U.S. Department of Transportation
Federal Highway Administration

Brent Spence Bridge
Replacement/Rehabilitation Project

KENTUCKY TRANSPORTATION CABINET

Air Quality Technical Report: Mobile Source Air Toxics

PID No. 75119
HAM-71/75-0.00/0.22
KYTC Project Item No. 6-17

November 2010

Prepared by:

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Disposition of Comments

Air Quality Technical Report
Brent Spence Bridge Replacement/Rehabilitation Project

No.	Comment	Response
1	Because the design year ADT is >140,000, this project is in the "higher potential of MSAT effect" category and a Quantitative MSAT Analysis is required. Please have the consultant follow the guidance found on the following link. http://www.dot.state.oh.us/Divisions/TransSysDev/Environment/NEPA_policy_issues/AIR_QUALITY/Documents/ODOT%20Technical%20Guidance%20for%20Analysis%20Mobile%20Source%20Air%20Toxics.PDF	The link provides references to FHWA's February 3, 2006 guidance. FHWA issues an Interim Guidance Update on MSAT analysis in NEPA documents on September 30, 2009. The link to this guidance can be found at: http://www.fhwa.dot.gov/environment/airtoxic/100109guidmem.htm While many aspects of the updated guidance echoes the 2006 guidance there are a few important differences. They include: MSAT to be analyzed – The 2006 guidance listed 6 priority MSAT, as defined by EPA. EPA no longer supports this. The new FHWA guidance refers to 7 compounds that EPA identified as having significant contributions from mobile sources. The FHWA considers these the priority mobile source air toxics. • Reference language and figures have been updated to reflect impacts of the new EPA rules on future MSAT emissions and VMT growth. It has been our experience that running FHWA's EMIT model on regional traffic data is the appropriate analysis procedure for projects with "higher potential of MSAT effects". EMIT however, does not currently reflect all the MSAT referenced in the 2009 update. To estimate all the MSAT of concern, MOBILE6 will be run outside of the EMIT model to obtain emission factors for POM (which requires the summation of 15 individual MSAT) and naphthalene. These emission factors will be applied to the regional VMT to obtain build and no build emission burden estimates.
2	Because the project involves design year ADT>125,000 and diesel truck volume > 8% of the ADT, a PM2.5 Hotspot Analysis is required to be prepared for the project.	A PM2.5 Hotspot Analysis was completed for the project.

No.	Comment	Response
3	Relative to CO, state that a CO analysis was conducted because "The constructed project will result in an increase in the ADT of more than 10,000 vehicles within 10 years of project completion date. Also, the project involves a new project right-of-way that will have an ADT of more than 20,000 vehicles within 10 years of construction. Hence, a carbon monoxide analysis is required." CO analysis should be a separate report under a separate cover.	The text was revised as requested. A separate report was prepared for the CO analysis.
4	CO, PM2.5 and MSAT analyses should be separate reports under separate covers. Please have the consultant separate these out and resubmit.	The report was revised into three separate reports for CO, PM2.5 and MSAT.

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1.0 INTRODUCTION

This Air Quality Technical Report has been prepared in support of the Brent Spence Bridge Project. The objective of this report is to evaluate the project's potential air quality impacts within the study area. This includes the following:

- Evaluate the project's impact on regional air quality levels;
- Evaluate the mobile source air toxic (MSAT) impacts of the project; and
- Evaluate the construction emissions of the project.

1.1 Project Description

Interstate 75 (I-75) within the Greater Cincinnati/Northern Kentucky region; is a major thoroughfare for local and regional mobility. Locally, it connects to I-71, I-74 and US Route 50. The Brent Spence Bridge provides an interstate connection over the Ohio River and carries both I-71 and I-75 traffic (Exhibit 1). The bridge also facilitates local travel by providing access to downtown Cincinnati, Ohio and Covington, Kentucky. Safety, congestion and geometric problems exist on the structure and its approaches. The Brent Spence Bridge, which opened to traffic in 1963, was designed to carry 80,000 vehicles per day. Currently, approximately 160,000 vehicles per day use the Brent Spence Bridge and traffic volumes are projected to increase to 200,000 vehicles per day in 2035.

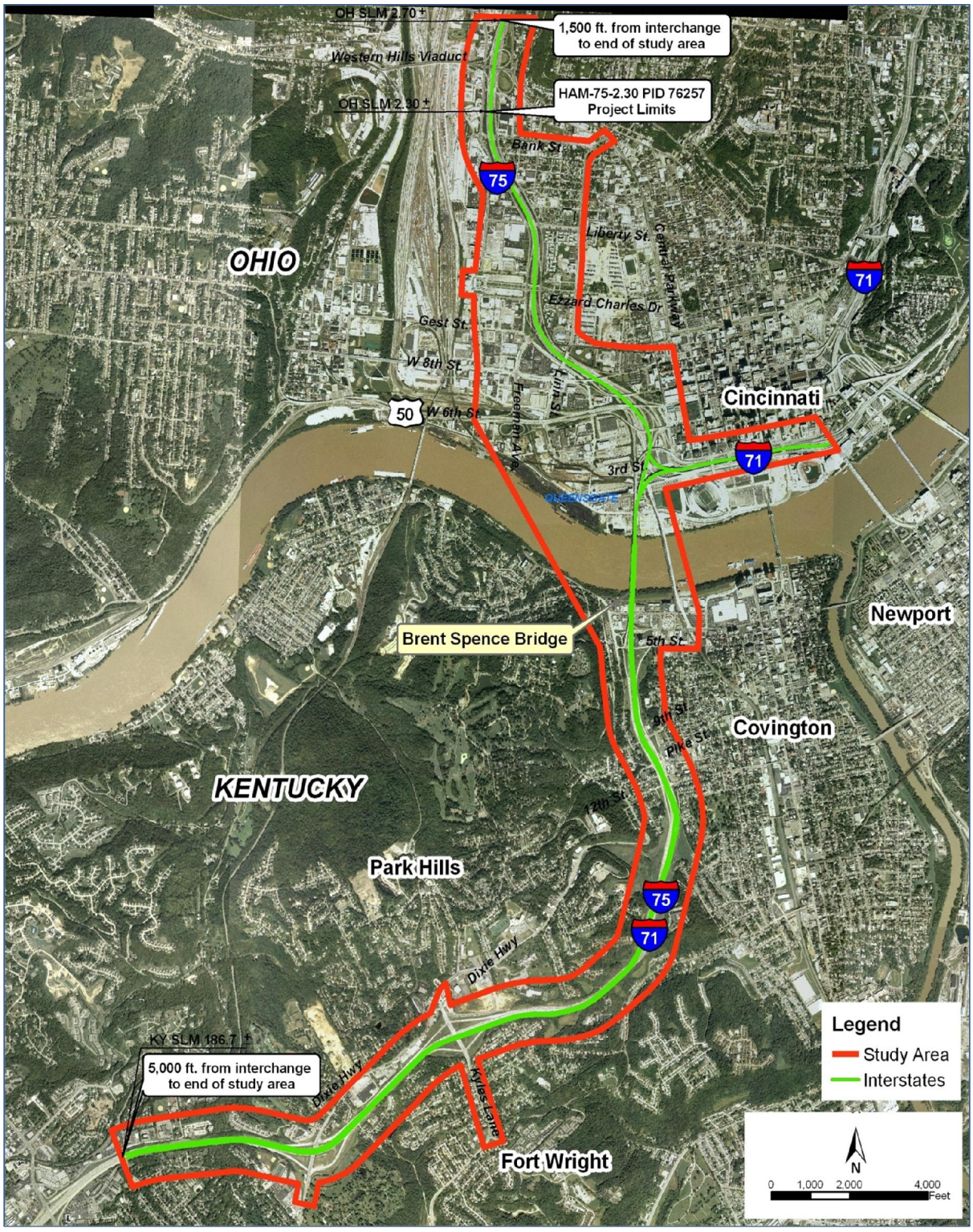
The I-75 corridor within the Greater Cincinnati/Northern Kentucky region is experiencing problems, which threaten the overall efficiency and flexibility of this vital trade corridor. Areas of concern include, but are not limited to, growing demand and congestion, land use pressures, environmental concerns, adequate safety margins, and maintaining linkage in key mobility, trade, and national defense highways.

The I-75 corridor has been the subject of numerous planning and engineering studies over the years and is a strategic link in the region's and the nation's highway network. As such, the Ohio Department of Transportation (ODOT) and the Kentucky Transportation Cabinet (KYTC), in cooperation with the Federal Highway Administration (FHWA), are proposing to improve the operational characteristics of I-75 and the Brent Spence Bridge in the Greater Cincinnati/Northern Kentucky region through a major transportation project.

1.2 Purpose and Need

The Brent Spence Bridge Replacement/Rehabilitation Project is intended to improve the operational characteristics within the I-71/I-75 corridor for both local and through traffic. In the Greater Cincinnati/Northern Kentucky region, the I-71/I-75 corridor suffers from congestion and safety–related issues as a result of inadequate capacity to accommodate current traffic demand. The objectives of this project are to:

- Improve traffic flow and level of service;
- Improve safety;
- Correct geometric deficiencies; and
- Maintain connections to key regional and national transportation corridors.



U.S. Department of Transportation Federal Highway Administration

Exhibit 1. Project Study Area Limits

1.3 Study Corridor

The overall project corridor is located along a 7.8-mile segment of I-75 within the Commonwealth of Kentucky (state line mile 186.7) and the State of Ohio (state line mile 2.7). The southern limit of the project is 5,000 feet south of the midpoint of the Dixie Highway Interchange on I-71/I-75 in Fort Wright, south of Covington, Kentucky. The northern limit of the project is 1,500 feet north of the midpoint of the Western Hills Viaduct Interchange on I-75 in Cincinnati, Ohio. The eastern and western limits of the study area generally follow the existing alignment of I-75. The project study area limit's for which the air analysis was completed is depicted in Exhibit 1.

1.4 Feasible Alternatives

The Brent Spence Bridge Rehabilitation/Reconstruction project is currently in Steps 6 and 7 of ODOT's Project Development Process (PDP). Two feasible alternatives and the No Build Alternative are being developed and studied in more detail. The two alternatives selected for the Step 6 and 7 are Alternative E and Alternative I, which is a combination of Conceptual Alternatives C and D from Step 5 of the PDP.

1.4.1 Alternative E

Alternative E utilizes the existing I-71/I-75 alignment from the southern project limits at the Dixie Highway Interchange north to the Kyles Lane Interchange. The Dixie Highway and Kyles Lane interchanges will be modified slightly to accommodate a Collector-Distributor (C-D) roadway, which will be constructed along both sides of I-71/I-75 between the two interchanges. North of the Kyles Lane Interchange, the alignment shifts to the west to accommodate additional I-71/I-75 travel lanes. Between Kyles Lane and KY 12th Street, six lanes will be provided in each direction for a total of 12 travel lanes.

Near KY 12th Street, the northbound alignment separates into two routes; one for interstate traffic and one for a local C-D roadway. Between Pike Street and KY 9th Street, the interstate separates into I-71 and I- 75 only routes. The C-D roadway will carry local traffic northbound and provide access to Covington at KY 12th and 5th streets and access from KY 9th and 4th streets. The southbound C-D roadway will carry traffic from Ohio over I-71/I-75 and provide access to both the interstate and into Covington at KY 9th Street.

A new double deck bridge will be built just west of the existing Brent Spence Bridge to carry northbound and southbound I-71 and I-75 traffic. On the upper deck, I-71 southbound will have three lanes and I-71 northbound will have two lanes. On the lower deck, I-75 will have three northbound and three southbound lanes. The existing Brent Spence Bridge will be rehabilitated to carry northbound and southbound local traffic with two lanes in the southbound direction and three lanes in the northbound direction.

In Ohio, Alternative E reconfigures I-75 through the I-71/I-75/US 50 Interchange and eliminates some of the existing access points along I-75. Existing ramps to I-71, US 50 and downtown Cincinnati will be reconfigured. The existing direct connections between I-75 to westbound and from eastbound US 50 will be maintained in Alternative E. US 50 will be reconfigured to eliminate left-hand entrances and exits. The OH 5th Street overpass will be eliminated and the 6th Street Expressway will be reconfigured as a two-way, six-lane elevated roadway with a new

signalized intersection for US 50 access and egress. Access between southbound I-71 (Fort Washington Way) and northbound I-75 will be provided near OH 9th Street as a direct connection. Both I-75 southbound and US 50 (Sixth Street Expressway) will have access to northbound I-71 (Fort Washington Way). Access to OH 3rd Street at the Clay Wade Bailey Bridge intersection will also be available via the I-75 southbound to northbound I-71 (Fort Washington Way) connection.

A local C-D roadway will carry local traffic northbound from the existing Brent Spence Bridge and provide access to OH 2nd, 5th, and 9th streets, Winchell Avenue and access from OH 4th before reconnecting to I-75 just south of the Linn Street overpass. The northbound ramps from OH 6th and 9th Street to I-75 will be removed requiring traffic from these points to utilize a new local roadway parallel to I-75 and access the interstate at Bank Street. Southbound I-75 traffic will separate from the local C-D roadway near Ezzard Charles Drive. The southbound C-D roadway will carry traffic over I-75 to OH 7th Street, allowing traffic to either; access downtown at 7th Street, travel south to OH 5th and 2nd streets, or travel across the existing Brent Spence Bridge into Covington. Access to the local southbound C-D roadway will be provided at Western Avenue and at OH 4th and 8th streets.

Alternative E also improves Western and Winchell avenues to facilitate traffic flow and increase capacity. The ramps to Western Avenue and from Winchell Avenue just north of Ezzard Charles Drive will be removed. The ramp from Freeman Avenue to I-75 northbound and the ramp from I-75 southbound to Freeman will remain. Between Ezzard Charles Drive and Western Hills Viaduct, southbound I-75 will have six lanes, northbound I-75 will have five lanes, and one auxiliary lane to the Western Hills Viaduct. The Western Hills Viaduct Interchange will be reconfigured to provide a full movement interchange. The improved interchange will be a Single Point Urban Interchange (SPUI) design.

1.4.2 Alternative I

Alternative I utilizes the existing I-71/I-75 alignment from the southern project limits at the Dixie Highway Interchange north to the Kyles Lane Interchange. The Dixie Highway and Kyles Lane interchanges will be modified slightly to accommodate a connector-distributor (C-D) roadway, which will be constructed along both sides of I-71/I-75 between the two interchanges. North of the Kyles Lane Interchange, the alignment shifts to the west to accommodate additional I-71/I-75 travel lanes. Between Kyles Lane and KY 12th Street, six lanes will be provided in each direction for a total of 12 travel lanes. Near KY 12th Street, the alignment separates into three routes for I-71, I-75 and a local C-D roadway.

In Alternative I, access into Covington from the interstate will be provided by the local C-D roadway; at KY 12th Street for northbound traffic and at KY 5th and 9th streets for southbound traffic. Direct access to I-71 from Covington will be provided at KY 9th Street with traffic to I-75 northbound using the C-D roadway through downtown Cincinnati and connecting at the Ezzard Charles merge. Access for southbound interstate traffic is located at KY 12th Street. Access from Covington to downtown Cincinnati will be provided by the C-D roadway from KY 9th and 4th streets. Bullock Street will be extended north from Pike Street to KY 9th, 5th, and 4th streets and Jillian's Way will be extended north from Pike Street to KY 9th and 5th streets.

A new double deck bridge will be built just west of the existing Brent Spence Bridge to carry northbound and southbound I-75 (three lanes in each direction), two lanes for southbound I-71

and three lanes for southbound local traffic. The existing Brent Spence Bridge will be rehabilitated to carry two lanes for northbound I-71 and three lanes for northbound local traffic.

Alternative I re-configures I-75 through the I-71/I-75/US 50 Interchange and eliminates all access to and from I-75 from KY 12th Street to the US 50/6th Street overpass in the northbound direction. Alternative I also eliminates access to and from I-75 southbound between KY 12th Street and the Freeman Avenue exit.

In Ohio, a local C-D roadway will be constructed along both sides of I-75. The local northbound C-D roadway will carry local traffic from the existing bridge and provide access ramps to OH 2nd Street, I-71 northbound, US 50 westbound, OH 5th Street, and Winchell Avenue before reconnecting to I-75 just south of Ezzard Charles Drive. The northbound ramps from OH 6th and 9th streets to I-75 will be removed requiring traffic from these three points to utilize a new local roadway parallel to the northbound C-D roadway for access to I-75 around the Western Hills Viaduct Interchange. The northbound ramps from OH 4th Street will utilize the new local northbound C-D roadway for access to I-75. The southbound C-D roadway begins near the Ezzard Charles Drive overpass and carries both downtown Covington and Cincinnati traffic. The southbound C-D roadway will provide access to OH 7th, 5th, 3rd, and 2nd streets, as well as connecting to access ramps from Western Avenue, OH 9th Street, and US 50 eastbound. The C-D roadway will continue south over the new bridge into Covington.

Between Ezzard Charles Drive and the Western Hills Viaduct, northbound I-75 will have five lanes and southbound I-75 will have six lanes, for a total of 11 travel lanes. The ramps to Western Avenue and from Winchell Avenue just north of Ezzard Charles Drive to the Interstate will be eliminated. The southbound ramp to Freeman Avenue and the northbound ramp from Freeman Avenue to I-75 will remain. Alternative I also improves Western and Winchell avenues to facilitate traffic flow and increase capacity. Ramps to Western Avenue and from Winchell Avenue will be provided around the Western Hills Viaduct Interchange, which will be reconfigured to be a tight diamond design.

1.4.3 No Build Alternative

The No Build Alternative consists of minor, short-term safety and maintenance improvements to the Brent Spence Bridge and I-75 corridor, which would maintain continuing operations. The No Build Alternative does not meet the Purpose and Need goals; however, this alternative will be carried forward as a baseline for evaluation of the feasible alternatives.

2.0 EXISTING CONDITIONS

"Air Pollution" is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants degrade the atmosphere by reducing visibility, damaging property, reducing the productivity or vigor of crops or natural vegetation, and/or reducing human or animal health. Air quality is a term used to describe the amount of air pollution the public is exposed to.

Air quality in the United States is governed by the Federal Clean Air Act (CAA) and is administered by the United States Environmental Protection Agency (USEPA).

2.1 United States Environmental Protection Agency

The USEPA is responsible for establishing the National Ambient Air Quality Standards (NAAQS) and enforcing the CAA, and regulates emission sources, such as aircraft, ships, and certain types of locomotives, under the exclusive authority of the federal government. The USEPA also has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards.

2.2 Clean Air Act Amendments of 1990

The Clean Air Act Amendments (CAAA) of direct the USEA to implement environmental policies and regulations that will ensure acceptable levels of air quality. Under the CAAA, a project cannot:

- Cause or contribute to any new violation of any NAAQS in any area;
- Increase the frequency or severity of any existing violation of any NAAQS in any area; or
- Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area."

2.3 National and State Ambient Air Quality Standards

As required by the CAA, NAAQS have been established for six major air pollutants. These pollutants are: CO, nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). These standards are summarized in Table 1. The "primary"

Table 1. National Ambient Air Quality Standards.

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour [(1)]	None	
	35 ppm (40 mg/m^3)	1-hour [(1)]		
Lead	0.15 µg/m^3 [(2)]	Rolling 3-Month Average	Same as Primary	
	1.5 µg/m^3	Quarterly Average	Same as Primary	
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Same as Primary	
	0.100 ppm	1-hour [(3)]	None	
Particulate Matter (PM_{10})	150 µg/m^3	24-hour [(4)]	Same as Primary	
Particulate Matter ($PM_{2.5}$)	15.0 µg/m^3	Annual [(5)] (Arithmetic Mean)	Same as Primary	
	35 µg/m^3	24-hour [(6)]	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour [(7)]	Same as Primary	
	0.08 ppm (1997 std)	8-hour [(8)]	Same as Primary	
	0.12 ppm	1-hour [(9)]	Same as Primary	
Sulfur Dioxide	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 µg/m^3)	3-hour [(1)]
	0.14 ppm	24-hour [(1)]		

(1) Not to be exceeded more than once per year.
(2) Final rule signed October 15, 2008.
(3) To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).
(4) Not to be exceeded more than once per year on average over 3 years.
(5) To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3.
(6) To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).
(7) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)
(8) (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
(c) USEPA is in the process of reconsidering these standards (set in March 2008).
(9) (a) USEPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").
(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is $\leq$1.

Source: http://www.epa.gov/air/criteria.html

standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare.

2.4 Ambient Air Quality Data

2.4.1 Local Meteorology

The proposed project is located in the Greater Cincinnati / Northern Kentucky region. The study area is located within the northern limit of the humid subtropical climate and the southern limit of the humid continental climate zone, with average temperatures by US standards. Summers are hot, humid and wet. July is the warmest month, with an average high of 87°F (31°C) and an average low of 68°F (20°C). Winters are generally cool to cold, with occasional snowfall. January is the coldest month, with an average high of 38°F (3°C) and an average low of 21°F (-6°C). Precipitation is fairly evenly distributed each month, averaging 41 inches of rainfall and 14 inches of snowfall annually.

2.4.2 Local Monitored Air Quality

The monitored information for the three monitoring stations nearest the study area—two in Cincinnati, Ohio and one in Highland Heights, Kentucky—are presented in Table 2. This table presents the last three years of available monitored at each of these stations in order to illustrate the study area's general air quality trends. Detailed monitored data can be found Appendix A.

2.5 Pollutant Description

2.5.1 Criteria Pollutants

Pollutants that have established national standards are referred to as "criteria pollutants." The sources of these pollutants, their effects on human health and the nation's welfare, and their final deposition in the atmosphere vary considerably. A brief description of each pollutant is provided below.

Exhibit 2. Ozone in the Atmosphere.

