Reading Registration Distributions from the following external
* data file: REG2000.EX4
M 49 Warning:
0.999 MYR sum not = 1. (will normalize)
M 49 Warning:
1.00 MYR sum not = 1. (will normalize)
M 49 Warning:
1.00 MYR sum not = 1. (will normalize)
M 49 Warning:
1.00 MYR sum not = 1. (will normalize)
M 49 Warning:
1.00 MYR sum not = 1. (will normalize)
M 49 Warning:
1.00 MYR sum not = 1. (will normalize)

* #####
* Summer Fleet-Average Emission - CY2000

* File 1, Run 1, Scenario 1.
* #####
M 48 Warning:
there are no sales for vehicle class HDGV8b

Calendar Year: 2000
Month: Jan.
Altitude: Low
Minimum Temperature: 72.0 (F)
Maximum Temperature: 92.0 (F)
Absolute Humidity: 75. grains/lb
Nominal Fuel RVP: 8.7 psi
Weathered RVP: 8.3 psi
Fuel Sulfur Content: 300. ppm

Exhaust I/M Program: No
Evap I/M Program: No
ATP Program: No
Reformulated Gas: No

Vehicle Type: LDGV LDGT12 LDGT34 LDGT HDGV LDDV LDDT HDDV MC All Veh
GVWR: <6000 >6000 (All)
VMT Distribution: 0.5040 0.2795 0.1006 0.0324 0.0011 0.0018 0.0744 0.0062 1.0000
-----
Composite Emission Factors (g/mi):
Composite VOC : 2.14 2.51 2.92 2.62 4.31 0.77 1.03 0.89 2.54 2.297
-----
*****
* MOBILE6 Draft (24-July-2001)
* Input file: EXAM_4A.IN (file 1, run 2).
*****

* Reading Registration Distributions from the following external
* data file: REG2010.EX4
M 49 Warning:
0.999 MYR sum not = 1. (will normalize)
M 49 Warning:
1.00 MYR sum not = 1. (will normalize)
M 49 Warning:
1.00 MYR sum not = 1. (will normalize)
M 49 Warning:
1.00 MYR sum not = 1. (will normalize)
M 49 Warning:
1.00 MYR sum not = 1. (will normalize)
M 49 Warning:
0.999 MYR sum not = 1. (will normalize)
M 49 Warning:
0.999 MYR sum not = 1. (will normalize)
M 49 Warning:
0.999 MYR sum not = 1. (will normalize)
M 49 Warning:
0.999 MYR sum not = 1. (will normalize)
M 49 Warning:
0.999 MYR sum not = 1. (will normalize)

```

Example 4a Output (Page 2 of 2)

```
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 1.00 MYR sum not = 1. (will normalize)

* #####
* Summer Fleet-Average Emission - CY2010

* File 1, Run 2, Scenario 1.
* #####
M 48 Warning:
    there are no sales for vehicle class HDGV8b

    Calendar Year: 2010
    Month: Jan.
    Altitude: Low
    Minimum Temperature: 72.0 (F)
    Maximum Temperature: 92.0 (F)
    Absolute Humidity: 75. grains/lb
    Nominal Fuel RVP: 8.7 psi
    Weathered RVP: 8.3 psi
    Fuel Sulfur Content: 30. ppm

    Exhaust I/M Program: No
    Evap I/M Program: No
    ATP Program: No
    Reformulated Gas: No

    Vehicle Type: LDGV LDGT12 LDGT34 LDGT HDGV LDDV LDDT HDDV MC All Veh
    GVWR: <6000 >6000 (All)
    -----
    VMT Distribution: 0.3616 0.3814 0.1369 0.0322 0.0003 0.0020 0.0803 0.0054 1.0000
    -----
Composite Emission Factors (g/mi):
    Composite VOC : 0.86 1.04 1.35 1.13 1.73 0.17 0.44 0.42 2.51 0.998
    -----
```

Example 4b Input File (Page 1 of 1)

* Filename: Exam_4b.in
* This input uses MOBILE5-based VMT distributions and
* generates the fleet-average VOC emissions for
* calendar years 2000 and 2010.

***** Header Section *****

MOBILE6 INPUT FILE

POLLUTANTS : HC

RUN DATA

***** Run Section #1 *****

* A separate run section is needed for each set of MOBILE5
* VMT fractions, which is calendar year dependent.

FUEL RVP : 8.7

MIN/MAX TEMP : 72.0 92.0

* MOBILE6 VMT fractions based on MOBILE5b CY2000 fractions:

* LDGV LDGT1 LDGT2 HDGV LDDV LDDT HDDV MC

* 0.614 0.191 0.086 0.031 0.001 0.001 0.068 0.006

VMT FRACTIONS :

0.6161 0.0446 0.1484 0.0589 0.0271 0.0321 0.0032 0.0024

0.0018 0.0070 0.0083 0.0091 0.0326 0.0016 0.0008 0.0060

***** Scenario Section *****

SCENARIO RECORD : Summer Fleet-Average Emission - CY2000

CALENDAR YEAR : 2000

***** End of Run #1/Begin Run #2 *****

END OF RUN

FUEL RVP : 8.7

MIN/MAX TEMP : 72.0 92.0

* MOBILE6 VMT fractions based on MOBILE5b CY2010 fractions:

* LDGV LDGT1 LDGT2 HDGV LDDV LDDT HDDV MC

* 0.589 0.201 0.088 0.032 0.002 0.003 0.080 0.005

VMT FRACTIONS :

0.5912 0.0471 0.1569 0.0603 0.0277 0.0360 0.0035 0.0029

0.0022 0.0080 0.0095 0.0103 0.0368 0.0018 0.0008 0.0050

***** Scenario Section *****

SCENARIO RECORD : Summer Fleet-Average Emission - CY2010

CALENDAR YEAR : 2010

***** End of Run #2 *****

END OF RUN

Example 4c Input File (Page 1 of 1)

```
* Filename: Exam_4c.in
* This input uses modified registration and VMT distributions
* and generates the fleet-average VOC emissions for
* calendar years 2000 and 2010.

***** Header Section *****
MOBILE6 INPUT FILE
POLLUTANTS      : HC
RUN DATA

***** Run Section #1 *****
* A separate run section is needed for each set of
* registration distribution data, which is calendar year
* dependent.

FUEL RVP        : 8.7
MIN/MAX TEMP    : 72.0 92.0

* MOBILE6 VMT fractions based on MOBILE5b CY2000 fractions:
* LDGV LDGT1 LDGT2 HDGV LDDV LDDT HDDV MC
* 0.614 0.191 0.086 0.031 0.001 0.001 0.068 0.006
VMT FRACTIONS   :
0.6161 0.0446 0.1484 0.0589 0.0271 0.0321 0.0032 0.0024
0.0018 0.0070 0.0083 0.0091 0.0326 0.0016 0.0008 0.0060

REG DIST        : Reg2000.ex4

***** Scenario Section *****
SCENARIO RECORD : Summer Fleet-Average Emission - CY2000
CALENDAR YEAR   : 2000

***** End of Run #1/Begin Run #2 *****
END OF RUN

FUEL RVP        : 8.7
MIN/MAX TEMP    : 72.0 92.0

* MOBILE6 VMT fractions based on MOBILE5b CY2010 fractions:
* LDGV LDGT1 LDGT2 HDGV LDDV LDDT HDDV MC
* 0.589 0.201 0.088 0.032 0.002 0.003 0.080 0.005
VMT FRACTIONS   :
0.5912 0.0471 0.1569 0.0603 0.0277 0.0360 0.0035 0.0029
0.0022 0.0080 0.0095 0.0103 0.0368 0.0018 0.0008 0.0050

REG DIST        : Reg2010.ex4

***** Scenario Section *****
SCENARIO RECORD : Summer Fleet-Average Emission - CY2010
CALENDAR YEAR   : 2010

***** End of Run #2 *****
END OF RUN
```

Example 4c Output (Page 1 of 2)

```

*****
* MOBILE6 Draft (24-July-2001) *
* Input file: EXAM_4C.IN (file 1, run 1). *
*****
M615 Comment:
      User supplied VMT mix.

* Reading Registration Distributions from the following external
* data file: REG2000.EX4
M 49 Warning:
0.999      MYR sum not = 1. (will normalize)
M 49 Warning:
1.00      MYR sum not = 1. (will normalize)
M 49 Warning:
1.00      MYR sum not = 1. (will normalize)
M 49 Warning:
1.00      MYR sum not = 1. (will normalize)
M 49 Warning:
1.00      MYR sum not = 1. (will normalize)
M 49 Warning:
1.00      MYR sum not = 1. (will normalize)

* #####
* Summer Fleet-Average Emission - CY2000

* File 1, Run 1, Scenario 1.
* #####
M 48 Warning:
      there are no sales for vehicle class HDGV8b

      Calendar Year: 2000
      Month: Jan.
      Altitude: Low
      Minimum Temperature: 72.0 (F)
      Maximum Temperature: 92.0 (F)
      Absolute Humidity: 75. grains/lb
      Nominal Fuel RVP: 8.7 psi
      Weathered RVP: 8.3 psi
      Fuel Sulfur Content: 300. ppm

      Exhaust I/M Program: No
      Evap I/M Program: No
      ATP Program: No
      Reformulated Gas: No

      Vehicle Type:      LDGV      LDGT12      LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV      MC      All Veh
      GVWR:              <6000     >6000     (All)
      VMT Distribution:  0.6148    0.1927    0.0848     0.0308    0.0013    0.0014    0.0681    0.0060    1.0000
-----
Composite Emission Factors (g/mi):
Composite VOC :      2.14      2.51      2.92      2.64      4.29      0.77      0.98      0.89      2.54      2.255
-----
*****
* MOBILE6 Draft (24-July-2001) *
* Input file: EXAM_4C.IN (file 1, run 2). *
*****
M615 Comment:
      User supplied VMT mix.

* Reading Registration Distributions from the following external
* data file: REG2010.EX4
M 49 Warning:
0.999      MYR sum not = 1. (will normalize)
M 49 Warning:
1.00      MYR sum not = 1. (will normalize)
M 49 Warning:
1.00      MYR sum not = 1. (will normalize)
M 49 Warning:
1.00      MYR sum not = 1. (will normalize)
M 49 Warning:
1.00      MYR sum not = 1. (will normalize)
M 49 Warning:
1.00      MYR sum not = 1. (will normalize)
M 49 Warning:
0.999      MYR sum not = 1. (will normalize)
M 49 Warning:
0.999      MYR sum not = 1. (will normalize)
M 49 Warning:
0.999      MYR sum not = 1. (will normalize)

```

Example 4c Output (Page 2 of 2)

```

0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 0.999 MYR sum not = 1. (will normalize)
M 49 Warning: 1.000 MYR sum not = 1. (will normalize)

* #####
* Summer Fleet-Average Emission - CY2010

* File 1, Run 2, Scenario 1.
* #####
M 48 Warning:
    there are no sales for vehicle class HDGV8b

    Calendar Year: 2010
    Month: Jan.
    Altitude: Low
    Minimum Temperature: 72.0 (F)
    Maximum Temperature: 92.0 (F)
    Absolute Humidity: 75. grains/lb
    Nominal Fuel RVP: 8.7 psi
    Weathered RVP: 8.3 psi
    Fuel Sulfur Content: 30. ppm

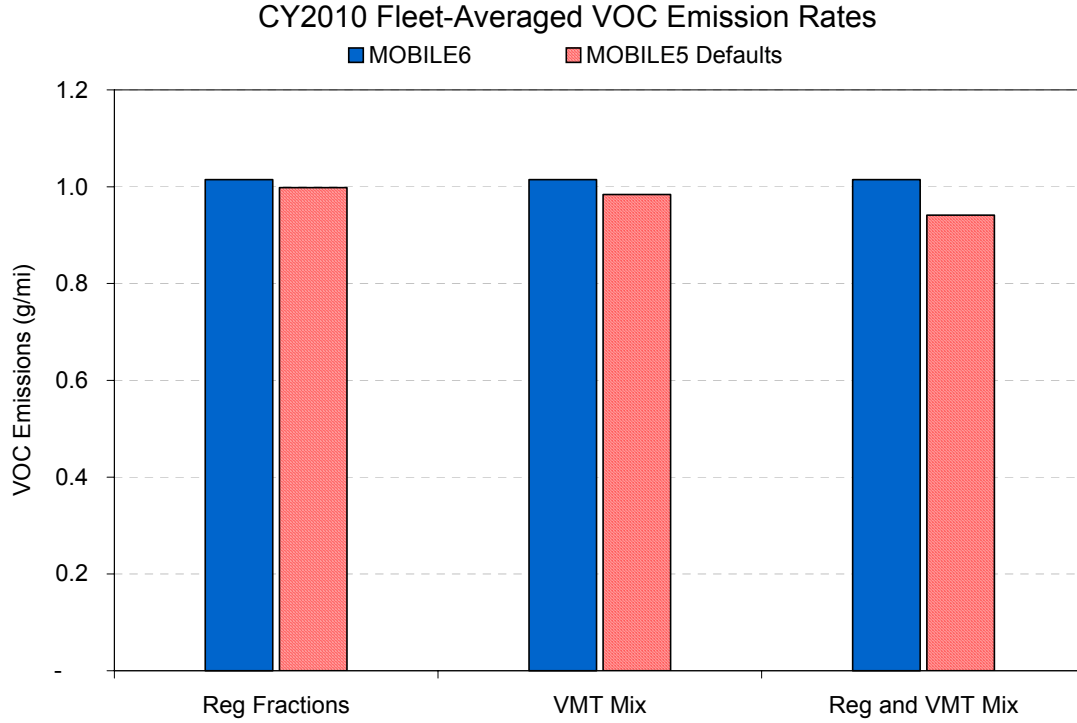
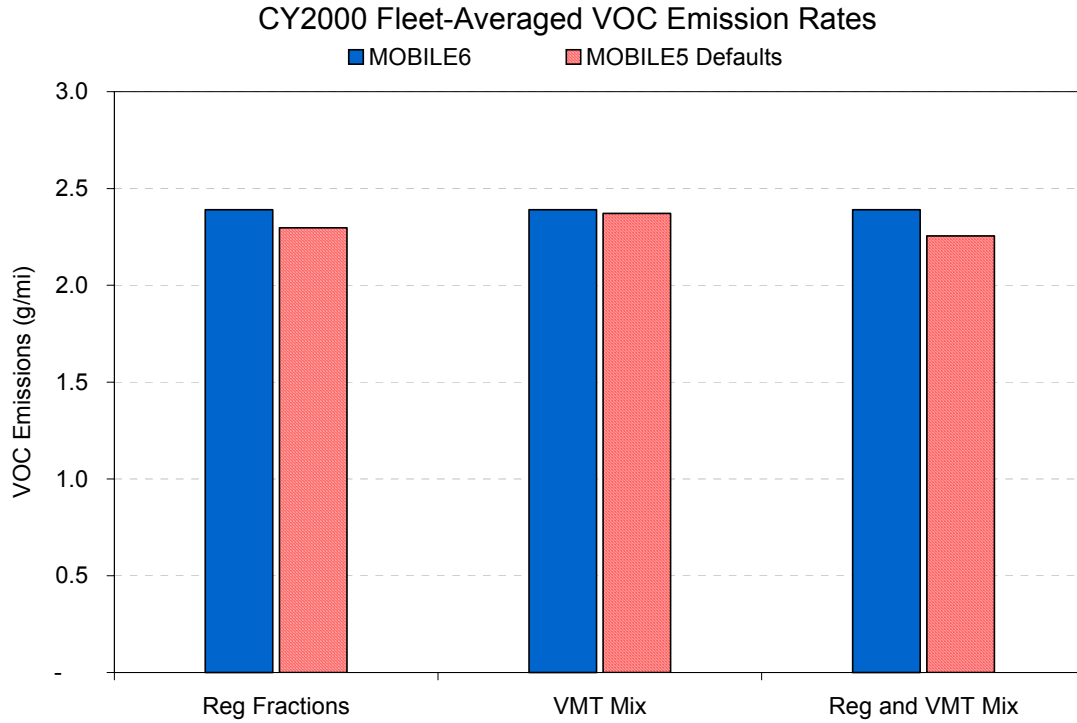
    Exhaust I/M Program: No
    Evap I/M Program: No
    ATP Program: No
    Reformulated Gas: No