Source: Ozone NY

2.5.1.1 Ozone

Ozone (O_3) is a colorless toxic gas. As shown in Exhibit 2, 0_3 is found in both the Earth's upper and lower atmospheric levels. In the upper atmosphere, O_3 is a naturally occurring gas that helps to prevent the sun's harmful ultraviolet rays from reaching the Earth. In the lower layer of the atmosphere, O_3 is man-made. Although O_3 is not directly emitted, it forms in the lower atmosphere through a chemical reaction between hydrocarbons (HC), also referred to as Volatile Organic Compounds (VOC), and nitrogen oxides (NOx), which are emitted from industrial sources and from automobiles. HC are compounds comprised primarily of atoms of hydrogen and carbon. Total organic gases (TOG) and reactive organic gases (ROG) are the two

Table 2. Air Quality Summary for Study Area Monitoring Station.

Air Pollutant	Standard/ Exceedance	100 E. 5th Street Cincinnati, OH			250 Wm Howard Taft Road Cincinnati, OH			524a John Hill Road Highland Heights, KY		
		2006	2007	2008	2006	2007	2008	2006	2007	2008
Carbon Monoxide	Maximum 1-hour Concentration (ppm)	10.6	4.9	5.9	NM	NM	NM	NM	NM	NM
	Maximum 8-hour Concentration (ppm)	4.3	3.1	3.6	NM	NM	NM	NM	NM	NM
	# Days>Federal 1-hour Standard of >35 ppm	0	0	0	NM	NM	NM	NM	NM	NM
	# Days>Federal 8-hour Standard of >9 ppm	0	0	0	NM	NM	NM	NM	NM	NM
Ozone	Maximum 1-hour Concentration (ppm)	NM	NM	NM	0.101	0.118	0.101	NM	0.105	0.090
	Maximum 8-hour Concentration (ppm)	NM	NM	NM	0.089	0.097	0.086	NM	0.095	0.084
	# Days>Federal 8-hour Standard Of >0.075 ppm	NM	NM	NM	8	15	7	NM	19	2
Nitrogen Dioxide	Maximum 1-hour Concentration (ppm)	NM	NM	NM	0.061	0.081	0.079	NM	0.044	0.044
	Annual Average (ppm)	NM	NM	NM	0.018	0.017	0.016	NM	0.006	0.006
Sulfur Dioxide	Maximum 24-hour Concentration (ppm)	NM	NM	NM	NM	NM	NM	NM	0.020	0.017
	Annual Average (ppm)	NM	NM	NM	NM	NM	NM	NM	0.004	0.003
	# Days>Federal 24-hour Standard of >0.14 ppm	NM	NM	NM	NM	NM	NM	NM	0	0
Suspended Particulates (PM_{10})	Maximum 24-hour Concentration ($\mu g/m^3$)	NM	NM	NM	58.0	46.0	46.0	NM	NM	NM
	#Days>Fed. 24-hour Standard of>150 $\mu g/m^3$	NM	NM	NM	0	0	0	NM	NM	NM
Suspended Particulates ($PM_{2.5}$)	Maximum 24-hour Concentration ($\mu g/m^3$)	NM	NM	NM	34.5	41.9	31.5	NM	34.0	30.5
	#Days>Fed. 24-hour Standard of>35 $\mu g/m^3$	NM	NM	NM	0	0	0	NM	0	0
	National Annual Average ($\mu g/m^3$)	NM	NM	NM	13.57	15.09	12.13	NM	14.36	11.98
	#Days>Fed. Annual Standard of>15.0 $\mu g/m^3$	NM	NM	NM	0	1	0	NM	0	0
Lead	Maximum Monthly Concentration ($\mu g/m^3$)	NM	NM	NM	NM	NM	NM	NM	NM	NM
	# Months Exceeding Federal Standard	NM	NM	NM	NM	NM	NM	NM	NM	NM

Source: USEPA AIRSData: http://www.epa.gov/air/data/geosel.html
NM = not measured

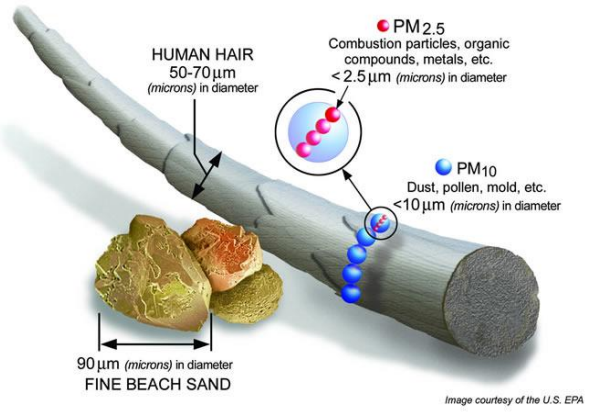
classes of HC that are inventoried by CARB and SCAQMD. ROG have relatively high photochemical reactivity. The principal nonreactive HC is methane (CH_4), which is also a greenhouse gas. The major source of ROG is the incomplete combustion of fossil fuels in internal combustion engines. Other sources of ROG include the evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products. Adverse effects on human health are not caused directly by ROG, but rather by reactions of ROG to form secondary pollutants. ROG are also transformed into organic aerosols in the atmosphere, contributing to higher levels of fine particulate matter and lower visibility. The term "ROG" is used by CARB for air quality analysis, and is defined the same as the Federal term "volatile organic compound" (VOC).

Substantial O_3 formations generally require a stable atmosphere with strong sunlight; thus high levels of O_3 are generally a concern in the summer. O_3 is the main ingredient of smog. O_3 enters the bloodstream through the respiratory system and interferes with the transfer of oxygen, depriving sensitive tissues in the heart and brain of oxygen. O_3 also damages vegetation by inhibiting its growth. The effects of changes in VOC and NO_x emissions for the proposed project are examined on a regional and statewide level.

2.5.1.2 Particulate Matter (PM)

Particulate pollution is composed of solid particles or liquid droplets that are small enough to remain suspended in the air. In general, particulate pollution can include dust, soot, salts, acids, metals, and smoke; these can be irritating but usually are not poisonous. Particulate pollution also can include bits of solid or liquid substances that can be highly toxic. Of particular concern are those particles that are smaller than, or equal to, 10 microns (PM_{10}) or 2.5 microns ($PM_{2.5}$) in size.

Exhibit 3. Relative Particulate Matter Size.



Source: USEPA Office of Air and Radiation

PM_{10} refers to PM less than 10 microns in diameter, about one-seventh the thickness of a human hair (Exhibit 3). PM also forms when gases emitted from motor vehicles undergo chemical reactions in the atmosphere.

Major sources of PM_{10} include motor vehicles; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Suspended particulates produce haze and reduce visibility.

Data collected through numerous nationwide studies indicate that most of the PM_{10} comes from the following:

- Fugitive dust

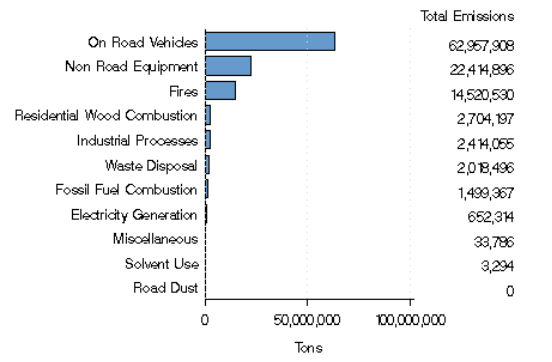
- Wind erosion
- Agricultural and forestry sources

A small portion of PM is the product of fuel combustion processes. In the case of $PM_{2.5}$, the combustion of fossil fuels accounts for a significant portion of this pollutant. The main health effect of airborne particulate matter is on the respiratory system. $PM_{2.5}$ refers to particulates that are 2.5 microns or less in diameter, roughly 1/28th the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_x, and VOCs. Like PM_{10}, $PM_{2.5}$ can penetrate the human respiratory system's natural defenses and damage the respiratory tract when inhaled. Whereas particles 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles 2.5 microns or less are so tiny that they can penetrate deeper into the lungs and damage lung tissues. The effects of PM_{10} and $PM_{2.5}$ emissions for the project are examined on a localized, or microscale, basis, a regional basis and a statewide basis.

2.5.1.3 Carbon Monoxide

Carbon monoxide (CO) is a colorless gas that interferes with the transfer of oxygen to the brain. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. As shown in (Exhibit 4), on-road motor vehicle exhaust is the primary source of CO. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Prolonged exposure to high levels of CO can cause headaches, drowsiness, loss of equilibrium, or heart disease. CO levels are generally highest in the colder months of the year when inversion conditions (when warmer air traps colder air near the ground) are more frequent.

Exhibit 4. Sources of CO.



Source: USEPA

CO concentrations can vary greatly over relatively short distances. Relatively high concentrations of CO are typically found near congested intersections, along heavily used roadways carrying slow-moving traffic, and in areas where atmospheric dispersion is inhibited by urban “street canyon” conditions. Consequently, CO concentrations must be predicted on a microscale basis.

2.5.1.4 Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a brownish gas that irritates the lungs. It can cause breathing difficulties at high concentrations. As with O_3, NO_2 is not directly emitted but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as nitrogen oxides (NO_x) and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM_{10}. At atmospheric concentrations, NO_2 can be potentially irritating. In high concentrations, the result is a brownish-red cast to the atmosphere and reduced visibility. There is some indication of a relationship between NO_2 and chronic

pulmonary fibrosis. An increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 parts per million (ppm).

2.5.1.5 Lead

Lead (Pb) is a stable element that persists and accumulates both in the environment and in animals. Its principal effects in humans are on the blood-forming, nervous, and renal systems. Pb levels from mobile sources in the urban environment have decreased significantly due to the federally-mandated switch to lead-free gasoline, and they are expected to continually decrease. An analysis of lead emissions from transportation projects is therefore not warranted.

2.5.1.6 Sulfur Dioxide

Sulfur Dioxide (SO_2) is a product of high-sulfur fuel combustion. The main sources of SO_2 are coal and oil used in power stations, industry, and domestic heating. Industrial chemical manufacturing is another source of SO_2. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also yellow plant leaves and corrode iron and steel. Although diesel-fueled heavy duty vehicles emit SO_2, transportation sources are not considered by USEPA (and other regulatory agencies) to be significant sources of this pollutant, thus an analysis of emissions from transportation projects is not warranted.

2.5.2 Mobile Source Air Toxics (MSAT)

2.5.2.1 Air Toxics

In addition to the criteria pollutants for which there are NAAQS, the USEPA also regulates air toxics. Toxic air pollutants are those that are known or suspected to cause cancer or other serious health effects. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Controlling air toxic emissions became a national priority with the passage of the CAAA of 1990, which mandated that the USEPA regulate 188 air toxics, also known as hazardous air pollutants. The USEPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS)[1]. In addition, USEPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA)[2]. These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While the Federal Highway Administration (FHWA) considers these the priority MSAT, the list is subject to change and may be adjusted in consideration of future USEPA rules.

The 2007 USEPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using USEPA's MOBILE6.2 model, even if vehicle activity (vehicle miles traveled [VMT]) increases by

[1] http://www.epa.gov/ncea/iris/index.html
[2] http://www.epa.gov/ttn/atw/nata1999/

145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050.

A brief description of the seven priority MSATs is given below.

Acrolein is a water-white or yellow liquid that burns easily, is readily volatilized, and has a disagreeable odor. It is present as a product of incomplete combustion in the exhausts of stationary equipment (e.g., boilers and heaters) and mobile sources. It is also a secondary pollutant, formed through the photochemical reaction of VOC and NO_X in the atmosphere. Acrolein is considered to have high acute toxicity, and it causes upper respiratory tract irritation and congestion in humans. The major effects from chronic (long-term) inhalation exposure to acrolein in humans consist of general respiratory congestion and eye, nose, and throat irritation. No information is available on the reproductive, developmental, or carcinogenic effects of acrolein in humans. USEPA considers acrolein data to be inadequate for an assessment of human carcinogenic potential.

Benzene is a volatile, colorless, highly flammable liquid with a sweet odor. Most of the benzene in ambient air is from incomplete combustion of fossil fuels and evaporation from gasoline service stations. Acute inhalation exposure to benzene causes neurological symptoms, such as drowsiness, dizziness, headaches, and unconsciousness in humans. Chronic inhalation of certain levels of benzene causes disorders in the blood in humans. Benzene specifically affects bone marrow (the tissues that produce blood cells). Aplastic anemia, excessive bleeding, and damage to the immune system (by changes in blood levels of antibodies and loss of white blood cells) may develop. Available human data on the developmental effects of benzene are inconclusive due to concomitant exposure to other chemicals, inadequate sample size, and lack of quantitative exposure data. USEPA has classified benzene as a known human carcinogen by inhalation.

1,3-Butadiene is a colorless gas with a mild gasoline-like odor. Sources of 1,3-butadiene released into the air include motor vehicle exhaust, manufacturing and processing facilities, forest fires or other combustion, and cigarette smoke. Acute exposure to 1,3-butadiene by inhalation in humans results in irritation of the eyes, nasal passages, throat, and lungs. Neurological effects, such as blurred vision, fatigue, headache, and vertigo, have also been reported at very high exposure levels. One epidemiological study reported that chronic exposure to 1,3-butadiene via inhalation resulted in an increase in cardiovascular diseases, such as rheumatic and arteriosclerotic heart diseases, while other human studies have reported effects on the blood. No information is available on reproductive or developmental effects of 1,3-butadiene in humans. USEPA has classified 1,3-butadiene as a probable human carcinogen by inhalation.

Diesel Particulate Matter (DPM)/Diesel Exhaust Organic Gases are a complex mixture of hundreds of constituents in either a gaseous or particle form. Gaseous components of diesel exhaust (DE) include CO_2, oxygen, nitrogen, water vapor, CO, nitrogen compounds, sulfur compounds, and numerous low-molecular-weight hydrocarbons. Among the gaseous hydrocarbon components of DE that are individually known to be of toxicological relevance are several carbonyls (e.g., formaldehyde, acetaldehyde, acrolein), benzene, 1,3-butadiene, and polycyclic aromatic hydrocarbons (PAHs) and nitro-PAHs. DPM is composed of a center core of elemental carbon and adsorbed organic compounds, as well as small amounts of sulfate, nitrate, metals, and other trace elements. DPM consists primarily of $PM_{2.5}$, including a subgroup

with a large number of particles having a diameter <0.1 µm. Collectively, these particles have a large surface area, which makes them an excellent medium for adsorbing organics. Also, their small size makes them highly respirable and able to reach the deep lung. A number of potentially toxicologically-relevant organic compounds, including PAHs, nitro-PAHs, and oxidized PAH derivatives, are on the particles. Diesel exhaust is emitted from on-road mobile sources, such as automobiles and trucks, and from off-road mobile sources (e.g., diesel locomotives, marine vessels, and construction equipment). DPM is directly emitted from diesel-powered engines (primary particulate matter) and can be formed from the gaseous compounds emitted by diesel engines (secondary particulate matter).

Acute or short-term (e.g., episodic) exposure to DE can cause acute irritation (e.g., eye, throat, bronchial), neurophysiological symptoms (e.g., lightheadedness, nausea), and respiratory symptoms (cough, phlegm). Evidence also exists for an exacerbation of allergenic responses to known allergens and asthma-like symptoms. Information from the available human studies is inadequate for a definitive evaluation of possible non-cancer health effects from chronic exposure to DE. However, on the basis of extensive animal evidence, DE is judged to pose a chronic respiratory hazard to humans. USEPA has determined that DE is "likely to be carcinogenic to humans by inhalation" and that this hazard applies to environmental exposures.

Formaldehyde is a colorless gas with a pungent, suffocating odor at room temperature. The major emission sources of formaldehyde appear to be power plants, manufacturing facilities, incinerators, and automobile exhaust. However, most of the formaldehyde in ambient air is a result of secondary formation through photochemical reaction of VOC and NO_X. The major toxic effects caused by acute formaldehyde exposure via inhalation are eye, nose, and throat irritation and effects on the nasal cavity. Other effects seen from exposure to high levels of formaldehyde in humans are coughing, wheezing, chest pains, and bronchitis. Chronic exposure to formaldehyde by inhalation in humans has been associated with respiratory symptoms and eye, nose, and throat irritation. USEPA considers formaldehyde to be a probable human carcinogen.

Naphthalene is used in the production of phthalic anhydride, a common industrial chemical; it is also used in mothballs. Acute (short-term) exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with hemolytic anemia, damage to the liver, and neurological damage. Cataracts have also been reported in workers acutely exposed to naphthalene by inhalation and ingestion. Chronic (long-term) exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Hemolytic anemia has been reported in infants born to mothers who "sniffed" and ingested naphthalene (as mothballs) during pregnancy. Available data are inadequate to establish a causal relationship between exposure to naphthalene and cancer in humans. USEPA has classified naphthalene as a Group C, possible human carcinogen.

The term **Polycyclic Organic Matter** (POM) defines a broad class of compounds that includes the PAH, of which benzo[a]pyrene is a member. POM compounds are formed primarily from combustion and are present in the atmosphere in particulate form. Sources of air emissions are diverse and include cigarette smoke, vehicle exhaust, home heating, laying tar, and grilling meat. Cancer is the major concern from exposure to POM. Epidemiologic studies have reported an increase in lung cancer in humans exposed to coke oven emissions, roofing tar emissions, and cigarette smoke; all of these mixtures contain POM compounds. Animal studies have reported respiratory tract tumors from inhalation exposure to benzo[a]pyrene and forestomach

tumors, leukemia, and lung tumors from oral exposure to benzo[a]pyrene. USEPA has classified seven PAHs (benzo[a]pyrene, benz[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) as Group B2, probable human carcinogens.

2.6 Attainment Status

Section 107 of the 1977 CAAA requires that the USEPA publish a list of all geographic areas in compliance with the NAAQS, plus those not attaining the NAAQS. Areas not in NAAQS compliance are deemed non-attainment areas. Areas that have insufficient data to make a determination are deemed unclassified, and are treated as being attainment areas until proven otherwise. An area's designation is based on the data collected by the state monitoring network on a pollutant-by-pollutant basis.

The study area is located in Hamilton County, Ohio and Kenton County, Kentucky. As shown Table 3, the USEPA has classified both counties as nonattainment areas for O_3 and for $PM_{2.5}$.

Table 3. Study Area Attainment Status.

Pollutant	Federal Attainment Status Hamilton County, OH	Federal Attainment Status Kenton County, KY
Ozone (O_3)	Nonattainment	Nonattainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Carbon Monoxide (CO)	Attainment	Attainment
Particulate Matter (PM_{10})	Attainment	Attainment
Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Lead (Pb)	Attainment	Attainment

Source: USEPA, 2010

2.7 State Implementation Plan and Transportation Improvement Program Status

Under the CAAA, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), and the Transportation Equity Act for the 21st Century (TEA-21), proposed transportation projects must be derived from a long-range transportation plan (LRP) or Regional Transportation Plan (RTP) that conforms with the state air quality plans as outlined in the SIP. The SIP sets forth the state's strategies for achieving air quality standards. Projects must also be included in a Transportation Improvement Program (TIP) that conforms with the SIP, and localized impacts from proposed projects must conform to state air quality plans in non-attainment and maintenance areas.

The Ohio-Kentucky-Indiana Regional Council of Governments (OKI) is the Metropolitan Planning Organization for the greater Cincinnati area. Every four years, OKI updates the OKI 2030 Regional Transportation Plan. The Plan is the long-range, comprehensive transportation-planning document for the three-state, eight-county Greater Cincinnati region. It defines the overarching goals for transportation in the region, establishes existing and future transportation needs of the region and allocates projected revenue to transportation programs and projects that address those needs.

The latest regional emissions and air quality conformity analysis was completed in June 2008 with the adoption of OKI's 2030 Regional Transportation Plan and amended FY 2008-FY 2011 Transportation Improvement Program. With the Plan's local adoption, it has been submitted to the federal highway and federal transit administrations for their review and approval. The Brent Spence Bridge Rehabilitation/Replacement project, identified as KYTC Project ID #6-17.03, 6-17.04, and ODOT PID 75119, was included in this analysis. This analysis found that the plan and, therefore, the individual projects contained in the plan, are conforming projects, and will have air quality impacts consistent with those identified in the SIPs for achieving the NAAQS.

3.0 ENVIRONMENTAL IMPACT/ENVIRONMENTAL CONSEQUENCES

Pollutants that can be traced principally to motor vehicles are relevant to the evaluation of the project's impacts; these pollutants include carbon monoxide (CO), hydrocarbons (HC), nitrous oxides (NO_x), ozone (O_3), Particulate Matter (PM_{10} and $PM_{2.5}$), and mobile source air toxics (MSAT). Transportation sources account for a small percentage of regional emissions of sulfur oxide (SO_x) and lead (Pb); thus, a detailed analysis is not required.

HC volatile organic compounds (VOC) and NO_x emissions from automotive sources are a concern primarily because they are precursors in the formation of O_3 and PM. Ozone is formed through a series of reactions that occur in the atmosphere in the presence of sunlight. Since the reactions are slow and occur as the pollutants are diffusing downwind, elevated O_3 levels often are found many miles from the sources of the precursor pollutants. Therefore, the effects of HC and NO_x emissions generally are examined on a regional or "mesoscale" basis.

PM_{10} and $PM_{2.5}$ impacts are both regional and local. A significant portion of particulate matter, especially PM_{10}, comes from disturbed vacant land, construction activity, and paved road dust. $PM_{2.5}$ also comes from these sources. Motor vehicle exhaust, particularly from diesel vehicles, is also a source of PM_{10} and $PM_{2.5}$. PM_{10}, and especially $PM_{2.5}$, can also be created by secondary formation from precursor elements such as sulfur dioxide (SO_2), NO_X, VOCs, and ammonia (NH_3). Secondary formation occurs due to chemical reaction in the atmosphere generally downwind some distance from the original emission source. Thus it is appropriate to predict concentrations of PM_{10} and $PM_{2.5}$ on both a regional and a localized basis.

CO impacts are generally localized. Even under the worst meteorological conditions and most congested traffic conditions, high concentrations are limited to a relatively short distance (300 to 600 feet) of heavily traveled roadways. Vehicle emissions are the major sources of CO. The project could change traffic patterns within the study area. Consequently, it is appropriate to predict concentrations of CO on both a regional and a localized or "microscale" basis.