    Vehicle Type: LDGV LDGT12 LDGT34 LDGT HDGV LDDV LDDT HDDV MC All Veh
    GVWR: <6000 >6000 (All)
    VMT Distribution: 0.5907 0.2040 0.0867 0.0331 0.0005 0.0013 0.0787 0.0050 1.0000

-----
Composite Emission Factors (g/mi):
Composite VOC : 0.86 1.04 1.35 1.14 1.72 0.17 0.44 0.42 2.51 0.941
-----

```

Example 4 Data Analysis (Page 1 of 1)



Example 5

Perform CY2000 runs for freeway operation based on the following:

- a. Average speeds of 10, 20, 40, 60, and 65 mph using the AVERAGE SPEED command. Plot emissions results.
- b. Modify the VMT by average speed matrix to reflect 20% of travel in each of the above speed bins. Also modify VMT by facility type to specify 100% of travel on freeways.

Compare a composite emission factor from a. to the results from b.

Temperature: 72°F to 92°F

RVP: 8.7 psi

Example 5a Input File (Page 1 of 1)

```
* Filename: Exam_5a.in
* This input uses the AVERAGE SPEED command to generate
* fleet-average VOC, CO and NOx emission factors for
* calendar year 2000 for freeway (non-ramp) operation.

***** Header Section *****
MOBILE6 INPUT FILE
RUN DATA

***** Run Section *****
FUEL RVP          : 8.7
MIN/MAX TEMP     : 72.0 92.0

***** Scenario Section *****
* A separate scenario must be written for each freeway
* average speed to be analyzed.

SCENARIO RECORD  : Fleet-Average Emissions 10mph- CY2000
CALENDAR YEAR   : 2000
AVERAGE SPEED  : 10.0 non-ramp

SCENARIO RECORD  : Fleet-Average Emissions 20mph- CY2000
CALENDAR YEAR   : 2000
AVERAGE SPEED  : 20.0 non-ramp

SCENARIO RECORD  : Fleet-Average Emissions 40mph- CY2000
CALENDAR YEAR   : 2000
AVERAGE SPEED  : 40.0 non-ramp

SCENARIO RECORD  : Fleet-Average Emissions 60mph- CY2000
CALENDAR YEAR   : 2000
AVERAGE SPEED  : 60.0 non-ramp

SCENARIO RECORD  : Fleet-Average Emissions 65mph- CY2000
CALENDAR YEAR   : 2000
AVERAGE SPEED  : 65.0 non-ramp

***** End of Run *****
END OF RUN
```


Example 5a Output (Page 3 of 3)

Vehicle Type: GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.4941	0.2831	0.0967		0.0356	0.0012	0.0016	0.0814	0.0062	1.0000

Composite Emission Factors (g/mi):										
Composite VOC :	1.63	1.88	2.84	2.13	2.13	0.62	0.78	0.52	2.44	1.751
Composite CO :	21.25	26.30	39.48	29.65	30.62	1.53	1.50	3.15	17.91	23.225
Composite NOX :	1.31	1.46	1.82	1.55	6.14	2.38	2.33	27.03	1.50	3.675

* #####
 * Fleet-Average Emissions 65mph- CY2000
 * File 1, Run 1, Scenario 5.
 * #####
 * A user supplied freeway average speed of 65.0 will
 * be used for all hours of the day. 100% of VMT has been
 * assigned to the freeway roadway type for all hours of
 * the day and all vehicle types.

M 48 Warning:
 there are no sales for vehicle class HDGV8b

Calendar Year: 2000
 Month: Jan.
 Altitude: Low
 Minimum Temperature: 72.0 (F)
 Maximum Temperature: 92.0 (F)
 Absolute Humidity: 75. grains/lb
 Nominal Fuel RVP: 8.7 psi
 Weathered RVP: 8.3 psi
 Fuel Sulfur Content: 300. ppm

Exhaust I/M Program: No
 Evap I/M Program: No
 ATP Program: No
 Reformulated Gas: No

Vehicle Type: GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.4941	0.2831	0.0967		0.0356	0.0012	0.0016	0.0814	0.0062	1.0000

Composite Emission Factors (g/mi):										
Composite VOC :	1.60	1.85	2.78	2.08	2.11	0.62	0.78	0.52	2.75	1.721
Composite CO :	22.21	27.33	40.51	30.69	37.31	1.62	1.59	3.58	25.81	24.418
Composite NOX :	1.33	1.49	1.84	1.58	6.34	2.90	2.83	31.15	1.63	4.037

Example 5b Input File (Page 1 of 1)

```
* Filename: Exam_5b.in
* This input generates fleet-average VOC, CO and NOx
* emission factors with adjustments made to the VMT by
* speed matrix for calendar year 2000 for freeway operation.

***** Header Section *****
MOBILE6 INPUT FILE
RUN DATA

***** Run Section *****
FUEL RVP          : 8.7
MIN/MAX TEMP     : 72.0 92.0

* Use speed vmt data from external file
SPEED VMT        : svmt.ex5

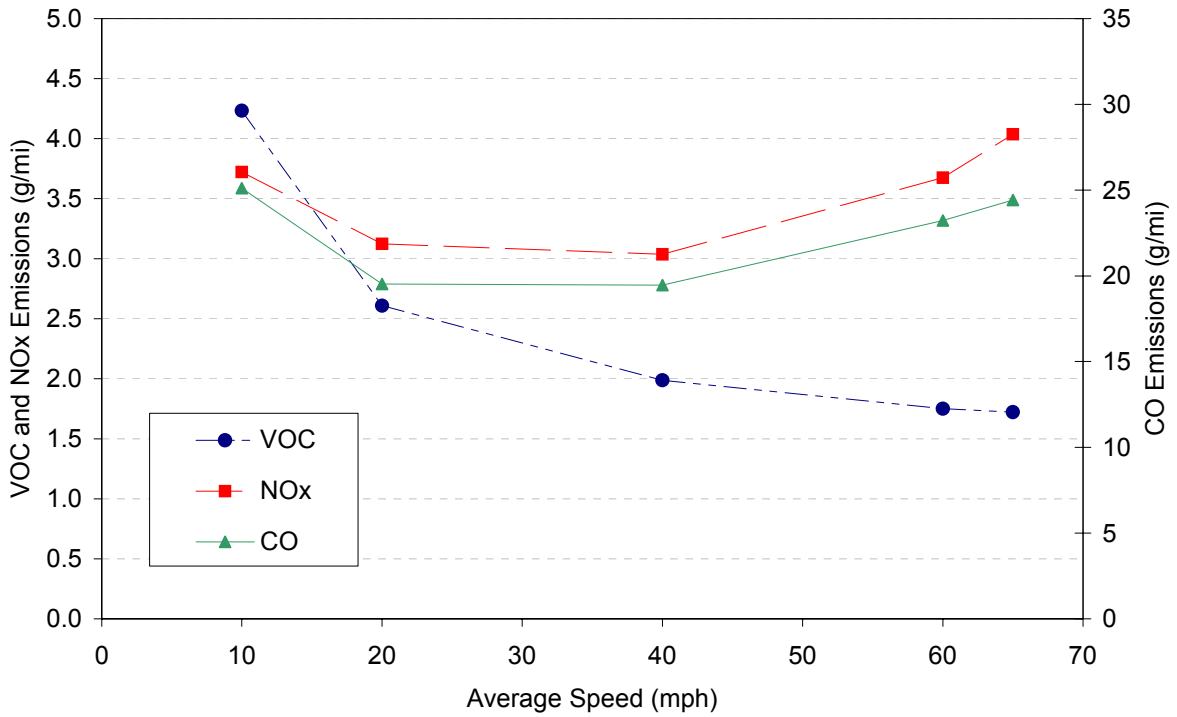
* Use vmt by facility data from external file
VMT BY FACILITY  : fvmt.ex5

***** Scenario Section *****
SCENARIO RECORD  : Fleet-Average Emissions - CY2000
CALENDAR YEAR    : 2000

***** End of Run *****
END OF RUN
```


Example 5 Data Analysis (Page 1 of 1)

CY2000 Fleet Emissions by Average Speed



Avg Speed (mph)	LDVs Emission Rates (g/mi)		
	VOC	CO	NOx
10	4.232	25.106	3.722
20	2.610	19.522	3.123
40	1.987	19.456	3.036
60	1.751	23.225	3.675
65	1.721	24.418	4.037
Composite	2.460	22.345	3.519
5b Results	2.460	22.345	3.519

Example 6

Perform 1995, 2000, 2005, and 2010 runs for a July evaluation date using:

- a. Min/max temperatures; and
- b. 24-hour temperature profile. (See profile below.)

Compare VOC results.

Temperature: 72°F to 92°F

RVP: 8.7 psi

Evaluation Month: July

				User-Input Min/Max Temp		
				Min	Max	
				Temp (F):	72.0	92.0
				Resulting Temp Profile		
	min	Hour	MOBILE6 Enhanced Period Evap Temp	72.0 72.4 74.9 78.9 83.0 86.5 89.6 91.3 91.8 92.0 91.6 90.4 88.4 85.8 83.3 81.0 79.4 77.8 76.3 75.2 74.3 73.6 73.1 72.5		
		6	1 72.0			
		7	2 72.5			
		8	3 75.5			
		9	4 80.3			
		10	5 85.2			
		11	6 89.4			
		12	7 93.1			
		13	8 95.1			
		14	9 95.8			
	max	15	10 96.0			
		16	11 95.5			
		17	12 94.1			
		18	13 91.7			
		19	14 88.6			
		20	15 85.5			
		21	16 82.8			
		22	17 80.9			
		23	18 79.0			
		24	19 77.2			
		1	20 75.8			
		2	21 74.7			
		3	22 73.9			
		4	23 73.3			
		5	24 72.6			

Example 6a Input File (Page 1 of 1)

* Filename: Exam_6a.in
* This input generates the summer fleet-average VOC, CO and NOx
* emissions for CYs 1995, 2000, 2005, and 2010 using a 24-hour
* temperature profile.

***** Header Section *****

MOBILE6 INPUT FILE
RUN DATA

***** Run Section *****

FUEL RVP

: 8.7

HOURLY TEMPERATURES: 72.0 72.4 74.9 78.9 83.0 86.5 89.6 91.3 91.8 92.0 91.6 90.4
88.4 85.8 83.3 81.0 79.4 77.8 76.3 75.2 74.3 73.6 73.1 72.5

EXPAND EVAPORATIVE :

***** Scenario Section *****

* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO RECORD : Summer Fleet-Average Emissions - CY1995
CALENDAR YEAR : 1995
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Fleet-Average Emissions - CY2000
CALENDAR YEAR : 2000
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Fleet-Average Emissions - CY2005
CALENDAR YEAR : 2005
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Fleet-Average Emissions - CY2010
CALENDAR YEAR : 2010
EVALUATION MONTH : 7

***** End of This Run *****

END OF RUN

Example 6a Output (Page 2 of 3)

Non-Exhaust Emissions (g/mi):

Hot Soak Loss:	0.223	0.200	0.354	0.239	0.438					0.349
Diurnal Loss:	0.044	0.041	0.059	0.045	0.076					0.116
Resting Loss:	0.147	0.136	0.223	0.158	0.296					0.374
Running Loss:	0.743	0.541	0.721	0.587	0.926					
Crankcase Loss:	0.009	0.011	0.013	0.012	0.015					0.000
Refueling Loss:	0.158	0.257	0.263	0.258	0.421					
Total Non-Exhaust:	1.324	1.185	1.633	1.302	2.171	0.000	0.000	0.000	0.839	1.230

 * #####
 * Summer Fleet-Average Emissions - CY2005

* File 1, Run 1, Scenario 3.
 * #####
 M 48 Warning:

there are no sales for vehicle class HDGV8b

Calendar Year: 2005
 Month: July
 Altitude: Low
 Minimum Temperature: 72.0 (F)
 Maximum Temperature: 92.0 (F)
 Absolute Humidity: 75. grains/lb
 Nominal Fuel RVP: 8.7 psi
 Weathered RVP: 8.3 psi
 Fuel Sulfur Content: 92. ppm

Exhaust I/M Program: No
 Evap I/M Program: No
 ATP Program: No
 Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.4158	0.3387	0.1165		0.0359	0.0006	0.0019	0.0849	0.0057	1.0000

Composite Emission Factors (g/mi):

Composite VOC :	1.500	1.494	2.315	1.704	2.213	0.578	0.801	0.540	2.46	1.541
Composite CO :	13.11	15.13	19.16	16.16	17.68	1.617	1.408	3.046	16.57	13.798
Composite NOX :	0.947	1.134	1.465	1.219	4.261	1.319	1.371	11.442	1.16	2.083

Non-Exhaust Emissions (g/mi):

Hot Soak Loss:	0.213	0.169	0.249	0.190	0.269					0.355
Diurnal Loss:	0.033	0.031	0.050	0.036	0.057					0.115
Resting Loss:	0.114	0.106	0.180	0.125	0.203					0.367
Running Loss:	0.546	0.385	0.567	0.432	0.636					
Crankcase Loss:	0.008	0.010	0.010	0.010	0.010					0.000
Refueling Loss:	0.086	0.155	0.229	0.174	0.395					
Total Non-Exhaust:	1.001	0.856	1.284	0.968	1.570	0.000	0.000	0.000	0.837	0.917

 * #####
 * Summer Fleet-Average Emissions - CY2010

* File 1, Run 1, Scenario 4.
 * #####
 M 48 Warning:

there are no sales for vehicle class HDGV8b

Calendar Year: 2010
 Month: July
 Altitude: Low
 Minimum Temperature: 72.0 (F)
 Maximum Temperature: 92.0 (F)
 Absolute Humidity: 75. grains/lb
 Nominal Fuel RVP: 8.7 psi
 Weathered RVP: 8.3 psi
 Fuel Sulfur Content: 30. ppm

Exhaust I/M Program: No
 Evap I/M Program: No
 ATP Program: No
 Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3478	0.3890	0.1336		0.0358	0.0003	0.0020	0.0860	0.0054	1.0000

Example 6a Output (Page 3 of 3)

Composite Emission Factors (g/mi):										
Composite VOC :	0.926	0.937	1.615	1.110	1.336	0.180	0.439	0.392	2.44	0.998
Composite CO :	9.49	10.68	13.57	11.42	9.43	1.072	0.842	1.751	16.57	9.853
Composite NOX :	0.581	0.716	1.097	0.813	2.251	0.415	0.724	6.834	1.16	1.303

Non-Exhaust Emissions (g/mi):										
Hot Soak Loss:	0.156	0.140	0.253	0.169	0.225					0.363
Diurnal Loss:	0.022	0.021	0.036	0.025	0.042					0.112
Resting Loss:	0.076	0.079	0.152	0.098	0.147					0.341
Running Loss:	0.318	0.228	0.412	0.275	0.408					
Crankcase Loss:	0.008	0.010	0.010	0.010	0.010					0.000
Refueling Loss:	0.037	0.074	0.123	0.086	0.230					
Total Non-Exhaust:	0.617	0.551	0.986	0.664	1.063	0.000	0.000	0.000	0.816	0.603

Example 6b Input File (Page 1 of 1)

```
* Filename: Exam_6b.in
* This input generates the summer fleet-average VOC, CO and NOx
* emissions for CYs 1995, 2000, 2005, and 2010 using min/max
* temperatures.