MSAT impacts are both regional and local. On February 3, 2006, the Federal Highway Administration (FHWA) released *Interim Guidance on Air Toxic Analysis in NEPA Documents.* This guidance was superseded on September 30, 2009 by FHWA's *Interim Guidance Update on Air Toxic Analysis in NEPA Documents.* According to these documents, regardless of the alternative chosen, MSAT emissions will likely be lower than present levels in the design year as a result of the United States Environmental Protection Agency's (USEPA) national control programs that are projected to reduce annual MSAT emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, vehicle miles traveled (VMT) growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

3.1 Regional Emissions Analysis

The regional (or mesoscale) analysis of a project determines a project's overall impact on regional air quality levels. A transportation project is analyzed as part of a regional transportation network developed by the County or State. Projects included in this network are

found in the area's Transportation Improvement Plan (TIP). The TIP is the basis for the regional analysis which utilizes VMT and vehicle hours traveled (VHT) within the region to estimate daily "pollutant burden" levels. The results of this analysis determine if an area is in conformity with regulations set forth in the Final Conformity Rule.

The Brent Spence Bridge Replacement/Rehabilitation project, identified as Kentucky Transportation Cabinet (KYTC) Project ID #6-17.03, 6-17.04, and Ohio Department of Transportation (ODOT) PID 75119, was included in the regional emissions analysis conducted by the Ohio Kentucky Indiana Regional Council of Governments (OKI) for the 2030 Regional Transportation Plan and the Fiscal Year 2008-2011 TIP, dated June 2008. This analysis found that the plan and, therefore, the individual projects contained in the plan, are conforming projects, and will have air quality impacts consistent with those identified in the state implementation plans (SIPs) for achieving the National Ambient Air Quality Standards (NAAQS).

Though the conformity analysis conducted by OKI determined that the project conforms to the air quality goals of the area, a project level regional analysis was conducted to highlight the project's impact on regional air quality levels. The regional analysis utilizes VMT and VHT within the region, with corresponding emission factors for HC, NO_x, CO, PM_{10} and $PM_{2.5}$ from USEPA's latest emission factor program, MOBILE6.2, to determine daily "pollutant burden" levels under each alternative.

The regional emissions analysis was conducted for the No Build and two Build Alternatives (Alternative E and Alternative I). The analysis was based on regional VMT estimates by roadway type along with associated VHT estimates. Emission factors were obtained using USEPA's MOBILE6.2 emission factor program with area specific data supplied by OKI. The results for the study area are shown in Table 4. The project is predicted to reduce overall VMT and emissions of VOC, PM_{10} and $PM_{2.5}$ by approximately 0.1 percent. It is expected to increase CO and NO_x emissions by approximately 0.1 to 0.2 percent. These increases are due to increased speeds under the Build Alternatives which increase emission rates for these particular pollutants. The overall effect of the project on regional pollutant levels, however, is less than 0.5 percent and will likely result in no measurable increase or decrease in regional pollutant levels.

3.2 Mobile source Air Toxics (MSAT)

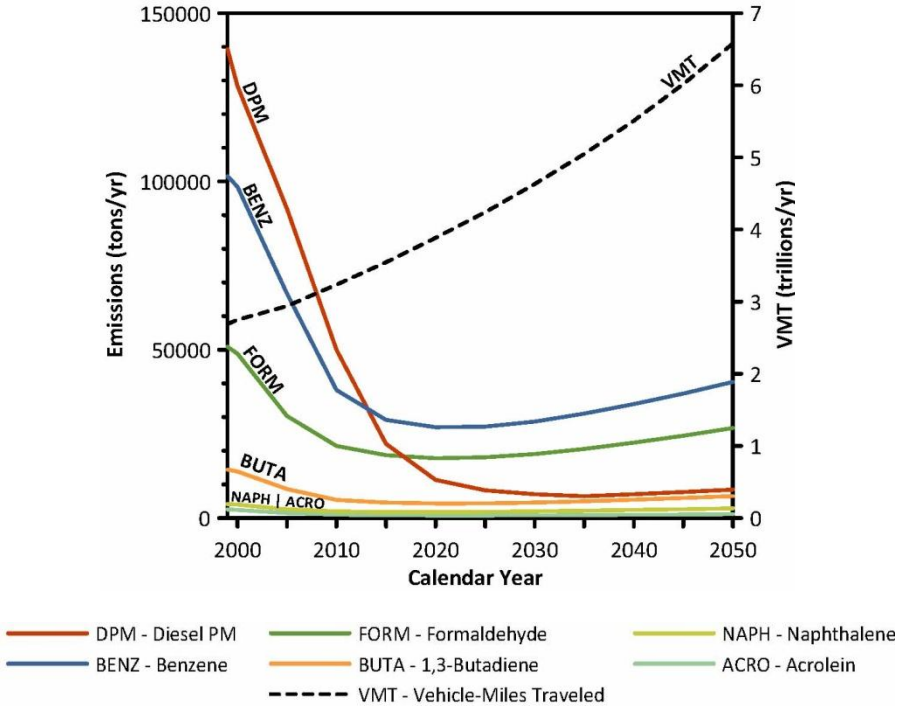
The localized assessment of air quality was conducted to address CO, PM_{10} and $PM_{2.5}$ impacts, as well as regional mobile source air toxics (MSAT). This report focuses on the MSAT analysis.

The USEPA is the lead federal agency for administering the Clean Air Act (CAA) and has certain responsibilities regarding the health effects of MSATs. The USEPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources (66 Federal Register 17229, March 29, 2001). This rule was issued under the authority in Section 202 of the CAA. In its rule, USEPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline program, its national low emission vehicle standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel requirements. Future emissions likely would be lower than present levels as result of the USEPA's national control programs that are projected to reduce MSAT emissions by 72 percent from 1999 to 2050, even if VMT increases by 145 percent, as shown in (Exhibit 5).

Table 4. Regional Emission Burden Assessment

Alternative	Vehicle Miles Travelled (miles)	Average Speed (mph)	Emission Burden (Tons per Day)					Percent Change from No Build					
			CO	VOC	NO_x	PM_{10}	$PM_{2.5}$	VMT	CO	VOC	NOx	PM_{10}	$PM_{2.5}$
No Build	89,731,288	32.0	1,230	33.6	32.5	2.7	1.3	N/A	N/A	N/A	N/A	N/A	N/A
Alternative E	89,667,285	32.0	1,231	33.5	32.6	2.7	1.3	-0.1%	0.1%	-0.1%	0.1%	-0.1%	-0.1%
Alternative I	89,667,285	32.0	1,231	33.5	32.6	2.7	1.3	-0.1%	0.1%	-0.1%	0.2%	-0.1%	-0.1%

Exhibit 5. National MSAT Emission Trends 1999 – 2050 for Vehicles Operating on Roadways Using USEPA's Mobile6.2 Model



Source: US Environmental Protection Agency. MOBILE6.2 Model run 20 August 2009.
Note:
(1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
(2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles traveled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.

On February 9, 2007 and under authority of CAA Section 202(l), USEPA signed a Final Rule, Control of Hazardous Air Pollutants from Mobile Sources, which sets standards to control MSATs from motor vehicles. Under this rule, USEPA is setting standards on fuel composition, vehicle exhaust emissions, and evaporative losses from portable containers. The new standardsare estimated to reduce total emissions of MSATs by 330,000 tons in 2030, including 61,000 tons of benzene. Concurrently, total emissions of volatile organic compounds (VOC) will be reduced by over 1.1 million tons in 2030 as a result of adopting these standards.

On February 3, 2006, the FHWA released "*Interim Guidance on Air Toxic Analysis in NEPA Documents."* This guidance was superseded on September 30, 2009 by FHWA's "*Interim Guidance Update on Air Toxic Analysis in NEPA Documents."* The purpose of FHWA's guidance is to advise on when and how to analyze MSATs in the NEPA process for highways. This guidance is interim, because MSAT science is still evolving. As the science progresses, FHWA will update the guidance.

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment

presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at: www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm.

FHWA's Interim Guidance groups projects into the following tier categories:

- No analysis for projects with no potential for meaningful MSAT Effects;
- Qualitative analysis for projects with low potential MSAT effects; or
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Based on FHWA's recommended tiering approach, the project falls within the Tier 3 approach (i.e., for projects with a high potential for MSAT effects). USEPA's MOBILE6.2 emission factor model was used to calculate annual MSAT pollutant burdens in tons per year for each of the project alternatives. MOBILE6.2 input parameters recommended by OKI were used, along with traffic volumes, speeds and travel characteristics forecasted for the project.

As shown in Table 5, all MSAT levels are predicted to decrease as compared to the No Build Alternative, with the exception of Formaldehyde, which is predicted to increase by 0.8%. As this increase is less than 1%, it is not considered to be significant.

Table 5. MSAT Regional Emission Burden Assessment

Alternative	Vehicle Miles Travelled (miles)	Average Speed	Emission Burden (Tons per Day)						
			Acrolein	Benzene	1,3-Butadiene	Diesel Particulate Matter	Formaldehyde	Napthalene	POM
No Build (2035)	89,731,288	32.0	21.16	1,269.5	144.2	0.17	468.1	39.2	5.1
Alternative E	89,667,285	32.0	21.15	1,268.8	134.9	0.17	472.0	39.1	5.1
Alternative I	89,667,285	32.0	21.15	1,268.7	134.8	0.17	472.0	39.1	5.1
Percent Change from No Build									
No Build (2035)	--	--	--	--	--	--	--	--	--
Alternative E	-0.1	NA	-0.1%	-0.1%	-6.5%	-0.1%	0.8%	-0.1%	-0.1%
Alternative I	-0.1	NA	-0.1%	-0.1%	-6.5%	-0.1%	0.8%	-0.1%	-0.1%

A basic analysis of the likely MSAT emission impacts of this project has been presented. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the alternatives in this Air Quality Report. Due to these limitations, the following discussion is included in accordance with Council of Environmental Quality (CEQ) regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information.

3.2.1 Information that is Unavailable or Incomplete

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The USEPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The USEPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects[3]". Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations[4] or in the future as vehicle emissions substantially decrease[5].

3.2.1.1 Emissions

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts, each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the USEPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the USEPA's DraftMOVES2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates Diesel Particulate Matter (DPM) emissions and significantly overestimates benzene emissions.

[3] USEPA, http://www.epa.gov/ncea/iris/index.html
[4] http://pubs.healtheffects.org/view.php?id=282
[5] http://pubs.healtheffects.org/view.php?id=306)

3.2.1.2 Dispersion

Regarding air dispersion modeling, an extensive evaluation of USEPA's guideline CAL3QHC model was conducted in a National Cooperative Highway Research Program (NCHRP) study[6], which documents poor model performance at ten sites across the country - three where intensive monitoring was conducted plus an additional seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with NAAQS for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

3.2.1.3 Exposure Levels and Health Effects

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI[7]. As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for DPM. The USEPA[8] and the HEI[9] have not established a basis for quantitative risk assessment of DPM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the USEPA as provided by the CAA to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires the USEPA to determine a “safe” or “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the US Court of Appeals for the District of Columbia Circuit upheld USEPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information

[6] http://www.epa.gov/scram001/dispersion_alt.htm#hyroad
[7] http://pubs.healtheffects.org/view.php?id=282
[8] http://www.epa.gov/risk/basicinformation.htm#g
[9] http://pubs.healtheffects.org/getfile.php?u=395

against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

3.3 Construction Assessment

Construction-related effects of the project would be limited to short-term increased fugitive dust and mobile-source emissions during construction. State and local regulations regarding dust control and other air quality emission reduction controls will be followed.

Once a detailed construction schedule is developed, a more refined construction analysis will be conducted to determine the air quality impacts of construction.

3.4 Fugitive Dust Emissions

Fugitive dust is airborne particulate matter, generally of a relatively large particulate size. Construction-related fugitive dust would be generated by haul trucks, concrete trucks, delivery trucks, and earth-moving vehicles operating around the construction sites. This fugitive dust would be due primarily to particulate matter re-suspended ("kicked up") by vehicle movement over paved and unpaved roads, dirt tracked onto paved surfaces from unpaved areas at access points, and material blown from uncovered haul trucks.

Generally, the distance that particles drift from their source depends on their size, the emission height, and the wind speed. Small particles (30 – 100 micron range) can travel several hundred feet before settling to the ground. Most fugitive dust, however, is comprised of relatively large particles (that is, particles greater than 100 microns in diameter). These particles are responsible for the reduced visibility often associated with this type of construction. Given their relatively large size, these particles tend to settle within 20 to 30 feet of their source.

In order to minimize the amount of construction dust generated, the guidelines below should be followed. The following preventive and mitigative measures should be taken to minimize the potential particulate pollution problem:

- **Site Preparation**
  - ► Minimize land disturbance.
  - ► Use watering trucks to minimize dust.
  - ► Cover trucks when hauling dirt.
  - ► Stabilize the surface of dirt piles if they are not removed immediately.
  - ► Use windbreaks to prevent accidental dust pollution.
  - ► Limit vehicular paths and stabilize these temporary roads.
  - ► Pave all unpaved construction roads and parking areas to road grade for a length no less than 50 feet from where such roads and parking areas exit the construction site. This prevents dirt from washing onto paved roadways.

- **Construction**
  - ► Cover trucks when transferring materials.
  - ► Use dust suppressants on unpaved traveled paths.
  - ► Minimize unnecessary vehicular and machinery activities.

  - ► Minimize dirt track-out by washing or cleaning trucks before leaving the construction site. An alternative to this strategy is to pave a few hundred feet of the exit road just before entering the public road.

- **Post-Construction**
  - ► Re-vegetate any disturbed land not used.
  - ► Remove unused material.
  - ► Remove dirt piles.
  - ► Re-vegetate all vehicular paths created during construction to avoid future off-road vehicular activities.

3.5 CO Emissions

Since CO emissions from motor vehicles generally increase with decreasing vehicle speed, disruption of traffic during construction (such as the temporary reduction of roadway capacity and the increased queue lengths) could result in short-term, elevated concentrations of CO. In order to minimize the amount of emissions generated, every effort should be made during the construction phase to limit disruption to traffic, especially during peak travel hours.

4.0 CONCLUSION

The Brent Spence Bridge Replacement/Rehabilitation project, identified as Kentucky Transportation Cabinet Project ID 6-17.03, 6-17.04, and Ohio Department of Transportation PID 75119, was included in the regional emissions analysis conducted by the Ohio Kentucky Regional Council of Governments for the 2030 Regional Transportation Plan and the Fiscal Year 2008-2011 Transportation Improvement Plan, dated June 2008. This analysis found that the plan and, therefore, the individual projects contained in the plan, are conforming projects, and will have air quality impacts consistent with those identified in the State Implementation Plans for achieving the National Ambient Air Quality Standards (NAAQS). In addition, the result of the air quality analyses conducted for the proposed project is that it would not significantly increase regional emission burdens or mobile source air toxic levels.

5.0 REFERENCES

Federal Highway Administration, Interim Guidance Update on Air Toxic Analysis in NEPA Documentation. 2009. http://www.fhwa.dot.gov/environment/airtoxic/100109guidmem.htm

Federal Highway Administration. *Transportation Conformity Reference Guide. 2008.* http://www.fhwa.dot.gov/environment/conform.htm

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Ohio, Kentucky, Indiana Regional Council of Governments. Air Quality Conformity Determination of the OKI 2030 Regional Transportation Plan", 2010. http://www.oki.org/environment/aqtransportation.html

US Environmental Protection Agency, Air Quality Analysis Branch, User's Guide to Mobile6.2, USEPA-TEB-92-01 http://www.epa.gov/oms/m6.htm

US Environmental Protection Agency, Airsdata, 2010. http://www.epa.gov/air/data/geosel.html

Appendix A Monitored Data
Appendix B MOBILE6.2 Input and Output Files

Appendix A

Monitored Data

AirData

AirData - Monitor Values Report - Criteria Air Pollutants
Generated on Thursday, April 1, 2010

You are here: EPA Home Air & Radiation AirData Reports and Maps Select Geography Select Report/Map Monitor Values Report Criteria
Monitor Values Report

EPA is assessing its data systems, including AirData reports and maps. Data updates are suspended while the assessment is underway. The last update included data through January 10, 2009; see database status for details. For more recent air quality data, visit the AirExplorer and Air Emission Sources sites.

Monitor Values Report - Criteria Air Pollutants

Geographic Area: Kentucky, Ohio
Pollutant: Carbon Monoxide
Year: 2006, 2007, 2008

EPA Air Quality Standards:
Carbon Monoxide: 35 ppm (1-hour average), 9 ppm (8-hour average)

ppm = parts per million

46 Rows
See Disclaimer

	CO (ppm)														
	1-Hour Values				8-Hour Values			Monitor Number							
Row #	# Obs	1st Max	2nd Max	# Exceed	1st Max	2nd Max	# Exceed		Year	Site ID	Site Address	City	County	State	EPA Region
SORT															
1	7,928	2.6	2.6	0	1.8	1.8	0	1	2006	391530022	177 S. Broadway	Akron	Summit Co	OH	05
2	8,389	2.2	2.0	0	1.7	1.4	0	1	2006	391530020	800 Patterson Ave.	Akron	Summit Co	OH	05
3	8,363	2.7	2.5	0	1.2	1.1	0	1	2007	391530022	177 S. Broadway	Akron	Summit Co	OH	05
4	8,382	2.3	1.7	0	1.6	1.4	0	1	2007	391530020	800 Patterson Ave.	Akron	Summit Co	OH	05
5	7,003	1.7	1.6	0	1.3	1.1	0	1	2008	391530020	800 Patterson Ave.	Akron	Summit Co	OH	05
6	6,948	2.0	1.5	0	0.9	0.8	0	1	2008	391530022	177 S. Broadway	Akron	Summit Co	OH	05
7	7,750	3.5	3.3	0	2.7	2.2	0	1	2006	391510020	420 Market	Canton	Stark Co	OH	05
8	8,311	2.1	2.1	0	1.8	1.7	0	1	2007	391510020	420 Market	Canton	Stark Co	OH	05
9	6,158	2.9	2.9	0	2.6	2.5	0	1	2008	391510020	420 Market	Canton	Stark Co	OH	05
10	8,636	10.6	9.9	0	4.3	3.0	0	1	2006	390610021	100 E. 5th St.	Cincinnati	Hamilton Co	OH	05

11	8,706	4.9	4.1	0	3.1	2.8	0	1	2007	390610021	100 E. 5th St.	Cincinnati	Hamilton Co	OH	05
12	6,358	5.9	5.1	0	3.6	2.7	0	1	2008	390610021	100 E. 5th St.	Cincinnati	Hamilton Co	OH	05
13	8,592	7.8	7.3	0	5.8	3.9	0	1	2006	390350051	1301 E. 9th St.	Cleveland	Cuyahoga Co	OH	05
14	8,441	5.0	2.8	0	1.8	1.6	0	1	2006	390350048	2026 East 9th St.	Cleveland	Cuyahoga Co	OH	05
15	8,533	5.0	4.0	0	2.2	2.0	0	1	2006	390350053	4169 Pearl Rd.	Cleveland	Cuyahoga Co	OH	05
16	8,590	2.5	2.3	0	1.6	1.5	0	1	2006	390350070	13013 Corlett Ave.	Cleveland	Cuyahoga Co	OH	05
17	8,576	3.8	3.0	0	2.0	1.5	0	1	2007	390350070	13013 Corlett Ave.	Cleveland	Cuyahoga Co	OH	05
18	8,282	7.0	6.7	0	3.1	2.9	0	1	2007	390350051	1301 E. 9th St.	Cleveland	Cuyahoga Co	OH	05
19	8,581	6.0	5.0	0	3.4	2.6	0	1	2007	390350048	2026 East 9th St.	Cleveland	Cuyahoga Co	OH	05
20	8,642	2.5	2.5	0	2.5	2.3	0	1	2007	390350053	4169 Pearl Rd.	Cleveland	Cuyahoga Co	OH	05
21	6,967	4.8	4.8	0	2.1	1.5	0	1	2008	390350048	2026 East 9th St.	Cleveland	Cuyahoga Co	OH	05
22	7,252	2.0	2.0	0	1.2	1.2	0	1	2008	390350053	4169 Pearl Rd.	Cleveland	Cuyahoga Co	OH	05
23	7,023	7.8	6.3	0	3.3	2.4	0	1	2008	390350051	1301 E. 9th St.	Cleveland	Cuyahoga Co	OH	05
24	7,232	2.0	1.8	0	1.5	1.3	0	1	2008	390350070	13013 Corlett Ave.	Cleveland	Cuyahoga Co	OH	05
25	8,582	3.6	2.9	0	2.4	2.1	0	1	2006	390490005	1585 Morse Rd.	Columbus	Franklin Co	OH	05
26	8,607	2.9	2.4	0	2.0	1.6	0	1	2006	390490036	122 S. Front St.	Columbus	Franklin Co	OH	05
27	6,722	1.7	1.6	0	1.1	1.1	0	1	2007	390490036	122 S. Front St.	Columbus	Franklin Co	OH	05
28	8,590	2.4	2.3	0	1.6	1.6	0	1	2007	390490005	1585 Morse Rd.	Columbus	Franklin Co	OH	05
29	7,183	2.7	2.3	0	1.6	1.4	0	1	2008	390490005	1585 Morse Rd.	Columbus	Franklin Co	OH	05
30	8,724	2.8	2.6	0	2.0	1.9	0	1	2006	391130034	117 South Main St.	Dayton	Montgomery Co	OH	05
31	8,711	4.5	4.2	0	2.6	1.5	0	1	2006	391130028	901 West Fairview Ave.	Dayton	Montgomery Co	OH	05
32	8,680	4.7	4.2	0	2.5	1.6	0	1	2007	391130028	901 West Fairview Ave.	Dayton	Montgomery Co	OH	05
33	8,719	4.4	3.0	0	1.5	1.5	0	1	2007	391130034	117 South Main St.	Dayton	Montgomery Co	OH	05
34	8,739	2.3	2.3	0	1.6	1.5	0	1	2008	391130034	117 South Main St.	Dayton	Montgomery Co	OH	05
35	8,720	1.5	1.4	0	1.1	1.0	0	1	2008	391130028	901 West Fairview Ave.	Dayton	Montgomery Co	OH	05
36	8,398	4.3	3.2	0	3.1	2.7	0	1	2006	211110046	3510 Goldsmith Lane, Seneca High School	Louisville	Jefferson Co	KY	04
37	8,598	11.4	4.9	0	3.1	2.8	0	1	2006	211111019	1735 Bardstown Rd, Fire Station #20	Louisville	Jefferson Co	KY	04
38	8,538	4.1	3.7	0	2.2	2.1	0	1	2007	211111019	1735 Bardstown Rd, Fire Station #20	Louisville	Jefferson Co	KY	04

AirData

AirData - Monitor Values Report - Criteria Air Pollutants
Generated on Thursday, April 1, 2010

You are here: EPA Home Air & Radiation AirData Reports and Maps Select Geography Select Report/Map Monitor Values Report Criteria
Monitor Values Report

EPA is assessing its data systems, including AirData reports and maps. Data updates are suspended while the assessment is underway. The last update included data through January 10, 2009; see database status for details. For more recent air quality data, visit the AirExplorer and Air Emission Sources sites.