***** Header Section *****
MOBILE6 INPUT FILE
RUN DATA

***** Run Section *****
FUEL RVP          : 8.7
MIN/MAX TEMP     : 72.0 92.0
EXPAND EVAPORATIVE :

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO RECORD   : Summer Fleet-Average Emissions - CY1995
CALENDAR YEAR     : 1995
EVALUATION MONTH  : 7

SCENARIO RECORD   : Summer Fleet-Average Emissions - CY2000
CALENDAR YEAR     : 2000
EVALUATION MONTH  : 7

SCENARIO RECORD   : Summer Fleet-Average Emissions - CY2005
CALENDAR YEAR     : 2005
EVALUATION MONTH  : 7

SCENARIO RECORD   : Summer Fleet-Average Emissions - CY2010
CALENDAR YEAR     : 2010
EVALUATION MONTH  : 7

***** End of This Run *****
END OF RUN
```


Example 6b Output (Page 3 of 3)

Vehicle Type: GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3478	0.3890	0.1336		0.0358	0.0003	0.0020	0.0860	0.0054	1.0000

Composite Emission Factors (g/mi):										
Composite VOC :	0.926	0.937	1.615	1.110	1.336	0.180	0.439	0.392	2.44	0.998
Composite CO :	9.49	10.68	13.57	11.42	9.43	1.072	0.842	1.751	16.57	9.853
Composite NOX :	0.581	0.716	1.097	0.813	2.251	0.415	0.724	6.834	1.16	1.303

Non-Exhaust Emissions (g/mi):										
Hot Soak Loss:	0.156	0.140	0.253	0.169	0.225				0.363	
Diurnal Loss:	0.022	0.021	0.036	0.025	0.042				0.112	
Resting Loss:	0.076	0.079	0.152	0.098	0.147				0.341	
Running Loss:	0.318	0.228	0.412	0.275	0.408					
Crankcase Loss:	0.008	0.010	0.010	0.010	0.010				0.000	
Refueling Loss:	0.037	0.074	0.123	0.086	0.230					
Total Non-Exhaust:	0.617	0.551	0.986	0.664	1.063	0.000	0.000	0.000	0.816	0.603

Example 6 Data Analysis (Page 1 of 1)

CY	Fleet VOC Emissions	
	Hourly	Min/Max
1995	3.211	3.211
2000	2.363	2.363
2005	1.541	1.541
2010	0.998	0.998

Same results from using MIN/MAX TEMPERATURE and HOURLY TEMPERATURE (diurnal cycle-based)

Example 7

Generate CO emission factors for a high-altitude area in CY1990, CY2000, and CY2010 using a January evaluation date. (Results to be used later...)

Temperature: 18°F to 26°F

RVP: 14.5 psi

Example 7 Input File (Page 1 of 1)

```
* Filename: Exam_7.in
* This input generates winter fleet-average CO emissions
* for a high-altitude area in CYS 1990, 2000, and 2010 using
* the default January evaluation date.

***** Header Section *****
MOBILE6 INPUT FILE
POLLUTANTS      : CO
RUN DATA

***** Run Section *****
FUEL RVP        : 14.5
MIN/MAX TEMP    : 18.0 26.0

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO RECORD : Winter Fleet-Average Emissions - CY1990
CALENDAR YEAR   : 1990
ALTITUDE        : 2

SCENARIO RECORD : Winter Fleet-Average Emissions - CY2000
CALENDAR YEAR   : 2000
ALTITUDE        : 2

SCENARIO RECORD : Winter Fleet-Average Emissions - CY2010
CALENDAR YEAR   : 2010
ALTITUDE        : 2

***** End of This Run *****
END OF RUN
```

Example 7 Output (Page 1 of 2)

```
*****
* MOBILE6 Draft (17-Aug-2001)
* Input file: EXAM_7.IN (file 1, run 1).
*****
```

```
* #####
* Winter Fleet-Average Emissions - CY1990
```

```
* File 1, Run 1, Scenario 1.
* #####
```

```
M 48 Warning:
    there are no sales for vehicle class HDGV8b
```

```
    Calendar Year: 1990
    Month: Jan.
    Altitude: High
    Minimum Temperature: 18.0 (F)
    Maximum Temperature: 26.0 (F)
    Absolute Humidity: 75. grains/lb
    Nominal Fuel RVP: 14.5 psi
    Weathered RVP: 14.5 psi
    Fuel Sulfur Content: 300. ppm
```

```
    Exhaust I/M Program: No
    Evap I/M Program: No
    ATP Program: No
    Reformulated Gas: No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
VTM Distribution:	0.6179	0.1782	0.0817		0.0370	0.0105	0.0044	0.0631	0.0073	1.0000

Composite Emission Factors (g/mi):										
Composite CO :	83.23	92.28	120.12	101.04	186.18	2.09	4.36	25.70	32.87	86.473

```
* #####
* Winter Fleet-Average Emissions - CY2000
```

```
* File 1, Run 1, Scenario 2.
* #####
```

```
M 48 Warning:
    there are no sales for vehicle class HDGV8b
```

```
    Calendar Year: 2000
    Month: Jan.
    Altitude: High
    Minimum Temperature: 18.0 (F)
    Maximum Temperature: 26.0 (F)
    Absolute Humidity: 75. grains/lb
    Nominal Fuel RVP: 14.5 psi
    Weathered RVP: 14.5 psi
    Fuel Sulfur Content: 300. ppm
```

```
    Exhaust I/M Program: No
    Evap I/M Program: No
    ATP Program: No
    Reformulated Gas: No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
VTM Distribution:	0.4941	0.2831	0.0967		0.0356	0.0012	0.0016	0.0814	0.0062	1.0000

Composite Emission Factors (g/mi):										
Composite CO :	38.18	49.05	69.29	54.20	81.51	2.249	2.641	10.462	31.95	43.414

```
* #####
* Winter Fleet-Average Emissions - CY2010
```

```
* File 1, Run 1, Scenario 3.
* #####
```

```
M 48 Warning:
    there are no sales for vehicle class HDGV8b
```

Example 7 Output (Page 2 of 2)

Calendar Year: 2010
 Month: Jan.
 Altitude: High
 Minimum Temperature: 18.0 (F)
 Maximum Temperature: 26.0 (F)
 Absolute Humidity: 75. grains/lb
 Nominal Fuel RVP: 14.5 psi
 Weathered RVP: 14.5 psi

Fuel Sulfur Content: 30. ppm
 Exhaust I/M Program: No
 Evap I/M Program: No
 ATP Program: No
 Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000							
VMT Distribution:	0.3541	0.3856	0.1315		0.0356	0.0003	0.0019	0.0856	0.0054	1.0000
Composite Emission Factors (g/mi):										
Composite CO :	22.63	25.39	32.70	27.25	36.99	1.079	0.952	4.605	31.95	23.989

Example 8

Generate CO emission factors for a high-altitude area in CY1990, CY2000, and CY2010 using a January evaluation date. Assume that oxygenated gasoline is used (20% ethanol; 80% MTBE) and that the fuel has an oxygen content of 2.7% by weight. Compare these results to Example 7.

Temperature: 18°F to 26°F

RVP: 14.5 psi (No waiver)

Example 8 Input File (Page 1 of 1)

```
* Filename: Exam_8.in
* This input generates winter fleet-average CO emissions
* for a high-altitude area in CYs 1990, 2000, and 2010 using
* the default January evaluation date and assuming oxygenated
* gasoline is used.