Monitor Values Report - Criteria Air Pollutants

Geographic Area: Kentucky, Ohio
Pollutant: Nitrogen Dioxide
Year: 2006, 2007, 2008

EPA Air Quality Standards:
Nitrogen Dioxide: 0.053 ppm (annual mean)

ppm = parts per million

36 Rows
See Disclaimer

	NO2 (ppm)												
	1-Hour Values			Annual		Monitor Number							
Row #	# Obs	1st Max	2nd Max	Mean	# Exceed		Year	Site ID	Site Address	City	County	State	EPA Region
SORT													
1	7,183	0.049	0.043	0.010	0	1	2006	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY	04
2	8,158	0.059	0.055	0.011	0	1	2007	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY	04
3	6,207	0.056	0.050	0.010	0	1	2008	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY	04
4	7,891	0.046	0.045	0.008	0	1	2006	210290006	2nd & Carpenter Sts	Shepherdsville	Bullitt Co	KY	04
5	1,662	0.052	0.047	0.011	0	1	2007	210290006	2nd & Carpenter Sts	Shepherdsville	Bullitt Co	KY	04
6	1,597	0.052	0.048	0.011	0	1	2006	210370003	700 Alexandria Pk, Water Plt, Ft Thomas	Fort Thomas	Campbell Co	KY	04
7	3,926	0.044	0.041	0.006	0	1	2007	210373002	524a John Hill Road	Highland Heights	Campbell Co	KY	04

8	6,219	0.044	0.044	0.006	0	1	2008	210373002	524a John Hill Road	Highland Heights	Campbell Co	KY	04
9	7,928	0.041	0.041	0.006	0	1	2006	210590005	Wyndall Shpg Ctr Us 60 & Plsnt Valley Rd	Owensboro	Daviess Co	KY	04
10	8,310	0.051	0.049	0.005	0	1	2007	210590005	Wyndall Shpg Ctr Us 60 & Plsnt Valley Rd	Owensboro	Daviess Co	KY	04
11	5,265	0.042	0.038	0.007	0	1	2008	210590005	Wyndall Shpg Ctr Us 60 & Plsnt Valley Rd	Owensboro	Daviess Co	KY	04
12	8,220	0.061	0.061	0.012	0	1	2006	210670012	650 Newtown Pike, Fayette Co Health Dept	Lexington-Fayette (Corporate N	Fayette Co	KY	04
13	8,126	0.066	0.062	0.011	0	1	2007	210670012	650 Newtown Pike, Fayette Co Health Dept	Lexington-Fayette (Corporate N	Fayette Co	KY	04
14	6,120	0.051	0.050	0.008	0	1	2008	210670012	650 Newtown Pike, Fayette Co Health Dept	Lexington-Fayette (Corporate N	Fayette Co	KY	04
15	7,914	0.050	0.050	0.015	0	2	2006	211111021	1918 Mellwood Avenue, Wlky-Tv	Louisville	Jefferson Co	KY	04
16	8,323	0.058	0.055	0.016	0	2	2007	211111021	1918 Mellwood Avenue, Wlky-Tv	Louisville	Jefferson Co	KY	04
17	6,821	0.077	0.064	0.015	0	2	2008	211111021	1918 Mellwood Avenue, Wlky-Tv	Louisville	Jefferson Co	KY	04
18	6,471	0.060	0.060	0.014	0	1	2006	211170007	1401 Dixie Hwy, University College	Covington	Kenton Co	KY	04
19	4,300	0.063	0.062	0.015	0	1	2007	211170007	1401 Dixie Hwy, University College	Covington	Kenton Co	KY	04
20	7,829	0.051	0.051	0.009	0	1	2006	211451024	2901 Powell St, Jackson Purchase Recc	Paducah	McCracken Co	KY	04
21	8,178	0.049	0.047	0.009	0	1	2007	211451024	2901 Powell St, Jackson Purchase Recc	Paducah	McCracken Co	KY	04
22	6,092	0.061	0.053	0.008	0	1	2008	211451024	2901 Powell St, Jackson Purchase Recc	Paducah	McCracken Co	KY	04
23	6,911	0.021	0.020	0.002	0	2	2007	212218001	Old Dover Highway Cadiz, Ky		Trigg Co	KY	04
24	1,329	0.033	0.032	0.004	0	2	2008	212218001	Old Dover Highway Cadiz, Ky		Trigg Co	KY	04
25	7,946	0.049	0.048	0.008	0	1	2006	212270008	Oakland Elementary Sch, Ky 179, Oakland	Oakland	Warren Co	KY	04
26	8,252	0.040	0.037	0.005	0	1	2007	390090004	7760 Blackburn Road	Athens	Athens Co	OH	05
27	7,639	0.064	0.053	0.005	0	1	2008	390090004	7760 Blackburn Road	Athens	Athens Co	OH	05
28	8,396	0.068	0.065	0.018	0	1	2006	390350060	E. 14th & Orange	Cleveland	Cuyahoga Co	OH	05
29	8,390	0.073	0.070	0.020	0	1	2007	390350060	E. 14th & Orange	Cleveland	Cuyahoga Co	OH	05

30	7,103	0.075	0.073	0.017	0	1	2008	390350060	E. 14th & Orange	Cleveland	Cuyahoga Co	OH	05
31	8,457	0.175	0.075	0.014	0	1	2006	390350070	13013 Corlett Ave.	Cleveland	Cuyahoga Co	OH	05
32	8,508	0.098	0.075	0.016	0	1	2007	390350070	13013 Corlett Ave.	Cleveland	Cuyahoga Co	OH	05
33	7,052	0.074	0.069	0.014	0	1	2008	390350070	13013 Corlett Ave.	Cleveland	Cuyahoga Co	OH	05
34	8,596	0.061	0.061	0.018	0	1	2006	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
35	8,726	0.081	0.072	0.017	0	1	2007	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
36	7,264	0.079	0.073	0.016	0	1	2008	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
Grand Total					0		2007						
					0		2006						
					0		2008						

Page 1 of 1

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Comma Tab About exporting

Disclaimer: AirData reports are produced from a monthly extract of EPA's air pollution database, AQS. Data for this report were extracted on January 10, 2009. They represent the best information available to EPA from state agencies on that date. However, some values may be absent due to incomplete reporting, and some values subsequently may be changed due to quality assurance activities. The AQS database is updated daily by state and local organizations who own and submit the data. Please contact the pertinent state agency to report errors.

Readers are cautioned not to infer a qualitative ranking order of geographic areas based on AirData reports. Air pollution levels measured in the vicinity of a particular monitoring site may not be representative of the prevailing air quality of a county or urban area. Pollutants emitted from a particular source may have little impact on the immediate geographic area, and the amount of pollutants emitted does not indicate whether the source is complying with applicable regulations.

AirData

EPA is assessing its data systems, including AirData reports and maps. Data updates are suspended while the assessment is underway. The last update included data through January 10, 2009; see database status for details. For more recent air quality data, visit the AirExplorer and Air Emission Sources sites.

Monitor Values Report - Criteria Air Pollutants

Geographic Area: Kentucky, Ohio
Pollutant: Ozone
Year: 2006, 2007, 2008

EPA Air Quality Standards:
Ozone: 0.12 ppm (1-hour average), 0.075 ppm (8-hour average)

ppm = parts per million

238 Rows
See Disclaimer

	O3 (ppm)																											
	1-Hour Values										8-Hour Values																	
Row #	1st Max	2nd Max	3rd Max	4th Max	# Exceed Actual	# Exceed Estimated	Required Days	# Days	% Days	Missing Days	1st Max	2nd Max	3rd Max	4th Max	Days > Std	Required Days	# Days	% Days	Monitor Number	Year	Site ID	Site Address	City	County	State	EPA Region
SORT																										
1	0.078	0.075	0.073	0.073	0	0.0	245	245	100	0	0.067	0.065	0.065	0.063	0	245	245	100	1	2006	211950002	101 North Mayo Trail, Dot District Offic	Pikeville	Pike Co	KY	04
2	0.094	0.094	0.089	0.089	0	0.0	245	244	100	1	0.082	0.080	0.080	**0.079**	9	245	244	100	1	2007	211950002	101 North Mayo Trail, Dot District Offic	Pikeville	Pike Co	KY	04
3	0.083	0.082	0.081	0.080	0	0.0	245	245	100	0	0.075	0.074	0.074	0.071	0	245	245	100	1	2008	211950002	101 North Mayo Trail, Dot District Offic	Pikeville	Pike Co	KY	04
4	0.091	0.086	0.085	0.085	0	0.0	245	243	99	2	0.081	0.078	0.077	**0.076**	5	245	241	98	1	2006	210470006	10800 Pilot Rock Road, Williamson Res.		Christian Co	KY	04
5	0.105	0.097	0.097	0.092	0	0.0	245	242	99	1	0.092	0.091	0.091	**0.089**	24	245	243	99	1	2007	210470006	10800 Pilot Rock Road, Williamson Res.		Christian Co	KY	04
6	0.071	0.070	0.064	0.062	0	0.0	245	31	13	0	0.066	0.065	0.059	0.058	0	245	31	13	1	2008	210470006	10800 Pilot Rock Road, Williamson Res.		Christian Co	KY	04
7	0.085	0.076	0.076	0.075	0	0.0	242	242	100	0	0.072	0.072	0.069	0.069	0	242	242	100	2	2008	210470006	10800 Pilot Rock Road, Williamson Res.		Christian Co	KY	04
8	0.095	0.092	0.092	0.092	0	0.0	214	213	100	1	0.084	0.084	0.082	**0.081**	9	214	213	100	1	2006	390610006	11590 Grooms Rd	Cincinnati	Hamilton Co	OH	05
																						11590 Grooms				

36	0.098	0.098	0.097	0.097	0	0.0	214	214	100	0	0.091	0.090	0.086	**0.086**	16	214	214	100	1	2007	391670004	2000 4th Street	Marietta	Washington Co	OH	05
37	0.105	0.093	0.092	0.087	0	0.0	214	214	100	0	0.095	0.082	0.079	**0.078**	4	214	213	100	1	2008	391670004	2000 4th Street	Marietta	Washington Co	OH	05
38	0.105	0.095	0.088	0.087	0	0.0	214	213	100	1	0.087	0.082	0.073	0.072	2	214	213	100	1	2006	390870006	2120 S. 8th	Ironton	Lawrence Co	OH	05
39	0.109	0.106	0.100	0.095	0	0.0	214	212	99	2	0.089	0.078	0.077	**0.076**	4	214	210	98	1	2007	390870006	2120 S. 8th	Ironton	Lawrence Co	OH	05
40	0.104	0.097	0.093	0.091	0	0.0	214	212	99	2	0.092	0.086	0.083	**0.082**	5	214	212	99	1	2008	390870006	2120 S. 8th	Ironton	Lawrence Co	OH	05
41	0.101	0.093	0.088	0.088	0	0.0	214	214	100	0	0.087	0.081	0.077	**0.077**	7	214	212	99	1	2006	390250022	2400 Clermont Center Dr.	Batavia	Clermont Co	OH	05
42	0.104	0.104	0.104	0.101	0	0.0	214	210	98	1	0.093	0.092	0.090	**0.086**	17	214	209	98	1	2007	390250022	2400 Clermont Center Dr.	Batavia	Clermont Co	OH	05
43	0.082	0.077	0.077	0.076	0	0.0	214	208	97	0	0.072	0.071	0.071	0.071	0	214	207	97	1	2008	390250022	2400 Clermont Center Dr.	Batavia	Clermont Co	OH	05
44	0.093	0.091	0.089	0.088	0	0.0	214	209	98	0	0.085	0.081	0.079	**0.079**	8	214	208	97	1	2006	391510021	245 W. 5th St.	Brewster	Stark Co	OH	05
45	0.096	0.095	0.091	0.091	0	0.0	89	75	84	0	0.087	0.086	0.083	**0.082**	14	89	75	84	1	2007	391510021	245 W. 5th St.	Brewster	Stark Co	OH	05
46	0.101	0.093	0.092	0.092	0	0.0	214	214	100	0	0.089	0.080	0.079	**0.078**	8	214	212	99	1	2006	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
47	0.118	0.104	0.103	0.101	0	0.0	214	212	99	1	0.097	0.093	0.088	**0.086**	15	214	212	99	1	2007	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
48	0.101	0.094	0.091	0.087	0	0.0	214	213	100	1	0.086	0.083	0.081	**0.080**	7	214	213	100	1	2008	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
49	0.092	0.085	0.084	0.083	0	0.0	214	214	100	0	0.086	0.080	0.076	**0.076**	4	214	213	100	1	2006	390490028	2521 Fairwood	Columbus	Franklin Co	OH	05
50	0.099	0.099	0.097	0.090	0	0.0	214	214	100	0	0.085	0.082	0.081	**0.078**	8	214	214	100	1	2007	390490028	2521 Fairwood	Columbus	Franklin Co	OH	05
51	0.090	0.078	0.076	0.076	0	0.0	112	111	99	0	0.078	0.070	0.069	0.069	1	112	111	99	1	2008	390490028	2521 Fairwood	Columbus	Franklin Co	OH	05
52	0.103	0.090	0.088	0.085	0	0.0	214	213	100	1	0.090	0.082	0.082	0.075	3	214	211	99	1	2006	390030002	2650 Bible Rd.		Allen Co	OH	05
53	0.095	0.091	0.086	0.084	0	0.0	214	214	100	0	0.088	0.080	0.079	**0.078**	7	214	214	100	1	2007	390030002	2650 Bible Rd.		Allen Co	OH	05
54	0.082	0.078	0.076	0.073	0	0.0	214	214	100	0	0.072	0.068	0.068	0.067	0	214	213	100	1	2008	390030002	2650 Bible Rd.		Allen Co	OH	05
55	0.095	0.089	0.086	0.084	0	0.0	245	245	100	0	0.084	0.077	0.075	0.075	2	245	245	100	1	2006	211451024	2901 Powell St, Jackson Purchase Recc	Paducah	McCracken Co	KY	04
56	0.098	0.091	0.089	0.088	0	0.0	245	240	98	0	0.083	0.083	0.080	**0.079**	7	245	239	98	1	2007	211451024	2901 Powell St, Jackson Purchase Recc	Paducah	McCracken Co	KY	04
57	0.091	0.086	0.085	0.079	0	0.0	245	245	100	0	0.074	0.072	0.072	0.071	0	245	245	100	1	2008	211451024	2901 Powell St, Jackson Purchase Recc	Paducah	McCracken Co	KY	04
58	0.108	0.103	0.102	0.099	0	0.0	245	245	100	0	0.087	0.083	0.081	**0.079**	5	245	245	100	1	2006	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY	04
59	0.103	0.098	0.090	0.088	0	0.0	245	244	100	0	0.080	0.076	0.076	0.072	3	245	244	100	1	2007	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY	04
60	0.093	0.088	0.086	0.080	0	0.0	245	244	100	1	0.080	0.079	0.077	0.073	3	245	242	99	1	2008	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY	04
61	0.088	0.084	0.084	0.082	0	0.0	214	209	98	0	0.080	0.080	0.075	0.074	2	214	209	98	1	2006	390950081	2930 131st St.	Toledo	Lucas Co	OH	05
62	0.107	0.092	0.092	0.092	0	0.0	214	214	100	0	0.088	0.080	0.077	**0.077**	4	214	214	100	1	2007	390950081	2930 131st St.	Toledo	Lucas Co	OH	05
63	0.095	0.093	0.091	0.088	0	0.0	245	241	98	2	0.085	0.079	0.078	**0.076**	8	245	239	98	1	2006	210910012	2nd & Caroline, Lewisport Elementary Sch	Lewisport	Hancock Co	KY	04
64	0.097	0.093	0.093	0.092	0	0.0	245	243	99	0	0.087	0.085	0.081	**0.081**	15	245	240	98	1	2007	210910012	2nd & Caroline, Lewisport Elementary Sch	Lewisport	Hancock Co	KY	04
																						2nd & Caroline,				

96	0.102	0.099	0.096	0.096	0	0.0	245	245	100	0	0.086	0.086	0.085	**0.083**	10	245	244	100	1	2006	211850004	Rd, Dot Garage, Buckner	Buckner	Oldham Co	KY	04
97	0.108	0.099	0.099	0.093	0	0.0	245	245	100	0	0.088	0.086	0.086	**0.084**	18	245	244	100	1	2007	211850004	3995 Morgan Rd, Dot Garage, Buckner	Buckner	Oldham Co	KY	04
98	0.099	0.095	0.089	0.088	0	0.0	245	239	98	1	0.089	0.080	0.080	**0.077**	4	245	238	97	1	2008	211850004	3995 Morgan Rd, Dot Garage, Buckner	Buckner	Oldham Co	KY	04
99	0.110	0.104	0.100	0.099	0	0.0	214	214	100	0	0.092	0.090	0.088	**0.086**	12	214	214	100	1	2006	391650007	416 Southeast St.	Lebanon	Warren Co	OH	05
100	0.115	0.106	0.100	0.095	0	0.0	214	214	100	0	0.103	0.089	0.088	**0.088**	32	214	214	100	1	2007	391650007	416 Southeast St.	Lebanon	Warren Co	OH	05
101	0.099	0.096	0.093	0.092	0	0.0	214	208	97	0	0.092	0.087	0.084	**0.082**	11	214	204	95	1	2008	391650007	416 Southeast St.	Lebanon	Warren Co	OH	05
102	0.100	0.099	0.096	0.096	0	0.0	125	109	87	2	0.091	0.085	0.083	**0.083**	10	125	107	86	1	2007	391510022	45 S. Wabash Avenue, S.R 93	Brewster	Stark Co	OH	05
103	0.099	0.090	0.083	0.081	0	0.0	214	208	97	3	0.081	0.079	0.077	**0.076**	5	214	204	95	1	2008	391510022	45 S. Wabash Avenue, S.R 93	Brewster	Stark Co	OH	05
104	0.082	0.079	0.076	0.073	0	0.0	214	214	100	0	0.077	0.072	0.069	0.069	1	214	212	99	1	2006	390930018	4706 Detroit Rd.	Sheffield	Lorain Co	OH	05
105	0.092	0.091	0.086	0.085	0	0.0	214	214	100	0	0.084	0.082	0.079	**0.078**	4	214	212	99	1	2007	390930018	4706 Detroit Rd.	Sheffield	Lorain Co	OH	05
106	0.104	0.085	0.083	0.082	0	0.0	214	214	100	0	0.088	0.076	0.076	0.075	3	214	212	99	1	2008	390930018	4706 Detroit Rd.	Sheffield	Lorain Co	OH	05
107	0.089	0.087	0.086	0.086	0	0.0	214	198	93	3	0.083	0.081	0.080	**0.078**	9	214	195	91	1	2006	391510016	515 25th. St.	Canton	Stark Co	OH	05
108	0.099	0.096	0.095	0.095	0	0.0	214	205	96	3	0.089	0.087	0.086	**0.084**	18	214	204	95	1	2007	391510016	515 25th. St.	Canton	Stark Co	OH	05
109	0.088	0.088	0.086	0.082	0	0.0	214	206	96	2	0.082	0.080	0.078	**0.077**	4	214	204	95	1	2008	391510016	515 25th. St.	Canton	Stark Co	OH	05
110	0.104	0.097	0.090	0.087	0	0.0	214	214	100	0	0.091	0.081	0.077	**0.076**	5	214	214	100	1	2006	390230001	5171 Urbana	Springfield	Clark Co	OH	05
111	0.100	0.096	0.095	0.093	0	0.0	214	214	100	0	0.096	0.086	0.081	**0.078**	9	214	214	100	1	2007	390230001	5171 Urbana	Springfield	Clark Co	OH	05
112	0.103	0.094	0.089	0.084	0	0.0	214	213	100	1	0.090	0.084	0.078	0.075	3	214	213	100	1	2008	390230001	5171 Urbana	Springfield	Clark Co	OH	05
113	0.105	0.104	0.099	0.096	0	0.0	123	123	100	0	0.095	0.092	0.088	**0.086**	19	123	123	100	1	2007	210373002	524a John Hill Road	Highland Heights	Campbell Co	KY	04
114	0.090	0.090	0.083	0.083	0	0.0	245	243	99	0	0.084	0.083	0.075	0.075	2	245	242	99	1	2008	210373002	524a John Hill Road	Highland Heights	Campbell Co	KY	04
115	0.101	0.097	0.086	0.083	0	0.0	214	214	100	0	0.087	0.081	0.078	0.074	3	214	214	100	1	2006	390230003	5400 Spangler		Clark Co	OH	05
116	0.097	0.095	0.093	0.090	0	0.0	214	213	100	1	0.089	0.084	0.080	**0.078**	5	214	212	99	1	2007	390230003	5400 Spangler		Clark Co	OH	05
117	0.108	0.091	0.091	0.090	0	0.0	214	211	99	1	0.089	0.077	0.076	0.075	3	214	210	98	1	2008	390230003	5400 Spangler		Clark Co	OH	05
118	0.106	0.096	0.087	0.087	0	0.0	214	214	100	0	0.085	0.082	0.081	**0.079**	5	214	214	100	1	2006	390570006	541 Ledbetter Rd.,	Xenia	Greene Co	OH	05
119	0.101	0.092	0.091	0.090	0	0.0	214	213	100	1	0.092	0.085	0.081	**0.077**	7	214	213	100	1	2007	390570006	541 Ledbetter Rd.,	Xenia	Greene Co	OH	05
120	0.094	0.093	0.089	0.086	0	0.0	214	212	99	0	0.083	0.078	0.076	0.075	3	214	211	99	1	2008	390570006	541 Ledbetter Rd.,	Xenia	Greene Co	OH	05
121	0.096	0.094	0.086	0.084	0	0.0	214	214	100	0	0.085	0.084	0.080	**0.077**	4	214	212	99	1	2006	390490081	5750 Maple Canyon	Columbus	Franklin Co	OH	05
122	0.101	0.095	0.094	0.092	0	0.0	214	214	100	0	0.086	0.083	0.080	**0.079**	8	214	213	100	1	2007	390490081	5750 Maple Canyon	Columbus	Franklin Co	OH	05
123	0.099	0.083	0.075	0.074	0	0.0	214	214	100	0	0.088	0.073	0.066	0.066	1	214	214	100	1	2008	390490081	5750 Maple Canyon	Columbus	Franklin Co	OH	05
124	0.100	0.093	0.093	0.090	0	0.0	214	211	99	2	0.090	0.085	0.083	**0.081**	8	214	210	98	1	2006	390355002	6116 Wilson Mills	Mayfield	Cuyahoga Co	OH	05
125	0.098	0.091	0.090	0.089	0	0.0	214	213	100	1	0.086	0.084	0.082	**0.080**	5	214	209	98	1	2007	390355002	6116 Wilson Mills	Mayfield	Cuyahoga Co	OH	05

AirData

AirData - Monitor Values Report - Criteria Air Pollutants
Generated on Thursday, April 1, 2010

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Monitor Values Report

EPA is assessing its data systems, including AirData reports and maps. Data updates are suspended while the assessment is underway. The last update included data through January 10, 2009; see database status for details. For more recent air quality data, visit the AirExplorer and Air Emission Sources sites.