***** Header Section *****
MOBILE6 INPUT FILE
POLLUTANTS      : CO
RUN DATA

***** Run Section *****
FUEL RVP        : 14.5
MIN/MAX TEMP    : 18.0 26.0

* Indicate 80% MTBE and 20% ethanol market share both with
* 2.7 wt % oxygen. Assume no waiver for alcohol blend RVP.
OXYGENATED FUELS : 0.80 0.20 0.027 0.027 1

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO RECORD : Winter Fleet-Average Emissions - CY1990
CALENDAR YEAR   : 1990
ALTITUDE        : 2

SCENARIO RECORD : Winter Fleet-Average Emissions - CY2000
CALENDAR YEAR   : 2000
ALTITUDE        : 2

SCENARIO RECORD : Winter Fleet-Average Emissions - CY2010
CALENDAR YEAR   : 2010
ALTITUDE        : 2

***** End of This Run *****
END OF RUN
```


Example 8 Data Analysis (Page 1 of 1)

Fleet-Averaged CO Emissions (g/mi)

Condition	CY1990	CY2000	CY2010
High Altitude Winter	86.473	43.414	23.989
w/ Oxygenates	70.312	38.048	22.331
Difference (Δ)	16.16	5.37	1.66

Example 9

Generate VOC emission factors for 1995, 2000, 2005, and 2010 assuming a northern RFG program and Stage II refueling controls are in place. (July basis.)

Compare results to Example 6.

Temperature: 72°F to 92°F

RVP: 8.7 psi

Evaluation Month: July

Example 9 Input File (Page 1 of 1)

```
* Filename: Exam_9.in
* This input generates the summer fleet-average VOC emissions
* for CYS 1995, 2000, 2005, and 2010 assuming an RFG program
* and that Stage II refueling controls are in place.

***** Header Section *****
MOBILE6 INPUT FILE
POLLUTANTS      : HC
RUN DATA

***** Run Section *****
FUEL RVP        : 8.7
MIN/MAX TEMP    : 72.0 92.0
EXPAND EVAPORATIVE :

* Indicate northern RFG program is in place
FUEL PROGRAM    : 2 N

* Indicate that Stage II emission controls are in place
STAGE II REFUELING :
89 3 92. 84.

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO RECORD : Summer Fleet-Average Emissions - CY1995
CALENDAR YEAR   : 1995
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Fleet-Average Emissions - CY2000
CALENDAR YEAR   : 2000
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Fleet-Average Emissions - CY2005
CALENDAR YEAR   : 2005
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Fleet-Average Emissions - CY2010
CALENDAR YEAR   : 2010
EVALUATION MONTH : 7

***** End of This Run *****
END OF RUN
```


Example 9 Output (Page 2 of 3)

VMT Distribution:	0.4841	0.2894	0.0996		0.0358	0.0011	0.0016	0.0820	0.0063	1.0000

Composite Emission Factors (g/mi):										
Composite VOC :	1.505	1.673	2.677	1.930	2.267	0.800	0.986	0.785	2.10	1.641

Non-Exhaust Emissions (g/mi):										
Hot Soak Loss:	0.156	0.131	0.236	0.158	0.285					0.097
Diurnal Loss:	0.027	0.025	0.040	0.029	0.051					0.006
Resting Loss:	0.147	0.136	0.223	0.158	0.296					0.374
Running Loss:	0.324	0.265	0.330	0.281	0.367					
Crankcase Loss:	0.009	0.011	0.013	0.012	0.015					0.000
Refueling Loss:	0.022	0.033	0.034	0.033	0.078					
Total Non-Exhaust:	0.684	0.600	0.876	0.672	1.091	0.000	0.000	0.000	0.477	0.634

* #####
 * Summer Fleet-Average Emissions - CY2005

* File 1, Run 1, Scenario 3.
 * #####
 M 48 Warning:

there are no sales for vehicle class HDGV8b

Calendar Year: 2005
 Month: July
 Altitude: Low
 Minimum Temperature: 72.0 (F)
 Maximum Temperature: 92.0 (F)
 Absolute Humidity: 75. grains/lb
 Nominal Fuel RVP: 8.7 psi
 Weathered RVP: 6.5 psi
 Fuel Sulfur Content: 90. ppm

Exhaust I/M Program: No
 Evap I/M Program: No
 ATP Program: No
 Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						

VMT Distribution:	0.4158	0.3387	0.1165		0.0359	0.0006	0.0019	0.0849	0.0057	1.0000

Composite Emission Factors (g/mi):										
Composite VOC :	1.035	1.070	1.662	1.222	1.402	0.578	0.801	0.540	2.11	1.097

Non-Exhaust Emissions (g/mi):										
Hot Soak Loss:	0.164	0.126	0.182	0.140	0.182					0.111
Diurnal Loss:	0.021	0.021	0.036	0.025	0.039					0.005
Resting Loss:	0.114	0.106	0.180	0.125	0.203					0.367
Running Loss:	0.252	0.194	0.270	0.214	0.272					
Crankcase Loss:	0.008	0.010	0.010	0.010	0.010					0.000
Refueling Loss:	0.016	0.025	0.031	0.026	0.074					
Total Non-Exhaust:	0.576	0.482	0.709	0.541	0.781	0.000	0.000	0.000	0.482	0.516

* #####
 * Summer Fleet-Average Emissions - CY2010

* File 1, Run 1, Scenario 4.
 * #####
 M 48 Warning:

there are no sales for vehicle class HDGV8b

Calendar Year: 2010
 Month: July
 Altitude: Low
 Minimum Temperature: 72.0 (F)
 Maximum Temperature: 92.0 (F)
 Absolute Humidity: 75. grains/lb
 Nominal Fuel RVP: 8.7 psi
 Weathered RVP: 6.5 psi
 Fuel Sulfur Content: 30. ppm

Exhaust I/M Program: No
 Evap I/M Program: No

Example 9 Output (Page 3 of 3)

		ATP Program: No		Reformulated Gas: Yes						
Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3478	0.3890	0.1336		0.0358	0.0003	0.0020	0.0860	0.0054	1.0000

Composite Emission Factors (g/mi):										
Composite VOC :	0.667	0.700	1.181	0.823	0.839	0.180	0.439	0.392	2.08	0.738

Non-Exhaust Emissions (g/mi):										
Hot Soak Loss:	0.125	0.110	0.199	0.133	0.162				0.111	
Diurnal Loss:	0.014	0.014	0.025	0.017	0.027				0.002	
Resting Loss:	0.076	0.079	0.152	0.098	0.147				0.341	
Running Loss:	0.148	0.117	0.196	0.137	0.183					
Crankcase Loss:	0.008	0.010	0.010	0.010	0.010				0.000	
Refueling Loss:	0.012	0.018	0.022	0.019	0.050					
Total Non-Exhaust:	0.383	0.347	0.605	0.414	0.579	0.000	0.000	0.000	0.454	0.372

Example 9 Data Analysis (Page 1 of 1)

Fleet-Averaged VOC Emissions (g/mi)

CY	Summer VOC	w/ RFG and Stage II	Difference (Δ)
1995	3.211	2.721	0.490
2000	2.363	1.641	0.722
2005	1.541	1.097	0.444
2010	0.998	0.738	0.260

Example 10

Generate VOC emission factors for 1995, 2000, 2005, and 2010 (July basis) assuming the following:

- a. A basic I/M program is in place; and
- b. An enhanced I/M program is in place.

Use the program parameters outlined in the Day 1 briefing. Compare results to Example 6.

- c. Add Stage II refueling and RFG to b.

Compare results to Example 9.

Temperature: 72°F to 92°F

RVP: 8.7 psi

Evaluation Month: July

Example 10a Input File (Page 1 of 1)

```
* Filename: Exam_10a.in
* This input generates the summer VOC emission factors for
* CYS 1995, 2000, 2005, and 2010 emissions under a basic
* I/M program.