Monitor Values Report - Criteria Air Pollutants

Geographic Area: Kentucky, Ohio
Pollutant: Particles < 2.5 micrometers diameter
Year: 2006, 2007, 2008

EPA Air Quality Standards:
Particles < 2.5 micrometers diameter: 35 µg/m3 (24-Hour Average), 15.0 µg/m3 (annual mean)

µg/m3 = micrograms per cubic meter

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	PM2.5 (µg/m3)																
	24-Hour Values							Annual		Monitor Number							
Row #	# Obs	1st Max	2nd Max	3rd Max	4th Max	98th Pct	# Exceed	Mean	# Exceed		Year	Site ID	Site Address	City	County	State	EPA Region
SORT																	
1	61	30.2	25.7	24.5	24.1	25.7	0	13.75	0	1	2006	210130002	Middlesboro Airport, 34th & Dorchester	Middlesborough (Corporate Name	Bell Co	KY	04
2	59	40.7	29.5	28.2	27.5	29.5	0	15.24	1	1	2007	210130002	Middlesboro Airport, 34th & Dorchester	Middlesborough (Corporate Name	Bell Co	KY	04
3	55	30.3	24.4	23.1	23.1	24.4	0	12.78	0	1	2008	210130002	Middlesboro Airport, 34th & Dorchester	Middlesborough (Corporate Name	Bell Co	KY	04
4	115	48.6	28.9	28.6	28.0	28.6	0	13.76	0	1	2006	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY	04
													2924 Holt				

5	117	40.4	39.0	38.5	35.2	**38.5**	1	14.34	0	1	2007	210190017	St, Fivco Health Dept	Ashland	Boyd Co	KY	04
6	110	27.8	25.8	24.3	23.8	24.3	0	12.17	0	1	2008	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY	04
7	117	39.0	34.3	33.5	30.9	33.5	0	14.14	0	1	2006	210290006	2nd & Carpenter Sts	Shepherdsville	Bullitt Co	KY	04
8	118	46.8	37.7	35.1	34.0	35.1	0	**15.14**	1	1	2007	210290006	2nd & Carpenter Sts	Shepherdsville	Bullitt Co	KY	04
9	111	29.3	25.9	25.4	24.8	25.4	0	13.13	0	1	2008	210290006	2nd & Carpenter Sts	Shepherdsville	Bullitt Co	KY	04
10	18	25.2	19.8	17.0	16.8	25.2	0	11.54	0	1	2006	210370003	700 Alexandria Pk, Water Plt, Ft Thomas	Fort Thomas	Campbell Co	KY	04
11	50	34.0	33.5	26.3	26.0	34.0	0	14.36	0	1	2007	210373002	524a John Hill Road	Highland Heights	Campbell Co	KY	04
12	109	30.5	27.3	26.1	24.4	26.1	0	11.98	0	1	2008	210373002	524a John Hill Road	Highland Heights	Campbell Co	KY	04
13	112	43.2	26.3	25.5	24.9	25.5	0	11.49	0	1	2006	210430500	Camp Webb Grayson Lake		Carter Co	KY	04
14	116	36.7	31.8	30.9	30.8	30.9	0	12.81	0	1	2007	210430500	Camp Webb Grayson Lake		Carter Co	KY	04
15	111	25.2	24.5	22.6	21.2	22.6	0	10.33	0	1	2008	210430500	Camp Webb Grayson Lake		Carter Co	KY	04
16	115	36.8	30.9	30.3	27.1	30.3	0	12.63	0	1	2006	210470006	10800 Pilot Rock Road, Williamson Res.		Christian Co	KY	04
17	116	43.6	39.5	35.5	35.5	**35.5**	1	13.99	0	1	2007	210470006	10800 Pilot Rock Road, Williamson Res.		Christian Co	KY	04
18	107	28.4	27.9	27.2	26.7	27.2	0	12.08	0	1	2008	210470006	10800 Pilot Rock Road, Williamson Res.		Christian Co	KY	04
19	114	42.7	38.2	30.0	28.8	30.0	0	13.05	0	1	2006	210590005	Wyndall Shpg Ctr Us	Owensboro	Daviess Co	KY	04

127	113	39.0	38.3	34.0	32.8	34.0	0	13.42	0	1	2006	390490025	1700 Ann St.	Columbus	Franklin Co	OH	05
128	109	40.0	35.6	35.5	31.6	**35.5**	1	14.67	0	1	2007	390490025	1700 Ann St.	Columbus	Franklin Co	OH	05
129	93	32.6	27.1	26.8	26.4	27.1	0	11.81	0	1	2008	390490025	1700 Ann St.	Columbus	Franklin Co	OH	05
130	87	32.0	31.2	29.9	28.8	31.2	0	12.89	0	1	2006	390490081	5750 Maple Canyon	Columbus	Franklin Co	OH	05
131	106	45.1	38.5	33.5	30.9	33.5	0	13.11	0	1	2007	390490081	5750 Maple Canyon	Columbus	Franklin Co	OH	05
132	95	43.8	30.3	25.3	24.6	30.3	0	10.43	0	1	2008	390490081	5750 Maple Canyon	Columbus	Franklin Co	OH	05
133	119	31.5	28.8	26.5	26.5	26.5	0	11.94	0	1	2006	390570005	100 Dayton St.	Yellow Springs	Greene Co	OH	05
134	116	38.7	34.6	32.6	32.2	32.6	0	13.28	0	1	2007	390570005	100 Dayton St.	Yellow Springs	Greene Co	OH	05
135	109	33.3	26.9	26.8	25.3	26.8	0	11.64	0	1	2008	390570005	100 Dayton St.	Yellow Springs	Greene Co	OH	05
136	118	35.0	34.6	33.3	31.8	33.3	0	13.29	0	1	2006	390610006	11590 Grooms Rd	Cincinnati	Hamilton Co	OH	05
137	296	40.8	39.2	38.1	37.2	34.7	0	14.63	0	1	2007	390610006	11590 Grooms Rd	Cincinnati	Hamilton Co	OH	05
138	154	33.9	28.1	28.1	27.0	27.0	0	12.03	0	1	2008	390610006	11590 Grooms Rd	Cincinnati	Hamilton Co	OH	05
139	58	36.3	35.2	31.5	27.1	35.2	0	**15.51**	1	1	2006	390610014	Seymour & Vine St.	Cincinnati	Hamilton Co	OH	05
140	109	41.5	38.1	36.5	36.2	**36.5**	1	**16.59**	1	1	2007	390610014	Seymour & Vine St.	Cincinnati	Hamilton Co	OH	05
141	99	37.7	33.0	31.7	29.7	33.0	0	14.52	0	1	2008	390610014	Seymour & Vine St.	Cincinnati	Hamilton Co	OH	05
142	48	40.1	33.0	32.1	28.3	**40.1**	1	14.51	0	2	2008	390610014	Seymour & Vine St.	Cincinnati	Hamilton Co	OH	05
143	121	34.5	33.7	32.8	32.3	32.8	0	13.57	0	1	2006	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
144	107	41.9	35.3	34.7	33.1	34.7	0	**15.09**	1	1	2007	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
145	90	31.5	26.6	25.5	25.0	26.6	0	12.13	0	1	2008	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
146	122	39.4	37.0	34.5	33.5	34.5	0	14.94	0	1	2006	390610042	2101 W. 8th St.	Cincinnati	Hamilton Co	OH	05
147	110	39.2	36.3	35.9	33.6	**35.9**	1	**15.90**	1	1	2007	390610042	2101 W. 8th St.	Cincinnati	Hamilton Co	OH	05
148	91	32.2	27.5	27.5	27.2	27.5	0	14.04	0	1	2008	390610042	2101 W. 8th St.	Cincinnati	Hamilton Co	OH	05
149	118	39.0	35.8	34.9	32.2	34.9	0	14.47	0	1	2006	390610043	3254 E.	Sharonville	Hamilton Co	OH	05

AirData

AirData - Monitor Values Report - Criteria Air Pollutants
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Monitor Values Report - Criteria Air Pollutants

Geographic Area: Kentucky, Ohio
Pollutant: Particles < 10 micrometers diameter
Year: 2006, 2007, 2008

EPA Air Quality Standards:
Particles < 10 micrometers diameter: 150 µg/m3 (24-hour average), 50 µg/m3 (annual mean)

µg/m3 = micrograms per cubic meter

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	PM10 (µg/m3)																
	24-Hour Values							Annual									
Row #	# Obs	1st Max	2nd Max	3rd Max	4th Max	# Exceed Actual	# Exceed Estimated	Mean	# Exceed	Monitor Number	Year	Site ID	Site Address	City	County	State	EPA Regior
SORT																	
1	8	28	24	24	23	0	0.0	18	0	1	2006	210130002	Middlesboro Airport, 34th & Dorchester	Middlesborough (Corporate Name	Bell Co	KY	04
2	59	108	72	68	68	0	0.0	34	0	1	2006	210190002	122 22nd St, Ashland Oil Pad	Ashland	Boyd Co	KY	04
3	57	106	72	72	68	0	0.0	33	0	2	2006	210190002	122 22nd St, Ashland Oil Pad	Ashland	Boyd Co	KY	04
4	58	98	94	92	77	0	0.0	39	0	1	2007	210190002	122 22nd St, Ashland	Ashland	Boyd Co	KY	04

87	47	58	43	43	38	0	0.0	18	0	1	2008	390351002	16900 Holland Rd.	Brook Park	Cuyahoga Co	OH	05
88	61	56	55	54	50	0	0.0	27	0	1	2006	390490024	State Fairgrounds	Columbus	Franklin Co	OH	05
89	59	123	76	72	70	0	0.0	36	0	1	2007	390490024	State Fairgrounds	Columbus	Franklin Co	OH	05
90	51	82	79	61	58	0	0.0	36	0	1	2008	390490024	State Fairgrounds	Columbus	Franklin Co	OH	05
91	363	80	64	60	59	0	0.0	23	0	1	2006	390490034	Korbel Ave.	Columbus	Franklin Co	OH	05
92	161	59	56	56	56	0	0.0	21	0	1	2007	390490034	Korbel Ave.	Columbus	Franklin Co	OH	05
93	58	33	33	30	29	0	0.0	16	0	1	2006	390570005	100 Dayton St.	Yellow Springs	Greene Co	OH	05
94	56	48	38	30	30	0	0.0	18	0	1	2007	390570005	100 Dayton St.	Yellow Springs	Greene Co	OH	05
95	58	32	32	30	29	0	0.0	15	0	1	2008	390570005	100 Dayton St.	Yellow Springs	Greene Co	OH	05
96	60	53	48	46	44	0	0.0	23	0	1	2006	390610014	Seymour & Vine St.	Cincinnati	Hamilton Co	OH	05
97	59	51	49	49	46	0	0.0	26	0	1	2007	390610014	Seymour & Vine St.	Cincinnati	Hamilton Co	OH	05
98	48	48	45	45	42	0	0.0	26	0	1	2008	390610014	Seymour & Vine St.	Cincinnati	Hamilton Co	OH	05
99	59	43	40	38	38	0	0.0	19	0	1	2006	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
100	242	58	56	55	50	0	0.0	22	0	9	2006	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
101	56	46	45	43	42	0	0.0	25	0	1	2007	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
102	49	39	37	35	35	0	0.0	19	0	1	2008	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
103	44	46	42	41	41	0	0.0	25	0	9	2008	390610040	250 Wm. Howard Taft	Cincinnati	Hamilton Co	OH	05
104	58	47	44	42	39	0	0.0	21	0	1	2006	390615001	101 Cooper Ave.	Lockland	Hamilton Co	OH	05
105	52	47	46	45	41	0	0.0	25	0	1	2007	390615001	101 Cooper Ave.	Lockland	Hamilton Co	OH	05
106	50	41	38	35	35	0	0.0	20	0	1	2008	390615001	101 Cooper Ave.	Lockland	Hamilton Co	OH	05

AirData

AirData - Monitor Values Report - Criteria Air Pollutants
Generated on Thursday, April 1, 2010

EPA is assessing its data systems, including AirData reports and maps. Data updates are suspended while the assessment is underway. The last update included data through January 10, 2009; see database status for details. For more recent air quality data, visit the AirExplorer and Air Emission Sources sites.

Monitor Values Report - Criteria Air Pollutants

Geographic Area: Kentucky, Ohio
Pollutant: Sulfur Dioxide
Year: 2006, 2007, 2008

EPA Air Quality Standards:
Sulfur Dioxide: 0.5 ppm (3-hour average), 0.14 ppm (24-hour average), 0.030 ppm (annual mean)

ppm = parts per million

125 Rows
See Disclaimer

	SO2 (ppm)																	
	1-Hour Values			3-Hour Values			24-Hour Values			Annual		Monitor Number						
Row #	# Obs	1st Max	2nd Max	1st Max	2nd Max	# Exceed	1st Max	2nd Max	# Exceed	Mean	# Exceed		Year	Site ID	Site Address	City	County	St
SORT																		
1	8,713	0.132	0.067	0.059	0.047	0	0.018	0.016	0	0.004	0	1	2006	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY
2	8,684	0.118	0.084	0.078	0.046	0	0.023	0.016	0	0.004	0	1	2007	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY
3	6,513	0.046	0.045	0.031	0.030	0	0.012	0.011	0	0.003	0	1	2008	210190017	2924 Holt St, Fivco Health Dept	Ashland	Boyd Co	KY
4	1,588	0.064	0.061	0.053	0.046	0	0.015	0.014	0	0.005	0	1	2006	210370003	700 Alexandria Pk, Water Plt, Ft	Fort Thomas	Campbell Co	KY

															Thomas			
5	4,136	0.129	0.078	0.080	0.056	0	0.020	0.015	0	0.004	0	1	2007	210373002	524a John Hill Road	Highland Heights	Campbell Co	KY
6	6,326	0.076	0.072	0.048	0.046	0	0.017	0.015	0	0.003	0	1	2008	210373002	524a John Hill Road	Highland Heights	Campbell Co	KY
7	8,448	0.081	0.064	0.061	0.042	0	0.014	0.013	0	0.004	0	1	2006	210590005	Wyndall Shpg Ctr Us 60 & Plsnt Valley Rd	Owensboro	Daviess Co	KY
8	8,206	0.088	0.067	0.054	0.048	0	0.016	0.015	0	0.005	0	1	2007	210590005	Wyndall Shpg Ctr Us 60 & Plsnt Valley Rd	Owensboro	Daviess Co	KY
9	5,181	0.107	0.062	0.048	0.044	0	0.013	0.011	0	0.003	0	1	2008	210590005	Wyndall Shpg Ctr Us 60 & Plsnt Valley Rd	Owensboro	Daviess Co	KY
10	7,735	0.055	0.048	0.042	0.031	0	0.013	0.013	0	0.004	0	1	2006	210670012	650 Newtown Pike, Fayette Co Health Dept	Lexington-Fayette (Corporate N	Fayette Co	KY
11	8,685	0.069	0.057	0.044	0.034	0	0.017	0.010	0	0.004	0	1	2007	210670012	650 Newtown Pike, Fayette Co Health Dept	Lexington-Fayette (Corporate N	Fayette Co	KY
12	6,365	0.044	0.041	0.027	0.022	0	0.009	0.008	0	0.003	0	1	2008	210670012	650 Newtown Pike, Fayette Co Health Dept	Lexington-Fayette (Corporate N	Fayette Co	KY
13	8,221	0.050	0.049	0.042	0.033	0	0.017	0.016	0	0.004	0	1	2006	210890007	Scott & Center Streets, Worthington	Worthington	Greenup Co	KY
14	8,625	0.067	0.049	0.042	0.035	0	0.023	0.014	0	0.004	0	1	2007	210890007	Scott & Center Streets, Worthington	Worthington	Greenup Co	KY
15	6,533	0.041	0.035	0.028	0.025	0	0.014	0.012	0	0.003	0	1	2008	210890007	Scott & Center Streets, Worthington	Worthington	Greenup Co	KY
16	8,704	0.107	0.102	0.085	0.081	0	0.028	0.022	0	0.003	0	1	2006	211010014	Baskett Fire Department		Henderson Co	KY
															Baskett Fire		Henderson	

Appendix B

MOBILE6.2

Input and Output Files

REGIONAL MOBILE6.2
INPUT AND OUTPUT FILES

```
* Mobile6 input file for Kentucky
*
******************  Header Section  ************************
MOBILE6 INPUT FILE :
POLLUTANTS         : NOx HC
PARTICULATES       :
* PARTICULATES REPORTED IN *.PM FILE


RUN DATA
******************  Run Section  ***************************

REG DIST           : KYREG.d
FUEL PROGRAM       : 1
OXYGENATED FUELS   : .000 .420 .000 .036 2
STAGE II REFUELING : 93 3 86. 86.

EXPAND BUS EFS     :
REBUILD EFFECTS    : 0.10

******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 57.6 Non-Ramp
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 45.6 Non-Ramp
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 12.9 freeway
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 58.1 Non-Ramp
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 46.3 Non-Ramp
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 12.6 freeway
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 58.1 Non-Ramp
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 46.2 Non-Ramp
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
```

```
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 12.5 freeway
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 18.6 arterial
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 18.7 arterial
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 18.8 arterial
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Summer Scenario Section  ***************
SCENARIO RECORD    : Brent Spence NOx HC PM2.5  emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
FUEL RVP           : 7.8
MIN/MAX TEMP       : 62.0 91.3
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 10.
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


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

```
*************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                            *
* Input file: K35REGS.INP (file 1, run 1).                              *
*************************************************************************

* Reading Registration Distributions from the following external
* data file: KYREG.D
  M616 Comment:
               User has supplied post-1999 sulfur levels.
  M601 Comment:
               User has enabled STAGE II REFUELING.


* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 57.6
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
 HDDV DEFEAT DEVICE EFFECTS ARE PRESENT. THE REBUILD FRACTION IS 0.10.