***** Header Section *****
MOBILE6 INPUT FILE
RUN DATA

***** Run Section *****
FUEL RVP          : 8.7
MIN/MAX TEMP     : 72.0 92.0

> Basic I/M Program -- Idle Testing for MY68-MY20
I/M PROGRAM      : 1 1983 2020 1 T/O IDLE
I/M MODEL YEARS  : 1 1968 2020
I/M VEHICLES     : 1 21111 11111111 1
I/M STRINGENCY   : 1 20.0
I/M COMPLIANCE   : 1 100.0
I/M WAIVER RATES : 1 0.0 0.0
NO I/M TTC CREDITS : 1

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO RECORD : Summer Basic I/M - CY1995
CALENDAR YEAR   : 1995
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Basic I/M - CY2000
CALENDAR YEAR   : 2000
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Basic I/M - CY2005
CALENDAR YEAR   : 2005
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Basic I/M - CY2010
CALENDAR YEAR   : 2010
EVALUATION MONTH : 7

***** End of Run *****
END OF RUN
```


Example 10b Input File (Page 1 of 2)

```
* Filename: Exam_10b.in
* This input generates the summer VOC emission factors for
* CYS 1995, 2000, 2005, and 2010 emissions under an enhanced
* I/M program.

***** Header Section *****
MOBILE6 INPUT FILE
RUN DATA
***** Run Section *****
FUEL RVP          : 8.7
MIN/MAX TEMP     : 72.0 92.0

> Enhanced I/M Program
> Basic I/M Program -- Idle/2500 Testing for MY68-MY85
I/M PROGRAM      : 1 1983 2020 1 T/O 2500/IDLE
I/M MODEL YEARS  : 1 1968 1985
I/M VEHICLES     : 1 22222 11111111 1
I/M STRINGENCY   : 1 20.0
I/M COMPLIANCE   : 1 96.0
I/M WAIVER RATES : 1 3.0 3.0
NO I/M TTC CREDITS : 1

> Enhanced I/M Program -- IM240 Testing for MY86+
I/M PROGRAM      : 2 1983 2020 1 T/O IM240
I/M MODEL YEARS  : 2 1986 2020
I/M VEHICLES     : 2 22222 11111111 1
I/M STRINGENCY   : 2 20.0
I/M COMPLIANCE   : 2 96.0
I/M WAIVER RATES : 2 3.0 3.0
NO I/M TTC CREDITS : 2
I/M CUTPOINTS    : 2 Cutpoint.x10

> Enhanced I/M Program -- Pressure Testing for MY83+
I/M PROGRAM      : 3 1983 2020 1 T/O FP & GC
I/M MODEL YEARS  : 3 1983 2020
I/M VEHICLES     : 3 22222 11111111 1
I/M STRINGENCY   : 3 20.0
I/M COMPLIANCE   : 3 96.0
I/M WAIVER RATES : 3 3.0 3.0
NO I/M TTC CREDITS : 3

> ATP program
ANTI-TAMP PROGRAM :
83 68 20 22222 11111111 1 11 096. 12211111

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO RECORD   : Summer Enhanced I/M - CY1995
CALENDAR YEAR     : 1995
EVALUATION MONTH  : 7

SCENARIO RECORD   : Summer Enhanced I/M - CY2000
CALENDAR YEAR     : 2000
EVALUATION MONTH  : 7

SCENARIO RECORD   : Summer Enhanced I/M - CY2005
CALENDAR YEAR     : 2005
EVALUATION MONTH  : 7
```

Example 10b Input File (Page 2 of 2)

SCENARIO RECORD : Summer Enhanced I/M - CY2010
CALENDAR YEAR : 2010
EVALUATION MONTH : 7

***** End of Run *****
END OF RUN

Example 10b File Input: Cutpoint.x10 (Page 1 of 1)

* External data file Cutpoint.x10 created from CUTPOINT.D

*

I/M CUTPOINTS

* Block 1 (LDGV, LDGT1)

0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
0.800	0.800	0.800	0.800	0.800					
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000					
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2.000	2.000	2.000	2.000	2.000					

* Block 2 (LDGT2, LDGT3)

0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
0.800	0.800	0.800	0.800	0.800					
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000					
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2.000	2.000	2.000	2.000	2.000					

* Block 3 (LDGT4)

0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
0.800	0.800	0.800	0.800	0.800					
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000					
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2.000	2.000	2.000	2.000	2.000					

* Block 4 (HDGV)

0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
0.800	0.800	0.800	0.800	0.800					
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000					
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2.000	2.000	2.000	2.000	2.000					

Example 10c Input File (Page 1 of 2)

```
* Filename: Exam_10c.in
* This input generates the summer VOC emission factors for
* CYS 1995, 2000, 2005, and 2010 emissions under an enhanced
* I/M program.

***** Header Section *****
MOBILE6 INPUT FILE
RUN DATA

***** Run Section *****
FUEL RVP          : 8.7
MIN/MAX TEMP     : 72.0 92.0

* Indicate RFG program is in place
FUEL PROGRAM     : 2 N

* Indicate that Stage II emission controls are in place
STAGE II REFUELING :
89 3 92. 84.

> Enhanced I/M Program
> Basic I/M Program -- Idle/2500 Testing for MY68-MY85
I/M PROGRAM      : 1 1983 2020 1 T/O 2500/IDLE
I/M MODEL YEARS  : 1 1968 1985
I/M VEHICLES     : 1 22222 1111111 1
I/M STRINGENCY   : 1 20.0
I/M COMPLIANCE   : 1 96.0
I/M WAIVER RATES : 1 3.0 3.0
NO I/M TTC CREDITS : 1

> Enhanced I/M Program -- IM240 Testing for MY86+
I/M PROGRAM      : 2 1983 2020 1 T/O IM240
I/M MODEL YEARS  : 2 1986 2020
I/M VEHICLES     : 2 22222 1111111 1
I/M STRINGENCY   : 2 20.0
I/M COMPLIANCE   : 2 96.0
I/M WAIVER RATES : 2 3.0 3.0
NO I/M TTC CREDITS : 2
I/M CUTPOINTS    : 2 Cutpoint.x10

> Enhanced I/M Program -- Pressure Testing for MY83+
I/M PROGRAM      : 3 1983 2020 1 T/O FP & GC
I/M MODEL YEARS  : 3 1983 2020
I/M VEHICLES     : 3 22222 1111111 1
I/M STRINGENCY   : 3 20.0
I/M COMPLIANCE   : 3 96.0
I/M WAIVER RATES : 3 3.0 3.0
NO I/M TTC CREDITS : 3