* Reading Ammonia (NH3) Basic Emissiion Rates
* from the external data file PMNH3BER.D

* Reading Ammonia (NH3) Sulfur Deterioration Rates
* from the external data file PMNH3SDR.D
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.225     0.278     0.438     0.317     0.202     0.033     0.080     0.153      2.27     0.283
     Composite NOX :      0.197     0.304     0.480     0.347     0.197     0.033     0.152     0.599      1.48     0.326
  ------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.393     0.152     0.182
     Composite NOX :     0.346     0.958     0.711
------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 45.6
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
```

```
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.240     0.291     0.462     0.333     0.225     0.036     0.086     0.171      2.12     0.298
    Composite NOX :      0.191     0.290     0.461     0.332     0.182     0.025     0.112     0.439      1.21     0.300
 ---------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :     0.433     0.171     0.204
    Composite NOX :     0.319     0.702     0.521
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.9
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

```
                    ATP Program:  No
                Reformulated Gas:  No

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.435     0.472     0.722     0.533     0.559     0.070     0.171     0.432      3.34     0.511
    Composite NOX :      0.220     0.309     0.495     0.354     0.141     0.030     0.136     0.535      0.94     0.327
 -------------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.933     0.432     0.517
    Composite NOX :     0.247     0.855     0.634
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 58.1
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.224     0.278     0.437     0.317     0.201     0.033     0.080     0.152      2.30     0.282
    Composite NOX :      0.197     0.304     0.481     0.348     0.198     0.034     0.154     0.609      1.50     0.328
 -------------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.392     0.152     0.182
    Composite NOX :     0.347     0.974     0.722
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 46.3
            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.
```

```
* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   7.8 psi
                     Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.239     0.290     0.460     0.332     0.223     0.036     0.086     0.169      2.12     0.297
    Composite NOX :      0.191     0.291     0.462     0.333     0.183     0.025     0.114     0.445      1.22     0.301
  -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.430     0.169     0.202
    Composite NOX :     0.320     0.712     0.528
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.6
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   7.8 psi
```

```
                Weathered RVP:   8.0 psi
            Fuel Sulfur Content:   30. ppm

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

  Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
  Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                         Alcohol Blend RVP Waiver: Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 -----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.442     0.479     0.733     0.542     0.569     0.071     0.173     0.438      3.38     0.519
    Composite NOX :      0.223     0.313     0.501     0.359     0.141     0.030     0.137     0.539      0.94     0.331
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :     0.948     0.437     0.524
    Composite NOX :     0.247     0.862     0.640
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
           The user supplied freeway average speed of 58.1
           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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
            Minimum Temperature:  62.0 (F)
            Maximum Temperature:  91.3 (F)
              Absolute Humidity:   75. grains/lb
               Nominal Fuel RVP:   7.8 psi
                  Weathered RVP:   8.0 psi
            Fuel Sulfur Content:   30. ppm

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

  Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
  Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                         Alcohol Blend RVP Waiver: Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 -----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.224     0.278     0.437     0.317     0.201     0.033     0.080     0.152      2.30     0.282
    Composite NOX :      0.197     0.304     0.481     0.348     0.198     0.034     0.154     0.609      1.50     0.328
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :     0.392     0.152     0.182
    Composite NOX :     0.347     0.974     0.722
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # # #
```

```
  M581 Warning:
            The user supplied freeway average speed of 46.2
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  July
                          Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.239     0.290     0.460     0.332     0.223     0.036     0.086     0.169      2.12     0.297
    Composite NOX :      0.191     0.291     0.462     0.333     0.182     0.025     0.114     0.444      1.22     0.301
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.430     0.169     0.203
    Composite NOX :     0.320     0.711     0.527
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.5
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  July
```

```
                    Altitude:  Low
               Minimum Temperature:  62.0 (F)
               Maximum Temperature:  91.3 (F)
                 Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
  -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.445     0.482     0.737     0.545     0.572     0.071     0.174     0.440      3.39     0.522
     Composite NOX :      0.224     0.314     0.503     0.360     0.141     0.030     0.137     0.541      0.94     0.332
  -----------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.953     0.439     0.526
     Composite NOX :     0.247     0.865     0.642
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 10.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 27.1
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
               Minimum Temperature:  62.0 (F)
               Maximum Temperature:  91.3 (F)
                 Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
  -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.291     0.332     0.526     0.380     0.313     0.048     0.116     0.261      2.47     0.352
     Composite NOX :      0.199     0.292     0.466     0.335     0.158     0.023     0.105     0.410      1.07     0.300
  -----------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.566     0.261     0.312
     Composite NOX :     0.277     0.656     0.486
-----------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 11.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 18.6
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.351     0.393     0.613     0.447     0.413    0.059     0.145     0.350      2.83     0.422
     Composite NOX :      0.226     0.322     0.511     0.369     0.147    0.026     0.119     0.466      0.97     0.331
  ------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.717     0.349     0.419
     Composite NOX :     0.257     0.745     0.553
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 12.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
```

```
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
                  Minimum Temperature:  62.0 (F)
                  Maximum Temperature:  91.3 (F)
                    Absolute Humidity:   75. grains/lb
                     Nominal Fuel RVP:   7.8 psi
                        Weathered RVP:   8.0 psi
                  Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.323     0.363     0.573     0.415     0.368     0.055     0.134     0.316      2.68     0.390
    Composite NOX :      0.215     0.309     0.492     0.355     0.150     0.025     0.113     0.442      1.00     0.318
  -----------------------------------------------------------------------------------------------------------------------

          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.651     0.315     0.378
    Composite NOX :     0.264     0.707     0.524
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 13.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 27.1
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
                  Minimum Temperature:  62.0 (F)
                  Maximum Temperature:  91.3 (F)
                    Absolute Humidity:   75. grains/lb
                     Nominal Fuel RVP:   7.8 psi
                        Weathered RVP:   8.0 psi
                  Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.291     0.332     0.526     0.380     0.313     0.048     0.116     0.261      2.47     0.352
    Composite NOX :      0.199     0.292     0.466     0.335     0.158     0.023     0.105     0.410      1.07     0.300
  -----------------------------------------------------------------------------------------------------------------------

          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
```

```
 Composite Emission Factors (g/mi):
     Composite VOC :     0.566     0.261     0.312
     Composite NOX :     0.277     0.656     0.486
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 14.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 18.7
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   7.8 psi
                       Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
  -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.350     0.391     0.611     0.445     0.411     0.059     0.144     0.349      2.82     0.420
     Composite NOX :      0.226     0.321     0.510     0.368     0.147     0.026     0.119     0.465      0.97     0.331
  -------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.715     0.348     0.417
     Composite NOX :     0.258     0.744     0.552
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 15.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
```

```
 M 48 Warning:
             there are no sales for vehicle class LDDT12
 M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.323     0.363     0.573     0.415     0.368     0.055     0.134     0.316      2.68     0.390
     Composite NOX :      0.215     0.309     0.492     0.355     0.150     0.025     0.113     0.442      1.00     0.318
 -----------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.651     0.315     0.378
     Composite NOX :     0.264     0.707     0.524
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 16.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
             The user supplied arterial average speed of 27.1
             will be used for all hours of the day.  100% of VMT
             has been assigned to the arterial/collector roadway
             type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.291     0.332     0.526     0.380     0.313     0.048     0.116     0.261      2.47     0.352
     Composite NOX :      0.199     0.292     0.466     0.335     0.158     0.023     0.105     0.410      1.07     0.300
 -----------------------------------------------------------------------------------------------------------------------
```

```
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.566     0.261     0.312
     Composite NOX :     0.277     0.656     0.486
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 17.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 18.8
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
  -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.348     0.390     0.610     0.444     0.409     0.059     0.144     0.347      2.82     0.419
     Composite NOX :      0.225     0.321     0.509     0.367     0.147     0.026     0.118     0.464      0.97     0.330
  -------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.712     0.347     0.416
     Composite NOX :     0.258     0.742     0.551
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 18.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV
```

```
* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  July
                          Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2805    0.4458    0.1461              0.0354    0.0003    0.0021    0.0849    0.0050    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.323     0.363     0.573     0.415     0.368     0.055     0.134     0.316      2.68     0.390
     Composite NOX :      0.215     0.309     0.492     0.355     0.150     0.025     0.113     0.442      1.00     0.318
 ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                     ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.651     0.315     0.378
     Composite NOX :     0.264     0.707     0.524
-----------------------------------------------------------------------------------------------------------------------
```

```
* Mobile6 input file for Kentucky
*
******************  Header Section  ************************
MOBILE6 INPUT FILE :
POLLUTANTS         : CO
PARTICULATES       :
* PARTICULATES REPORTED IN *.PM FILE


RUN DATA
******************  Run Section  ***************************

REG DIST           : KYREG.d
FUEL PROGRAM       : 1
OXYGENATED FUELS   : .000 .420 .000 .036 2
STAGE II REFUELING : 93 3 86. 86.

EXPAND BUS EFS     :
REBUILD EFFECTS    : 0.10

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 57.6 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 45.6 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 12.9 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 58.1 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 46.3 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 12.6 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 58.1 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 46.2 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
```

```
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 12.5 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 18.6 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 18.7 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 18.8 37.0
AVERAGE SPEED      : 50.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


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

```
************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                           *
* Input file: K2035REG.INP (file 1, run 1).                            *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2035
                                 Month:  Jan.
             Gasoline Fuel Sulfur Content:   30. ppm
               Diesel Fuel Sulfur Content:   43. ppm
                     Particle Size Cutoff:  2.50 Microns
                         Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
           GASPM:    0.0037    0.0035    0.0035    0.0035    0.0073    ------    ------    ------    0.0142    0.0034
         ECARBON:    ------    ------    ------    ------    ------    0.0065    0.0034    0.0075    ------    0.0006
         OCARBON:    ------    ------    ------    ------    ------    0.0018    0.0049    0.0038    ------    0.0003
             SO4:    0.0002    0.0004    0.0004    0.0004    0.0021    0.0004    0.0008    0.0026    0.0001    0.0006
  Total Exhaust PM:    0.0039    0.0039    0.0039    0.0039    0.0094    0.0088    0.0092    0.0140    0.0143    0.0050
           Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:    0.0020    0.0020    0.0020    0.0020    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
        Total PM:    0.0112    0.0112    0.0112    0.0112    0.0169    0.0162    0.0165    0.0258    0.0206    0.0127
             SO2:    0.0068    0.0088    0.0115    0.0095    0.0164    0.0084    0.0161    0.0377    0.0033    0.0114
             NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0927
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:    GasBUS     URBAN    SCHOOL
                     ------    ------    ------
         VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    ------    ------
           GASPM:    0.0127    ------    ------
         ECARBON:    ------    0.0116    0.0118
         OCARBON:    ------    0.0091    0.0092
             SO4:    0.0021    0.0044    0.0031
  Total Exhaust PM:    0.0148    0.0251    0.0241
           Brake:    0.0053    0.0053    0.0053
            Tire:    0.0030    0.0030    0.0030
        Total PM:    0.0231    0.0335    0.0324
             SO2:    0.0251    0.0623    0.0440
             NH3:    0.0451    0.0270    0.0270
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2035
                                 Month:  Jan.
             Gasoline Fuel Sulfur Content:   30. ppm
               Diesel Fuel Sulfur Content:   43. ppm
                     Particle Size Cutoff:  2.50 Microns
                         Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
           GASPM:    0.0037    0.0035    0.0035    0.0035    0.0073    ------    ------    ------    0.0142    0.0034
         ECARBON:    ------    ------    ------    ------    ------    0.0065    0.0034    0.0075    ------    0.0006
         OCARBON:    ------    ------    ------    ------    ------    0.0018    0.0049    0.0038    ------    0.0003
             SO4:    0.0002    0.0004    0.0004    0.0004    0.0021    0.0004    0.0008    0.0026    0.0001    0.0006
  Total Exhaust PM:    0.0039    0.0039    0.0039    0.0039    0.0094    0.0088    0.0092    0.0140    0.0143    0.0050
           Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:    0.0020    0.0020    0.0020    0.0020    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
        Total PM:    0.0112    0.0112    0.0112    0.0112    0.0169    0.0162    0.0165    0.0258    0.0206    0.0127
             SO2:    0.0068    0.0088    0.0115    0.0095    0.0164    0.0084    0.0161    0.0377    0.0033    0.0114
             NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0927
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:    GasBUS     URBAN    SCHOOL
                     ------    ------    ------
         VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    ------    ------
           GASPM:    0.0127    ------    ------
         ECARBON:    ------    0.0116    0.0118
         OCARBON:    ------    0.0091    0.0092
             SO4:    0.0021    0.0044    0.0031
  Total Exhaust PM:    0.0148    0.0251    0.0241
           Brake:    0.0053    0.0053    0.0053
            Tire:    0.0030    0.0030    0.0030
        Total PM:    0.0231    0.0335    0.0324
             SO2:    0.0251    0.0623    0.0440
             NH3:    0.0451    0.0270    0.0270
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # #
```

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0144	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0113	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 4.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0073	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0169	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0164	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0127	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 5.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

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

VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0073	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0169	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0164	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0127	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 6.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0144	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0113	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 7.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0073	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053

Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0169	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0164	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0127	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 8.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0073	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0169	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0164	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0127	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 9.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0144	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0113	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

---

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 10.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0035	0.0034	0.0034	0.0034	0.0076	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0004	0.0005	0.0005	0.0005	0.0017	0.0004	0.0008	0.0026	0.0001	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0168	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0130	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0017	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0252	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

---

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 11.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0080	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0144	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0113	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0134	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0013	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0230	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440

NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 12.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 13.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0035	0.0034	0.0034	0.0034	0.0076	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0004	0.0005	0.0005	0.0005	0.0017	0.0004	0.0008	0.0026	0.0001	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0168	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0130	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0017	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0252	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 14.
* #

Calendar Year: 2035
Month: Jan.

Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0080	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0144	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0113	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0134	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0013	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0230	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 15.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 16.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0035	0.0034	0.0034	0.0034	0.0076	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0004	0.0005	0.0005	0.0005	0.0017	0.0004	0.0008	0.0026	0.0001	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0168	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0130	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0017	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0252	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 17.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0073	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0169	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0164	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0127	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 18.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0006
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127

SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0113
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0927

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

```
*************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                            *
* Input file: K2035REG10.INP (file 1, run 1).                           *
*************************************************************************

* Reading Registration Distributions from the following external
* data file: KYREG.D
  M616 Comment:
               User has supplied post-1999 sulfur levels.
  M601 Comment:
               User has enabled STAGE II REFUELING.


* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 57.6
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
 HDDV DEFEAT DEVICE EFFECTS ARE PRESENT. THE REBUILD FRACTION IS 0.10.

* Reading Ammonia (NH3) Basic Emissiion Rates
* from the external data file PMNH3BER.D

* Reading Ammonia (NH3) Sulfur Deterioration Rates
* from the external data file PMNH3SDR.D
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.14     13.60     16.84     14.40      7.05     0.470     0.283     0.153     13.05    12.818
  -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    13.42      0.232     0.157
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 45.6
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV
```

```
* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:              <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     13.31     12.66     15.67     13.40      5.80     0.450     0.271     0.142      9.91    11.934
  ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    11.04      0.215     0.145
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.9
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
```

```
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.83     13.11     16.31     13.90     17.03     0.943     0.581     0.432     24.70    12.871
  -------------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     32.44      0.654     0.441
-----------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 58.1
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.17     13.64     16.89     14.44      7.14     0.472     0.285     0.155     13.66    12.858
  -------------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.61      0.234     0.158
-----------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 46.3
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
```

```
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:              <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.36     12.72     15.74     13.47      5.82     0.450     0.271     0.142      9.88    11.986
 -------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.10      0.215     0.145
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.6
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
```

Alcohol Blend RVP Waiver: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Composite CO :	13.92	13.20	16.43	13.99	17.38	0.957	0.590	0.440	25.21	12.964

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):
Composite CO : 33.11 0.667 0.450

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 7.
* #
M581 Warning:
The user supplied freeway average speed of 58.1
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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
M 48 Warning:
there are no sales for vehicle class HDGV8b
M 48 Warning:
there are no sales for vehicle class LDDT12
M111 Warning:
The input dIesel sulfur level of 43.0 ppm exceeds
the 2007 HDD Rule diesel sulfur limit of 15 ppm.

Calendar Year: 2035
Month: Jan.
Altitude: Low
Minimum Temperature: 19.0 (F)
Maximum Temperature: 37.0 (F)
Absolute Humidity: 75. grains/lb
Nominal Fuel RVP: 9.0 psi
Weathered RVP: 9.5 psi
Fuel Sulfur Content: 30. ppm

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

Ether Blend Market Share: 0.000 Alcohol Blend Market Share: 0.420
Ether Blend Oxygen Content: 0.000 Alcohol Blend Oxygen Content: 0.036
Alcohol Blend RVP Waiver: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2803	0.4463	0.1459		0.0353	0.0003	0.0021	0.0848	0.0049	1.0000
Composite Emission Factors (g/mi):										
Composite CO :	14.17	13.64	16.89	14.44	7.14	0.472	0.285	0.155	13.66	12.858

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):
Composite CO : 13.61 0.234 0.158

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 8.
* #
M581 Warning:
The user supplied freeway average speed of 46.2
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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

```
* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.35     12.71     15.73     13.46      5.82     0.450     0.271     0.142      9.88    11.978
  ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.09      0.215     0.145
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.5
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes
```

```
      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:               <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     13.95     13.23     16.47     14.02     17.50     0.962     0.593     0.443     25.39    12.997
 -------------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                     ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    33.35      0.671     0.453
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 10.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
             The user supplied arterial average speed of 27.1
             will be used for all hours of the day.  100% of VMT
             has been assigned to the arterial/collector roadway
             type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:               <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     12.63     11.87     14.70     12.57      8.08     0.570     0.347     0.213     13.94    11.356
 -------------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                     ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    15.40      0.322     0.217
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 11.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
             The user supplied arterial average speed of 18.6
             will be used for all hours of the day.  100% of VMT
             has been assigned to the arterial/collector roadway
             type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV
```

```
* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
               GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.24     12.50     15.53     13.25     12.07     0.742     0.455     0.314     18.38    12.101
  -------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    22.99      0.475     0.321
-----------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 12.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
```

```
             GVWR:               <6000     >6000     (All)
                    ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     12.96     12.21     15.15     12.93     10.40     0.672     0.411     0.272     16.57    11.766
 -------------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                    ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    19.82      0.413     0.279
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 13.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 27.1
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:               <6000     >6000     (All)
                    ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     12.63     11.87     14.70     12.57      8.08     0.570     0.347     0.213     13.94    11.356
 -------------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                    ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    15.40      0.322     0.217
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 14.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 18.7
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV
```

```
* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     13.23     12.49     15.52     13.24     12.00     0.740     0.453     0.312     18.30    12.087
  ------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    22.86      0.473     0.319
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 15.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

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

```
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     12.96     12.21     15.15     12.93     10.40     0.672     0.411     0.272     16.57    11.766
  ---------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    19.82      0.413     0.279
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 16.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 27.1
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     12.63     11.87     14.70     12.57      8.08     0.570     0.347     0.213     13.94    11.356
  ---------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    15.40      0.322     0.217
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 17.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 50.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
```

```
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  18.8 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     13.62     13.02     16.11     13.78      5.96     0.449     0.270     0.141      9.71    12.250
  ------------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    11.36      0.214     0.144
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 18.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ------------------------------------------------------------------------------------------------------------------------
```

Composite Emission Factors (g/mi):

Composite CO :	12.96	12.21	15.15	12.93	10.40	0.672	0.411	0.272	16.57	11.766

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Composite CO :	19.82	0.413	0.279

```
* Mobile6 input file for Butler, Clermont, Hamilton and Warren counties,
* low RVP beginning summer 2008
* created 4/9/07 by ajr, includes annual scenario,low RVP,post 2007
******************  Header Section  ************************
MOBILE6 INPUT FILE :
POLLUTANTS         : CO
PARTICULATES       :
* PARTICULATES REPORTED IN *.PM FILE


RUN DATA
******************  Run Section  ***************************
VMT BY HOUR        : OHVMT30.Def

VMT BY FACILITY    : OFVMT30.Def
REG DIST           : OHREG_30.D
FUEL PROGRAM       : 1
OXYGENATED FUELS   : .000 .420 .000 .036 2
STAGE II REFUELING : 93 3 86. 86.

EXPAND BUS EFS     :
REBUILD EFFECTS    : 0.10


******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 57.6 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 45.6 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 12.9 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 58.1 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 46.3 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 12.6 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 58.1 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 46.2 Non-Ramp
```

```
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 12.5 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 18.6 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 18.7 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 18.8 37.0
AVERAGE SPEED      : 50.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
```

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

END OF RUN

```
*****************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                                *
* Input file: O35REGS.INP (file 1, run 1).                                  *
*****************************************************************************

* Reading Hourly VMT distribution from the following external
* data file: OHVMT30.DEF

* Reading Hourly Roadway VMT distribution from the following external
* data file: OFVMT30.DEF

  Reading User Supplied ROADWAY VMT Factors

* Reading Registration Distributions from the following external
* data file: OHREG_30.D
  M616 Comment:
               User has supplied post-1999 sulfur levels.
  M601 Comment:
               User has enabled STAGE II REFUELING.


* # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 57.6
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
 HDDV DEFEAT DEVICE EFFECTS ARE PRESENT. THE REBUILD FRACTION IS 0.10.

* Reading Ammonia (NH3) Basic Emissiion Rates
* from the external data file PMNH3BER.D

* Reading Ammonia (NH3) Sulfur Deterioration Rates
* from the external data file PMNH3SDR.D
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  July
                          Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   7.8 psi
                       Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
  ----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.266     0.305     0.348     0.317     0.201     0.037     0.077     0.153      2.26     0.294
     Composite NOX :      0.240     0.349     0.444     0.375     0.197     0.035     0.153     0.599      1.50     0.357
  ----------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0010    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.390     0.152     0.182
     Composite NOX :     0.346     0.958     0.711
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 45.6
```

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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
M 48 Warning:
there are no sales for vehicle class HDGV8b
M 48 Warning:
there are no sales for vehicle class LDDT12
M111 Warning:
The input dIesel sulfur level of 43.0 ppm exceeds
the 2007 HDD Rule diesel sulfur limit of 15 ppm.

Calendar Year: 2035
Month: July
Altitude: Low
Minimum Temperature: 62.0 (F)
Maximum Temperature: 91.3 (F)
Absolute Humidity: 75. grains/lb
Nominal Fuel RVP: 7.8 psi
Weathered RVP: 8.0 psi
Fuel Sulfur Content: 30. ppm

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

Ether Blend Market Share: 0.000 Alcohol Blend Market Share: 0.420
Ether Blend Oxygen Content: 0.000 Alcohol Blend Oxygen Content: 0.036
Alcohol Blend RVP Waiver: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2697	0.4367	0.1632		0.0361	0.0002	0.0024	0.0866	0.0051	1.0000
Composite Emission Factors (g/mi):										
Composite VOC :	0.284	0.319	0.364	0.331	0.223	0.040	0.083	0.171	2.12	0.309
Composite NOX :	0.232	0.333	0.425	0.358	0.181	0.026	0.113	0.439	1.22	0.329

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0010	0.0019

Composite Emission Factors (g/mi):
Composite VOC : 0.429 0.171 0.204
Composite NOX : 0.318 0.702 0.521

* #
* Brent Spence NOx HC PM2.5 emissions 2035
* File 1, Run 1, Scenario 3.
* #
M582 Warning:
The user supplied freeway average speed of 12.9
will be used for all hours of the day. 100% of VMT
has been assigned to a fixed combination of freeways
and freeway ramps for all hours of the day and all
vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
M 48 Warning:
there are no sales for vehicle class HDGV8b
M 48 Warning:
there are no sales for vehicle class LDDT12
M111 Warning:
The input dIesel sulfur level of 43.0 ppm exceeds
the 2007 HDD Rule diesel sulfur limit of 15 ppm.