> ATP program
ANTI-TAMP PROGRAM :
83 68 20 22222 1111111 1 11 096. 12211111

***** Scenario Section *****
* A separate scenario must be written for each calendar
* year to be analyzed.

SCENARIO RECORD   : Summer Enhanced I/M - CY1995
CALENDAR YEAR     : 1995
EVALUATION MONTH  : 7
```

Example 10c Input File (Page 2 of 2)

SCENARIO RECORD : Summer Enhanced I/M - CY2000
CALENDAR YEAR : 2000
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Enhanced I/M - CY2005
CALENDAR YEAR : 2005
EVALUATION MONTH : 7

SCENARIO RECORD : Summer Enhanced I/M - CY2010
CALENDAR YEAR : 2010
EVALUATION MONTH : 7

***** End of Run *****
END OF RUN

Example 10 Data Analysis (Page 1 of 1)

Fleet-Averaged VOC Emissions (g/mi)

CY	Summer VOC (Ex.6)	w/ Basic I/M Program (Ex.10a)	Difference (Δ)
1995	3.211	3.001	0.210
2000	2.363	2.282	0.081
2005	1.541	1.512	0.029
2010	0.998	0.977	0.021

CY	Summer VOC (Ex.6)	w/ Enhanced I/M Program (Ex.10b)	Difference (Δ)
1995	3.211	2.752	0.459
2000	2.363	2.047	0.316
2005	1.541	1.363	0.178
2010	0.998	0.860	0.138

CY	RFG and Stage II (Ex.9)	w/ Enhanced I/M Program (Ex.10c)	Difference (Δ)
1995	2.721	2.312	0.409
2000	1.641	1.407	0.234
2005	1.097	0.979	0.118
2010	0.738	0.638	0.100

Example 11

Using DATABASE commands, find:

NO_x emission rates of 10-year old class 8B HDDVs from 1980 through 2010 model years without the impacts of HDD off-cycle NO_x.

Compare results to Example 3.

Temperature: 72°F to 92°F

RVP: 8.7 psi

Evaluation Month: July

Example 11 Input File (Page 1 of 1)

```
* Filename: Exam_11.in
* This input generates the summer NOx emission factors for
* 10-yr old Class 8B HDDVs from 1980 through 2010 model years
* (in 5 MY increments) without the impacts of off-cycle NOx.

***** Header Section *****
MOBILE6 INPUT FILE :

* Indicate database output
DATABASE OUTPUT    :

* Include field labels with database output
WITH FIELDNAMES   :

* Indicate vehicle age range and vehicles for study
DATABASE AGES     : 10 10
DATABASE VEHICLES : 11111 11111111 1 111 11111112 111

DAILY OUTPUT      :
POLLUTANTS        : NOX
RUN DATA

***** Run Section *****
FUEL RVP          : 8.7
MIN/MAX TEMP      : 72.0 92.0

* Turn-off effects of HDDV off-cycle NOx
NO DEFEAT DEVICE

***** Scenario Section *****

SCENARIO REC      : 10-yr Old Vehicle EFs - CY1990
CALENDAR YEAR     : 1990
EVALUATION MONTH  : 7

SCENARIO REC      : 10-yr Old Vehicle EFs - CY1995
CALENDAR YEAR     : 1995
EVALUATION MONTH  : 7

SCENARIO REC      : 10-yr Old Vehicle EFs - CY2000
CALENDAR YEAR     : 2000
EVALUATION MONTH  : 7

SCENARIO REC      : 10-yr Old Vehicle EFs - CY2005
CALENDAR YEAR     : 2005
EVALUATION MONTH  : 7

SCENARIO REC      : 10-yr Old Vehicle EFs - CY2010
CALENDAR YEAR     : 2010
EVALUATION MONTH  : 7

SCENARIO REC      : 10-yr Old Vehicle EFs - CY2015
CALENDAR YEAR     : 2015
EVALUATION MONTH  : 7

SCENARIO REC      : 10-yr Old Vehicle EFs - CY2020
CALENDAR YEAR     : 2020
EVALUATION MONTH  : 7

***** End of This Run *****
END OF RUN
```


Example 11 Output (Page 1 of 1)

FILE	RUN	SCEN	POI	VTYPE	ETYPE	FTYPE	AGE	GM_MILE	GM_DAY	STARTS	ENDS	MILES	MPG	FACVMT	REGDIST	VCOUNT	MYR
1	1	1	3	23	1	1	10	32.5536	4363.822	6.65	4.7467	134.0504	0	0.3421	0.0398	1.178	1980
1	1	1	3	23	1	2	10	24.6396	3302.944	6.65	4.7467	134.0504	0	0.4978	0.0398	1.178	1980
1	1	1	3	23	1	3	10	31.4712	4218.725	6.65	4.7467	134.0504	0	0.1305	0.0398	1.178	1980
1	1	1	3	23	1	4	10	23.0878	3094.931	6.65	4.7467	134.0504	0	0.0297	0.0398	1.178	1980
1	1	2	2	23	1	1	10	30.6573	4109.623	6.65	4.7467	134.0504	0	0.3421	0.0398	1.33	1985
1	1	2	3	23	1	2	10	23.2043	3110.543	6.65	4.7467	134.0504	0	0.4978	0.0398	1.33	1985
1	1	2	3	23	1	3	10	29.638	3972.979	6.65	4.7467	134.0504	0	0.1305	0.0398	1.33	1985
1	1	2	3	23	1	4	10	21.7429	2914.647	6.65	4.7467	134.0504	0	0.0297	0.0398	1.33	1985
1	1	3	3	23	1	1	10	20.4587	2742.494	6.65	4.7467	134.0504	0	0.3421	0.0398	1.578	1990
1	1	3	3	23	1	2	10	15.485	2075.773	6.65	4.7467	134.0504	0	0.4978	0.0398	1.578	1990
1	1	3	3	23	1	3	10	19.7784	2651.306	6.65	4.7467	134.0504	0	0.1305	0.0398	1.578	1990
1	1	3	3	23	1	4	10	14.5098	1945.044	6.65	4.7467	134.0504	0	0.0297	0.0398	1.578	1990
1	1	4	3	23	1	1	10	18.2901	2451.795	6.65	4.7467	134.0504	0	0.3421	0.0398	1.761	1995
1	1	4	3	23	1	2	10	13.8436	1855.745	6.65	4.7467	134.0504	0	0.4978	0.0398	1.761	1995
1	1	4	3	23	1	3	10	17.682	2370.273	6.65	4.7467	134.0504	0	0.1305	0.0398	1.761	1995
1	1	4	3	23	1	4	10	12.9718	1738.874	6.65	4.7467	134.0504	0	0.0297	0.0398	1.761	1995
1	1	5	3	23	1	1	10	14.6639	1965.696	6.65	4.7467	134.0504	0	0.3421	0.0398	1.874	2000
1	1	5	3	23	1	2	10	11.099	1487.82	6.65	4.7467	134.0504	0	0.4978	0.0398	1.874	2000
1	1	5	3	23	1	3	10	14.1763	1900.337	6.65	4.7467	134.0504	0	0.1305	0.0398	1.874	2000
1	1	5	3	23	1	4	10	10.4	1394.121	6.65	4.7467	134.0504	0	0.0297	0.0398	1.874	2000
1	1	6	3	23	1	1	10	8.3503	1119.359	6.65	4.7467	134.0504	0	0.3421	0.0398	1.948	2005
1	1	6	3	23	1	2	10	6.3203	847.235	6.65	4.7467	134.0504	0	0.4978	0.0398	1.948	2005
1	1	6	3	23	1	3	10	8.0726	1082.141	6.65	4.7467	134.0504	0	0.1305	0.0398	1.948	2005
1	1	6	3	23	1	4	10	5.9222	793.877	6.65	4.7467	134.0504	0	0.0297	0.0398	1.948	2005
1	1	7	3	23	1	1	10	0.6728	90.183	6.65	4.7467	134.0504	0	0.3421	0.0398	2.016	2010
1	1	7	3	23	1	2	10	0.5092	68.259	6.65	4.7467	134.0504	0	0.4978	0.0398	2.016	2010
1	1	7	3	23	1	3	10	0.6504	87.185	6.65	4.7467	134.0504	0	0.1305	0.0398	2.016	2010
1	1	7	3	23	1	4	10	0.4771	63.96	6.65	4.7467	134.0504	0	0.0297	0.0398	2.016	2010

Example 11 Data Analysis (Page 1 of 1)

10-Yr Old Class 8B HDDV NOx Emissions

MY	Summer NOx (g/mi)	w/o Off-Cycle NOx	Difference (Δ)
1980	28.19	28.19	0.00
1985	26.55	26.55	0.00
1990	22.44	17.72	4.72
1995	20.55	15.84	4.71
2000	16.36	12.70	3.66
2005	7.23	7.23	0.00
2010	0.58	0.58	0.00