Calendar Year: 2035
Month: July
Altitude: Low
Minimum Temperature: 62.0 (F)

```
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.494     0.511     0.579     0.530     0.550    0.077     0.170     0.432      3.33     0.525
    Composite NOX :      0.264     0.354     0.455     0.381     0.141    0.031     0.137     0.535      0.95     0.356
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0010    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.919     0.432     0.517
    Composite NOX :     0.247     0.855     0.634
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 58.1
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.266     0.305     0.347     0.316     0.200    0.037     0.077     0.152      2.29     0.294
    Composite NOX :      0.240     0.350     0.444     0.376     0.198    0.035     0.156     0.609      1.51     0.358
  ----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0010    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.389     0.152     0.182
    Composite NOX :     0.347     0.973     0.722
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
```

```
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 46.3
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.283     0.318     0.363     0.330     0.221     0.039     0.083     0.169      2.12     0.308
    Composite NOX :      0.233     0.334     0.426     0.359     0.182     0.026     0.115     0.445      1.23     0.330
 -------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0010    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.426     0.169     0.202
    Composite NOX :     0.320     0.712     0.528
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.6
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.
```

```
                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.501     0.520     0.588     0.538     0.559    0.078     0.172     0.438      3.37     0.534
    Composite NOX :      0.268     0.358     0.461     0.386     0.140    0.031     0.138     0.539      0.95     0.361
 -------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0010    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.934     0.437     0.524
    Composite NOX :     0.246     0.862     0.640
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 58.1
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.266     0.305     0.347     0.316     0.200    0.037     0.077     0.152      2.29     0.294
    Composite NOX :      0.240     0.350     0.444     0.376     0.198    0.035     0.156     0.609      1.51     0.358
 -------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0010    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
```

```
    Composite VOC :     0.389     0.152     0.182
    Composite NOX :     0.347     0.973     0.722
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 46.2
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.283     0.318     0.363     0.331     0.221     0.039     0.083     0.169      2.12     0.308
    Composite NOX :      0.233     0.334     0.426     0.359     0.182     0.026     0.114     0.444      1.23     0.330
  -------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0010    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.427     0.169     0.203
    Composite NOX :     0.320     0.711     0.527
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.5
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
```

```
 M 48 Warning:
             there are no sales for vehicle class LDDT12
 M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.504     0.523     0.591     0.541     0.563     0.078     0.173     0.440      3.39     0.537
     Composite NOX :      0.269     0.360     0.463     0.388     0.140     0.032     0.139     0.541      0.95     0.362
 -----------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0010    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.939     0.439     0.526
     Composite NOX :     0.246     0.865     0.642
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 10.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
             The user supplied arterial average speed of 27.1
             will be used for all hours of the day.  100% of VMT
             has been assigned to the arterial/collector roadway
             type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.339     0.363     0.415     0.377     0.310     0.053     0.113     0.261      2.46     0.364
     Composite NOX :      0.240     0.335     0.428     0.360     0.158     0.024     0.106     0.410      1.08     0.328
 -----------------------------------------------------------------------------------------------------------------------
```

```
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0010    0.0019
-------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.559     0.260     0.312
     Composite NOX :     0.276     0.655     0.486
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 11.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 18.6
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
  -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.406     0.429     0.489     0.446     0.408     0.065     0.143     0.350      2.82     0.436
     Composite NOX :      0.272     0.369     0.472     0.397     0.147     0.027     0.120     0.466      0.98     0.362
  -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0010    0.0019
-------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.709     0.349     0.419
     Composite NOX :     0.257     0.745     0.553
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 12.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV
```

```
* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  July
                          Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.375     0.398     0.454     0.413     0.364     0.060     0.132     0.316      2.68     0.403
     Composite NOX :      0.259     0.355     0.454     0.382     0.150     0.026     0.114     0.442      1.01     0.348
 ---------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
             VMT Mix:    0.0001    0.0010    0.0019
-------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.644     0.315     0.378
     Composite NOX :     0.263     0.707     0.524
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 13.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
             The user supplied arterial average speed of 27.1
             will be used for all hours of the day.  100% of VMT
             has been assigned to the arterial/collector roadway
             type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  July
                          Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
  --------------------------------------------------------------------------------------------------------------------------
```

```
 Composite Emission Factors (g/mi):
     Composite VOC :      0.339     0.363     0.415     0.377     0.310     0.053     0.113     0.261      2.46      0.364
     Composite NOX :      0.240     0.335     0.428     0.360     0.158     0.024     0.106     0.410      1.08      0.328
  ---------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0010    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.559     0.260     0.312
     Composite NOX :     0.276     0.655     0.486
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 14.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 18.7
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
  ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.404     0.428     0.488     0.444     0.406     0.065     0.142     0.349      2.82      0.435
     Composite NOX :      0.271     0.369     0.471     0.396     0.147     0.027     0.120     0.465      0.98      0.362
  ---------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0010    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :     0.706     0.348     0.417
     Composite NOX :     0.257     0.744     0.552
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 15.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV
```

```
* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   7.8 psi
                     Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.375     0.398     0.454     0.413     0.364    0.060     0.132     0.316      2.68     0.403
    Composite NOX :      0.259     0.355     0.454     0.382     0.150    0.026     0.114     0.442      1.01     0.348
  ---------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0010    0.0019
---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.644     0.315     0.378
    Composite NOX :     0.263     0.707     0.524
---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 16.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 27.1
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   7.8 psi
                     Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
```

GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2697	0.4367	0.1632		0.0361	0.0002	0.0024	0.0866	0.0051	1.0000

Composite Emission Factors (g/mi):

Composite VOC :	0.339	0.363	0.415	0.377	0.310	0.053	0.113	0.261	2.46	0.364
Composite NOX :	0.240	0.335	0.428	0.360	0.158	0.024	0.106	0.410	1.08	0.328

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0010	0.0019

Composite Emission Factors (g/mi):

Composite VOC :	0.559	0.260	0.312
Composite NOX :	0.276	0.655	0.486

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 17.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 18.8
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  July
                          Altitude:  Low
                Minimum Temperature:  62.0 (F)
                Maximum Temperature:  91.3 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   7.8 psi
                      Weathered RVP:   8.0 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2697	0.4367	0.1632		0.0361	0.0002	0.0024	0.0866	0.0051	1.0000

Composite Emission Factors (g/mi):

Composite VOC :	0.403	0.426	0.486	0.443	0.404	0.065	0.142	0.347	2.81	0.433
Composite NOX :	0.271	0.368	0.470	0.396	0.147	0.027	0.119	0.464	0.98	0.361

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0010	0.0019

Composite Emission Factors (g/mi):

Composite VOC :	0.703	0.347	0.416
Composite NOX :	0.258	0.742	0.551

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence NOx HC PM2.5  emissions 2035
* File 1, Run 1, Scenario 18.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
```

```
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  62.0 (F)
              Maximum Temperature:  91.3 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   7.8 psi
                    Weathered RVP:   8.0 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2697    0.4367    0.1632              0.0361    0.0002    0.0024    0.0866    0.0051    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :      0.375     0.398     0.454     0.413     0.364     0.060     0.132     0.316      2.68     0.403
    Composite NOX :      0.259     0.355     0.454     0.382     0.150     0.026     0.114     0.442      1.01     0.348
 ---------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0010    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite VOC :     0.644     0.315     0.378
    Composite NOX :     0.263     0.707     0.524
-------------------------------------------------------------------------------------------------------------------------
```

```
* Mobile6 input file for Butler, Clermont, Hamilton and Warren counties,
* low RVP beginning summer 2008
* created 4/9/07 by ajr, includes annual scenario,low RVP,post 2007
******************  Header Section  ************************
MOBILE6 INPUT FILE :
POLLUTANTS         : CO
PARTICULATES       :
* PARTICULATES REPORTED IN *.PM FILE


RUN DATA
******************  Run Section  ***************************
VMT BY HOUR        : OHVMT30.Def

VMT BY FACILITY    : OFVMT30.Def
REG DIST           : OHREG_30.D
FUEL PROGRAM       : 1
OXYGENATED FUELS   : .000 .420 .000 .036 2
STAGE II REFUELING : 93 3 86. 86.

EXPAND BUS EFS     :
REBUILD EFFECTS    : 0.10


******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 57.6 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 45.6 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 12.9 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 58.1 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 46.3 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 12.6 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 58.1 Non-Ramp
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 46.2 Non-Ramp
```

```
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 12.5 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 18.6 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 18.7 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 27.1 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 18.8 37.0
AVERAGE SPEED      : 50.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 21.4 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
```

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

END OF RUN

```
*****************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                                *
* Input file: O2035REG.INP (file 1, run 1).                                 *
*****************************************************************************

* Reading Hourly VMT distribution from the following external
* data file: OHVMT30.DEF

* Reading Hourly Roadway VMT distribution from the following external
* data file: OFVMT30.DEF

  Reading User Supplied ROADWAY VMT Factors

* Reading Registration Distributions from the following external
* data file: OHREG_30.D
  M616 Comment:
               User has supplied post-1999 sulfur levels.
  M601 Comment:
               User has enabled STAGE II REFUELING.


* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 57.6
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
 HDDV DEFEAT DEVICE EFFECTS ARE PRESENT. THE REBUILD FRACTION IS 0.10.

* Reading Ammonia (NH3) Basic Emissiion Rates
* from the external data file PMNH3BER.D

* Reading Ammonia (NH3) Sulfur Deterioration Rates
* from the external data file PMNH3SDR.D
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     15.72     14.78     15.91     15.09      7.09     0.495     0.266     0.153     13.07    13.649
  ----------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    13.51      0.232     0.157
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 45.6
            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.

```
* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.75     13.71     14.70     13.98      5.83     0.475     0.254     0.142      9.93    12.656
  -------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.11      0.215     0.145
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.9
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
```

```
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     15.36     14.20     15.29     14.50     17.14     0.984     0.565     0.432     24.76    13.638
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    32.65      0.654     0.441
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 58.1
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     15.76     14.82     15.96     15.13      7.19     0.497     0.268     0.155     13.69    13.693
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    13.70      0.234     0.158
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 46.3
            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.
```

```
* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:              <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.81     13.77     14.78     14.05      5.86     0.474     0.254     0.142      9.89    12.715
  ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.17      0.215     0.145
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.6
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm
```

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     15.46     14.30     15.40     14.60     17.49     0.998     0.574     0.440     25.28    13.742
  ------------------------------------------------------------------------------------------------------------------------
            Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
              VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    33.33      0.667     0.450
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 58.1
            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.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     15.76     14.82     15.96     15.13      7.19     0.497     0.268     0.155     13.69    13.693
  ------------------------------------------------------------------------------------------------------------------------
            Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
              VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    13.70      0.234     0.158
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M581 Warning:
            The user supplied freeway average speed of 46.2
            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.
```

```
* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:              <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.80     13.76     14.77     14.04      5.86     0.474     0.254     0.142      9.90    12.706
 ---------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.16      0.215     0.145
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 12.5
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm
```

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     15.50     14.34     15.44     14.64     17.62     1.003     0.577     0.443     25.45    13.778
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    33.56      0.671     0.453
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 10.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 27.1
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.96     12.81     13.70     13.05      8.14     0.599     0.330     0.213     13.96    11.992
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    15.50      0.322     0.217
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 11.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 18.6
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
```

```
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                 there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.68     13.53     14.53     13.80     12.15     0.777     0.438     0.314     18.42    12.816
  ---------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    23.14      0.475     0.321
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 12.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                 there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

```
                    ATP Program:  No
                Reformulated Gas:  No

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.35     13.20     14.14     13.45     10.47     0.704     0.394     0.272     16.60    12.444
  ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     19.95      0.413     0.278
---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 13.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 27.1
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.96     12.81     13.70     13.05      8.14     0.599     0.330     0.213     13.96    11.992
  ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     15.50      0.322     0.217
---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 14.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 18.7
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV
```

```
* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     14.67     13.52     14.51     13.79     12.08     0.774     0.437     0.312     18.35    12.800
 -------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    23.01      0.473     0.319
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 15.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

```
   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.35     13.20     14.14     13.45     10.47     0.704     0.394     0.272     16.60    12.444
 ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     19.95      0.413     0.278
---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 16.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 27.1
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.96     12.81     13.70     13.05      8.14     0.599     0.330     0.213     13.96    11.992
 ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     15.50      0.322     0.217
---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 17.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 50.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV
```

```
* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  18.8 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     15.12     14.11     15.16     14.40      6.00     0.473     0.253     0.141      9.72    13.013
 -------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.44      0.214     0.144
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 18.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 21.4
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
```

Ether Blend Oxygen Content: 0.000 Alcohol Blend Oxygen Content: 0.036
Alcohol Blend RVP Waiver: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Composite CO :	14.35	13.20	14.14	13.45	10.47	0.704	0.394	0.272	16.60	12.444

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Composite CO :	19.95	0.413	0.278

```
************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                           *
* Input file: O2035REG.INP (file 1, run 1).                            *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2035
                                 Month:  Jan.
             Gasoline Fuel Sulfur Content:   30. ppm
               Diesel Fuel Sulfur Content:   43. ppm
                     Particle Size Cutoff:  2.50 Microns
                         Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
           GASPM:    0.0037    0.0035    0.0035    0.0035    0.0073    ------    ------    ------    0.0142    0.0034
         ECARBON:    ------    ------    ------    ------    ------    0.0065    0.0034    0.0075    ------    0.0007
         OCARBON:    ------    ------    ------    ------    ------    0.0018    0.0049    0.0038    ------    0.0003
             SO4:    0.0002    0.0004    0.0004    0.0004    0.0021    0.0004    0.0008    0.0026    0.0001    0.0006
  Total Exhaust PM:    0.0039    0.0039    0.0039    0.0039    0.0094    0.0088    0.0092    0.0140    0.0143    0.0050
           Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:    0.0020    0.0020    0.0020    0.0020    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
        Total PM:    0.0112    0.0112    0.0112    0.0112    0.0169    0.0162    0.0165    0.0258    0.0206    0.0127
             SO2:    0.0068    0.0088    0.0115    0.0096    0.0164    0.0084    0.0161    0.0377    0.0033    0.0115
             NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0926
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:    GasBUS     URBAN    SCHOOL
                     ------    ------    ------
         VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    ------    ------
           GASPM:    0.0127    ------    ------
         ECARBON:    ------    0.0116    0.0118
         OCARBON:    ------    0.0091    0.0092
             SO4:    0.0021    0.0044    0.0031
  Total Exhaust PM:    0.0148    0.0251    0.0241
           Brake:    0.0053    0.0053    0.0053
            Tire:    0.0030    0.0030    0.0030
        Total PM:    0.0231    0.0335    0.0324
             SO2:    0.0251    0.0623    0.0440
             NH3:    0.0451    0.0270    0.0270
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2035
                                 Month:  Jan.
             Gasoline Fuel Sulfur Content:   30. ppm
               Diesel Fuel Sulfur Content:   43. ppm
                     Particle Size Cutoff:  2.50 Microns
                         Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
           GASPM:    0.0037    0.0035    0.0035    0.0035    0.0073    ------    ------    ------    0.0142    0.0034
         ECARBON:    ------    ------    ------    ------    ------    0.0065    0.0034    0.0075    ------    0.0007
         OCARBON:    ------    ------    ------    ------    ------    0.0018    0.0049    0.0038    ------    0.0003
             SO4:    0.0002    0.0004    0.0004    0.0004    0.0021    0.0004    0.0008    0.0026    0.0001    0.0006
  Total Exhaust PM:    0.0039    0.0039    0.0039    0.0039    0.0094    0.0088    0.0092    0.0140    0.0143    0.0050
           Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:    0.0020    0.0020    0.0020    0.0020    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
        Total PM:    0.0112    0.0112    0.0112    0.0112    0.0169    0.0162    0.0165    0.0258    0.0206    0.0127
             SO2:    0.0068    0.0088    0.0115    0.0096    0.0164    0.0084    0.0161    0.0377    0.0033    0.0115
             NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0926
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:    GasBUS     URBAN    SCHOOL
                     ------    ------    ------
         VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    ------    ------
           GASPM:    0.0127    ------    ------
         ECARBON:    ------    0.0116    0.0118
         OCARBON:    ------    0.0091    0.0092
             SO4:    0.0021    0.0044    0.0031
  Total Exhaust PM:    0.0148    0.0251    0.0241
           Brake:    0.0053    0.0053    0.0053
            Tire:    0.0030    0.0030    0.0030
        Total PM:    0.0231    0.0335    0.0324
             SO2:    0.0251    0.0623    0.0440
             NH3:    0.0451    0.0270    0.0270
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # #
```

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0144	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 4.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0073	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0169	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0096	0.0164	0.0084	0.0161	0.0377	0.0033	0.0115
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0127	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 5.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

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

VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0073	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0169	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0096	0.0164	0.0084	0.0161	0.0377	0.0033	0.0115
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0127	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 6.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0144	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 7.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0073	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053

Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0169	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0096	0.0164	0.0084	0.0161	0.0377	0.0033	0.0115
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0127	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 8.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0073	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0169	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0096	0.0164	0.0084	0.0161	0.0377	0.0033	0.0115
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0127	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 9.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0144	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 10.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0035	0.0034	0.0034	0.0034	0.0076	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0004	0.0005	0.0005	0.0005	0.0017	0.0004	0.0008	0.0026	0.0001	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0168	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0130	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0017	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0252	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 11.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0080	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0144	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0113	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0134	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0013	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0230	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440

NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 12.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0112	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 13.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0035	0.0034	0.0034	0.0034	0.0076	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0004	0.0005	0.0005	0.0005	0.0017	0.0004	0.0008	0.0026	0.0001	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0168	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0130	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0017	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0252	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 14.
* #

Calendar Year: 2035
Month: Jan.

Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0080	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0144	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0113	0.0113	0.0113	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0134	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0013	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0230	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 15.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0112	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127
SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 16.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0035	0.0034	0.0034	0.0034	0.0076	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0004	0.0005	0.0005	0.0005	0.0017	0.0004	0.0008	0.0026	0.0001	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0168	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0130	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0017	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0252	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 17.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0073	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0094	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0169	0.0162	0.0165	0.0258	0.0206	0.0127
SO2:	0.0068	0.0088	0.0115	0.0096	0.0164	0.0084	0.0161	0.0377	0.0033	0.0115
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0127	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0148	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 18.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0079	------	------	------	0.0142	0.0033
ECARBON:	------	------	------	------	------	0.0065	0.0034	0.0075	------	0.0007
OCARBON:	------	------	------	------	------	0.0018	0.0049	0.0038	------	0.0003
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0007
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0093	0.0088	0.0092	0.0140	0.0143	0.0050
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0112	0.0168	0.0162	0.0165	0.0258	0.0207	0.0127

SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0133	------	------
ECARBON:	------	0.0116	0.0118
OCARBON:	------	0.0091	0.0092
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0147	0.0251	0.0241
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0231	0.0335	0.0324
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

```
************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                           *
* Input file: O35REG10.INP (file 1, run 1).                            *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2035
                                 Month:  Jan.
             Gasoline Fuel Sulfur Content:   30. ppm
               Diesel Fuel Sulfur Content:   43. ppm
                     Particle Size Cutoff: 10.00 Microns
                         Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
           GASPM:    0.0040    0.0038    0.0038    0.0038    0.0080    ------    ------    ------    0.0205    0.0037
         ECARBON:    ------    ------    ------    ------    ------    0.0071    0.0037    0.0082    ------    0.0007
         OCARBON:    ------    ------    ------    ------    ------    0.0020    0.0053    0.0042    ------    0.0004
             SO4:    0.0002    0.0004    0.0004    0.0004    0.0021    0.0004    0.0008    0.0026    0.0001    0.0006
  Total Exhaust PM:    0.0042    0.0042    0.0042    0.0042    0.0101    0.0096    0.0099    0.0150    0.0206    0.0054
           Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
            Tire:    0.0080    0.0080    0.0080    0.0080    0.0086    0.0080    0.0080    0.0258    0.0040    0.0095
        Total PM:    0.0247    0.0247    0.0247    0.0247    0.0313    0.0301    0.0304    0.0534    0.0371    0.0275
             SO2:    0.0068    0.0088    0.0115    0.0096    0.0164    0.0084    0.0161    0.0377    0.0033    0.0115
             NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0926
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:    GasBUS     URBAN    SCHOOL
                     ------    ------    ------
         VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    ------    ------
           GASPM:    0.0140    ------    ------
         ECARBON:    ------    0.0126    0.0128
         OCARBON:    ------    0.0099    0.0100
             SO4:    0.0021    0.0044    0.0031
  Total Exhaust PM:    0.0160    0.0269    0.0259
           Brake:    0.0125    0.0125    0.0125
            Tire:    0.0120    0.0120    0.0120
        Total PM:    0.0406    0.0515    0.0504
             SO2:    0.0251    0.0623    0.0440
             NH3:    0.0451    0.0270    0.0270
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2035
                                 Month:  Jan.
             Gasoline Fuel Sulfur Content:   30. ppm
               Diesel Fuel Sulfur Content:   43. ppm
                     Particle Size Cutoff: 10.00 Microns
                         Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
           GASPM:    0.0040    0.0038    0.0038    0.0038    0.0080    ------    ------    ------    0.0205    0.0037
         ECARBON:    ------    ------    ------    ------    ------    0.0071    0.0037    0.0082    ------    0.0007
         OCARBON:    ------    ------    ------    ------    ------    0.0020    0.0053    0.0042    ------    0.0004
             SO4:    0.0002    0.0004    0.0004    0.0004    0.0021    0.0004    0.0008    0.0026    0.0001    0.0006
  Total Exhaust PM:    0.0042    0.0042    0.0042    0.0042    0.0101    0.0096    0.0099    0.0150    0.0206    0.0054
           Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
            Tire:    0.0080    0.0080    0.0080    0.0080    0.0086    0.0080    0.0080    0.0258    0.0040    0.0095
        Total PM:    0.0247    0.0247    0.0247    0.0247    0.0313    0.0301    0.0304    0.0534    0.0371    0.0275
             SO2:    0.0068    0.0088    0.0115    0.0096    0.0164    0.0084    0.0161    0.0377    0.0033    0.0115
             NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0926
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:    GasBUS     URBAN    SCHOOL
                     ------    ------    ------
         VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:    0.0000    ------    ------
           GASPM:    0.0140    ------    ------
         ECARBON:    ------    0.0126    0.0128
         OCARBON:    ------    0.0099    0.0100
             SO4:    0.0021    0.0044    0.0031
  Total Exhaust PM:    0.0160    0.0269    0.0259
           Brake:    0.0125    0.0125    0.0125
            Tire:    0.0120    0.0120    0.0120
        Total PM:    0.0406    0.0515    0.0504
             SO2:    0.0251    0.0623    0.0440
             NH3:    0.0451    0.0270    0.0270
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # #
```

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0087	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0207	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0146	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 4.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0038	0.0038	0.0038	0.0080	------	------	------	0.0205	0.0037
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0371	0.0275
SO2:	0.0068	0.0088	0.0115	0.0096	0.0164	0.0084	0.0161	0.0377	0.0033	0.0115
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0140	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 5.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

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

VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0038	0.0038	0.0038	0.0080	------	------	------	0.0205	0.0037
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0371	0.0275
SO2:	0.0068	0.0088	0.0115	0.0096	0.0164	0.0084	0.0161	0.0377	0.0033	0.0115
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0140	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 6.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0087	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0207	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0146	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 7.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0038	0.0038	0.0038	0.0080	------	------	------	0.0205	0.0037
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125

Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0371	0.0275
SO2:	0.0068	0.0088	0.0115	0.0096	0.0164	0.0084	0.0161	0.0377	0.0033	0.0115
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0140	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 8.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0038	0.0038	0.0038	0.0080	------	------	------	0.0205	0.0037
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0371	0.0275
SO2:	0.0068	0.0088	0.0115	0.0096	0.0164	0.0084	0.0161	0.0377	0.0033	0.0115
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0140	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 9.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0087	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0207	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0146	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

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* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 10.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0037	0.0037	0.0037	0.0084	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0004	0.0005	0.0005	0.0005	0.0017	0.0004	0.0008	0.0026	0.0001	0.0007
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275
SO2:	0.0068	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0143	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0017	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0252	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

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* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 11.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0087	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0207	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0147	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0013	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0253	0.0623	0.0440

NH3:	0.0451	0.0270	0.0270

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* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 12.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0086	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0007
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275
SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0146	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

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* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 13.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0037	0.0037	0.0037	0.0084	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0004	0.0005	0.0005	0.0005	0.0017	0.0004	0.0008	0.0026	0.0001	0.0007
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275
SO2:	0.0068	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0143	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0017	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0252	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

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* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 14.
* #

Calendar Year: 2035
Month: Jan.

Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0087	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0004	0.0008	0.0026	0.0002	0.0008
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0207	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0147	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0013	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 15.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0086	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0007
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275
SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0146	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 16.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0037	0.0037	0.0037	0.0084	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0004	0.0005	0.0005	0.0005	0.0017	0.0004	0.0008	0.0026	0.0001	0.0007
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275
SO2:	0.0068	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0143	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0017	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0252	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 17.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0038	0.0038	0.0038	0.0080	------	------	------	0.0205	0.0037
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0002	0.0004	0.0004	0.0004	0.0021	0.0004	0.0008	0.0026	0.0001	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0371	0.0275
SO2:	0.0068	0.0088	0.0115	0.0096	0.0164	0.0084	0.0161	0.0377	0.0033	0.0115
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0140	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0021	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0251	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

* #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 18.
* #

Calendar Year: 2035
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 43. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2691	0.4384	0.1639		0.0355	0.0002	0.0024	0.0854	0.0049	1.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0086	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0082	------	0.0007
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0042	------	0.0004
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0004	0.0008	0.0026	0.0002	0.0007
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0101	0.0096	0.0099	0.0150	0.0206	0.0054
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0095
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0313	0.0301	0.0304	0.0534	0.0372	0.0275

SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0084	0.0161	0.0377	0.0033	0.0114
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0001	0.0009	0.0019

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0146	------	------
ECARBON:	------	0.0126	0.0128
OCARBON:	------	0.0099	0.0100
SO4:	0.0014	0.0044	0.0031
Total Exhaust PM:	0.0160	0.0269	0.0259
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.0406	0.0515	0.0504
SO2:	0.0253	0.0623	0.0440
NH3:	0.0451	0.0270	0.0270

MICROSCALE MOBILE6.2
INPUT AND OUTPUT FILES

```
* Mobile6 input file for Kentucky
*
******************  Header Section  ************************
MOBILE6 INPUT FILE :
POLLUTANTS         : CO
PARTICULATES       :
* PARTICULATES REPORTED IN *.PM FILE


RUN DATA
******************  Run Section  ***************************

REG DIST           : KYREG.d
FUEL PROGRAM       : 1
OXYGENATED FUELS   : .000 .420 .000 .036 2
STAGE II REFUELING : 93 3 86. 86.

EXPAND BUS EFS     :
REBUILD EFFECTS    : 0.10

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 2.5 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 5.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 10.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 15.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 20.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 25.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 30.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 35.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
```

```
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 40.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 45.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 50.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 55.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 60.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 65.0 freeway
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 2.5 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 5.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 10.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 15.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************
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```
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 20.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 25.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 30.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 35.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 40.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 45.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 50.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 55.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 60.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43
******************  Winter CO Scenario Section  ***************
SCENARIO RECORD    : Brent Spence CO emissions 2035
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1
FUEL RVP           : 9.0
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 65.0 arterial
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 43

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

```
************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                           *
* Input file: KY2035.INP (file 1, run 1).                              *
************************************************************************

* Reading Registration Distributions from the following external
* data file: KYREG.D
  M616 Comment:
               User has supplied post-1999 sulfur levels.
  M601 Comment:
               User has enabled STAGE II REFUELING.


* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M514 Warning:
             The combined freeway and ramp average speed entered
            cannot be less than  2.7 miles per hour.
            The average speed will be reset to this value.
  M582 Warning:
            The user supplied freeway average speed of  2.7
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
 HDDV DEFEAT DEVICE EFFECTS ARE PRESENT. THE REBUILD FRACTION IS 0.10.

* Reading Ammonia (NH3) Basic Emissiion Rates
* from the external data file PMNH3BER.D

* Reading Ammonia (NH3) Sulfur Deterioration Rates
* from the external data file PMNH3SDR.D
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     27.89     27.06     34.87     28.98     37.60     1.722     1.071     0.890     92.63     26.845
 ------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    71.63      1.348     0.910
------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of  5.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.
```

```
* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:              <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     19.91     19.25     24.46     20.53     30.70     1.469     0.912     0.741     58.32     19.178
 ---------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    58.49      1.123     0.758
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 10.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm
```

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.87     14.18     17.74     15.06     20.85     1.094     0.676     0.521     30.97    14.020
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    39.72      0.789     0.532
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 15.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.35     12.61     15.65     13.36     14.96     0.860     0.529     0.383     21.70    12.322
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    28.49      0.580     0.392
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 20.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.
```

```
* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.03     12.27     15.18     12.99     11.20     0.705     0.432     0.292     17.38    11.850
  ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    21.35      0.442     0.299
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 25.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm
```

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     12.89     12.13     14.98     12.83      8.81     0.602     0.367     0.231     14.78    11.615
  ---------------------------------------------------------------------------------------------------------------------
            Veh. Type:    GasBUS     URBAN    SCHOOL
                          ------    ------    ------
              VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     16.78      0.351     0.237
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
             The user supplied freeway average speed of 30.0
             will be used for all hours of the day. 100% of VMT
             has been assigned to a fixed combination of freeways
             and freeway ramps for all hours of the day and all
              vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     12.79     12.03     14.84     12.72      7.29     0.534     0.324     0.191     12.92    11.460
  ---------------------------------------------------------------------------------------------------------------------
            Veh. Type:    GasBUS     URBAN    SCHOOL
                          ------    ------    ------
              VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     13.89      0.290     0.196
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
             The user supplied freeway average speed of 35.0
             will be used for all hours of the day. 100% of VMT
             has been assigned to a fixed combination of freeways
             and freeway ramps for all hours of the day and all
```

```
            vehicle types.

 * Reading PM Gas Carbon ZML Levels
 * from the external data file PMGZML.CSV

 * Reading PM Gas Carbon DR1 Levels
 * from the external data file PMGDR1.CSV

 * Reading PM Gas Carbon DR2 Levels
 * from the external data file PMGDR2.CSV

 * Reading PM Diesel Zero Mile Levels
 * from the external data file PMDZML.CSV

 * Reading the First PM Deterioration Rates
 * from the external data file PMDDR1.CSV

 * Reading the Second PM Deterioration Rates
 * from the external data file PMDDR2.CSV
   M 48 Warning:
              there are no sales for vehicle class HDGV8b
   M 48 Warning:
              there are no sales for vehicle class LDDT12
   M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

    Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
    Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                           Alcohol Blend RVP Waiver: Yes

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
    VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
   ---------------------------------------------------------------------------------------------------------------------
  Composite Emission Factors (g/mi):
      Composite CO  :     12.82     12.08     14.90     12.77      6.38     0.490     0.296     0.166     11.52    11.457
   ---------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
  Composite Emission Factors (g/mi):
      Composite CO  :    12.15      0.251     0.169
-----------------------------------------------------------------------------------------------------------------------

 * # # # # # # # # # # # # # # # # # # # # # # # # #
 * Brent Spence CO emissions 2035
 * File 1, Run 1, Scenario 9.
 * # # # # # # # # # # # # # # # # # # # # # # # # #
   M582 Warning:
             The user supplied freeway average speed of 40.0
             will be used for all hours of the day. 100% of VMT
             has been assigned to a fixed combination of freeways
             and freeway ramps for all hours of the day and all
              vehicle types.

 * Reading PM Gas Carbon ZML Levels
 * from the external data file PMGZML.CSV

 * Reading PM Gas Carbon DR1 Levels
 * from the external data file PMGDR1.CSV

 * Reading PM Gas Carbon DR2 Levels
 * from the external data file PMGDR2.CSV

 * Reading PM Diesel Zero Mile Levels
 * from the external data file PMDZML.CSV

 * Reading the First PM Deterioration Rates
 * from the external data file PMDDR1.CSV

 * Reading the Second PM Deterioration Rates
 * from the external data file PMDDR2.CSV
   M 48 Warning:
              there are no sales for vehicle class HDGV8b
   M 48 Warning:
              there are no sales for vehicle class LDDT12
   M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
```

```
             Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.18     12.48     15.40     13.20      5.93     0.465     0.280     0.150     10.57    11.785
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.30      0.228     0.154
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 10.
* # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 45.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.54     12.89     15.91     13.63      5.87     0.453     0.273     0.144     10.02    12.138
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.18      0.218     0.147
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 11.
* # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 50.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
```

```
           and freeway ramps for all hours of the day and all
            vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
             Minimum Temperature:  19.0 (F)
             Maximum Temperature:  37.0 (F)
               Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
             Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     13.91     13.30     16.43     14.07      6.21     0.456     0.275     0.145      9.85    12.516
  ------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    11.84      0.220     0.149
------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 12.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 55.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
             Minimum Temperature:  19.0 (F)
             Maximum Temperature:  37.0 (F)
               Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
```

```
                Weathered RVP:   9.5 psi
            Fuel Sulfur Content:   30. ppm

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

  Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
  Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                         Alcohol Blend RVP Waiver: Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     14.29     13.73     16.96     14.53      7.07     0.473     0.286     0.155     13.38    12.938
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :    13.47      0.235     0.159
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 13.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 60.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

  Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
  Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                         Alcohol Blend RVP Waiver: Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     14.67     14.17     17.51     14.99      8.68     0.509     0.308     0.177     20.30    13.413
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :    16.53      0.268     0.181
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 14.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M515 Warning:
            The combined freeway and ramp average speed entered
            cannot be greater than 60.7 miles per hour.
```

```
           The average speed will be reset to this value.
  M582 Warning:
           The user supplied freeway average speed of 60.7
           will be used for all hours of the day. 100% of VMT
           has been assigned to a fixed combination of freeways
           and freeway ramps for all hours of the day and all
            vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
             Minimum Temperature:  19.0 (F)
             Maximum Temperature:  37.0 (F)
               Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
             Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.73     14.23     17.58     15.05      8.92     0.515     0.312     0.180     21.22    13.478
  ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    17.00      0.273     0.184
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 15.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
           The user supplied arterial average speed of  2.5
           will be used for all hours of the day.  100% of VMT
           has been assigned to the arterial/collector roadway
           type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
```

```
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     28.96     28.13     36.35     30.16     40.33     1.830     1.139     0.953     99.75    27.976
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    76.83      1.444     0.975
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 16.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of  5.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     19.58     18.94     24.12     20.22     32.23     1.532     0.952     0.778     59.39    18.960
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    61.39      1.179     0.796
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 17.
* # # # # # # # # # # # # # # # # # # # # # # # #
```

```
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                 there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     15.13     14.48     18.17     15.39     21.44     1.121     0.693     0.537     30.90    14.311
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    40.84      0.813     0.549
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 18.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 15.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                 there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
```

```
              Absolute Humidity:   75. grains/lb
               Nominal Fuel RVP:   9.0 psi
                  Weathered RVP:   9.5 psi
            Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.77     13.05     16.27     13.85     15.07     0.867     0.533     0.387     21.67    12.731
  ---------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     28.71      0.587     0.396
---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 19.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 20.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.08     12.34     15.32     13.07     11.19     0.706     0.432     0.292     17.42    11.917
  ---------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     21.32      0.443     0.299
---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 20.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 25.0
```

```
           will be used for all hours of the day.  100% of VMT
           has been assigned to the arterial/collector roadway
           type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
             Minimum Temperature:  19.0 (F)
             Maximum Temperature:  37.0 (F)
               Absolute Humidity:   75. grains/lb
                Nominal Fuel RVP:   9.0 psi
                   Weathered RVP:   9.5 psi
             Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     12.70     11.94     14.80     12.65      8.78     0.602     0.367     0.231     14.81    11.454
 ---------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    16.73      0.350     0.236
---------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 21.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
             The user supplied arterial average speed of 30.0
             will be used for all hours of the day.  100% of VMT
             has been assigned to the arterial/collector roadway
             type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
  M 48 Warning:
             there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
             Minimum Temperature:  19.0 (F)
             Maximum Temperature:  37.0 (F)
               Absolute Humidity:   75. grains/lb
                Nominal Fuel RVP:   9.0 psi
```

```
                Weathered RVP:   9.5 psi
            Fuel Sulfur Content:   30. ppm

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

  Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
  Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                         Alcohol Blend RVP Waiver: Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     12.55     11.79     14.58     12.48      7.28     0.534     0.324     0.191     12.93    11.244
 -------------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :    13.87      0.290     0.195
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 22.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 35.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

  Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
  Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                         Alcohol Blend RVP Waiver: Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     12.57     11.83     14.63     12.52      6.38     0.490     0.296     0.166     11.53    11.236
 -------------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :    12.15      0.251     0.169
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 23.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 40.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
```

```
           type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     12.91     12.22     15.12     12.94      5.90     0.464     0.280     0.150     10.56    11.555
  -------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.24      0.227     0.153
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 24.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 45.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm
```

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     13.26     12.61     15.60     13.35      5.77     0.451     0.271     0.142      9.95    11.888
  ---------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    10.99      0.215     0.145
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 25.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 50.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     13.60     13.00     16.09     13.76      5.96     0.449     0.270     0.141      9.70    12.235
  ---------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    11.36      0.214     0.144
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 26.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 55.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
```

```
* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:              <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.95     13.39     16.58     14.18      6.51     0.458     0.276     0.147      9.70    12.597
 ------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    12.39      0.222     0.150
------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 27.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 60.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  No
```

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.30     13.78     17.06     14.59      7.50     0.479     0.290     0.159     15.88    13.005
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    14.29      0.241     0.163
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 28.
* # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 65.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2803    0.4463    0.1459              0.0353    0.0003    0.0021    0.0848    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.64     14.17     17.55     15.00      9.14     0.517     0.313     0.181     22.07    13.437
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    17.41      0.274     0.185
-----------------------------------------------------------------------------------------------------------------------
```

```
* Mobile6 input file for Butler, Clermont, Hamilton and Warren counties,

* low RVP beginning summer 2008

* created 4/9/07 by ajr, includes annual scenario,low RVP,post 2007

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

MOBILE6 INPUT FILE :

POLLUTANTS         : CO

PARTICULATES       :

* PARTICULATES REPORTED IN *.PM FILE



RUN DATA

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

VMT BY HOUR        : OHVMT30.Def

VMT BY FACILITY    : OFVMT30.Def

REG DIST           : OHREG_30.D

FUEL PROGRAM       : 1

OXYGENATED FUELS   : .000 .420 .000 .036 2

STAGE II REFUELING : 93 3 86. 86.


EXPAND BUS EFS     :

REBUILD EFFECTS    : 0.10

******************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 2.5 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
```

```
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 5.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43


******************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 10.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 15.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43

******************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 20.0 freeway

PARTICLE SIZE      : 2.5
```

```
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 25.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 30.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 35.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0
```

```
MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 40.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 45.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 50.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 55.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035
```

```
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 60.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 65.0 freeway

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43


********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 2.5 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43

********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 5.0 arterial
```

```
PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43


*******************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 10.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43

*******************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 15.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43

*******************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 20.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
*******************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035
```

```
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 25.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 30.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 35.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 40.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
```

```
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 45.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 50.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 55.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
```

```
AVERAGE SPEED      : 60.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43
********************  Winter CO Scenario Section  ***************

SCENARIO RECORD    : Brent Spence CO emissions 2035

CALENDAR YEAR      : 2035
EVALUATION MONTH   : 1

FUEL RVP           : 9.0

MIN/MAX TEMP       : 19.0 37.0
AVERAGE SPEED      : 65.0 arterial

PARTICLE SIZE      : 2.5

PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
DIESEL SULFUR      : 43

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

END OF RUN
```

```
*****************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                                *
* Input file: OHIO2035.INP (file 1, run 1).                                 *
*****************************************************************************

* Reading Hourly VMT distribution from the following external
* data file: OHVMT30.DEF

* Reading Hourly Roadway VMT distribution from the following external
* data file: OFVMT30.DEF

  Reading User Supplied ROADWAY VMT Factors

* Reading Registration Distributions from the following external
* data file: OHREG_30.D
  M616 Comment:
               User has supplied post-1999 sulfur levels.
  M601 Comment:
               User has enabled STAGE II REFUELING.


* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M514 Warning:
             The combined freeway and ramp average speed entered
            cannot be less than  2.7 miles per hour.
            The average speed will be reset to this value.
  M582 Warning:
            The user supplied freeway average speed of  2.7
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
 HDDV DEFEAT DEVICE EFFECTS ARE PRESENT. THE REBUILD FRACTION IS 0.10.

* Reading Ammonia (NH3) Basic Emissiion Rates
* from the external data file PMNH3BER.D

* Reading Ammonia (NH3) Sulfur Deterioration Rates
* from the external data file PMNH3SDR.D
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     32.13     30.25     33.75     31.20     37.84     1.788     1.056     0.890     92.90    29.323
  ---------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    72.09      1.348     0.910
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 2.
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of  5.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     22.62     21.27     23.41     21.85     30.90     1.527     0.896     0.741     58.48    20.700
  ------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    58.87      1.123     0.758
------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 10.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
```

```
                    Altitude:  Low
             Minimum Temperature:  19.0 (F)
             Maximum Temperature:  37.0 (F)
               Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
             Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     16.60     15.44     16.71     15.78     20.98     1.140     0.660     0.521     31.06    14.920
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    39.97      0.789     0.532
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 15.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
             Minimum Temperature:  19.0 (F)
             Maximum Temperature:  37.0 (F)
               Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
             Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.79     13.63     14.63     13.90     15.05     0.898     0.513     0.383     21.75    13.027
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    28.68      0.580     0.392
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
```

```
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 20.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.39     13.24     14.17     13.49     11.28     0.738     0.415     0.292     17.42    12.513
  ---------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    21.48      0.442     0.299
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 25.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
```

```
                          Month:  Jan.
                       Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.23     13.07     13.97     13.32      8.87     0.632     0.350     0.231     14.81    12.258
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    16.89      0.351     0.237
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 30.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.11     12.96     13.84     13.20      7.34     0.561     0.307     0.191     12.94    12.091
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    13.98      0.290     0.196
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
```

```
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 35.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     14.15     13.01     13.90     13.26      6.42     0.516     0.279     0.166     11.55    12.092
  ------------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    12.23      0.251     0.169
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 40.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.
```

```
                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
                 Minimum Temperature:  19.0 (F)
                 Maximum Temperature:  37.0 (F)
                   Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                 Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.57     13.47     14.42     13.73      5.97     0.489     0.263     0.150     10.59    12.466
 -----------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.37      0.228     0.154
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 10.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 45.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
                 Minimum Temperature:  19.0 (F)
                 Maximum Temperature:  37.0 (F)
                   Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                 Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.99     13.94     14.94     14.21      5.91     0.478     0.256     0.144     10.03    12.865
 -----------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.25      0.218     0.147
-----------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 11.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 50.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     15.43     14.41     15.48     14.70      6.25     0.480     0.258     0.145      9.86    13.291
 -------------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    11.91      0.220     0.149
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 12.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 55.0
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.
```

```
                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     15.87     14.90     16.03     15.21      7.11     0.498     0.268     0.155     13.40    13.763
  ------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    13.55      0.235     0.159
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 13.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
             The user supplied freeway average speed of 60.0
             will be used for all hours of the day. 100% of VMT
             has been assigned to a fixed combination of freeways
             and freeway ramps for all hours of the day and all
              vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     16.32     15.40     16.58     15.72      8.73     0.536     0.291     0.177     20.35    14.289
  ------------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                        ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    16.64      0.268     0.181
-------------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 14.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M515 Warning:
            The combined freeway and ramp average speed entered
            cannot be greater than 60.7 miles per hour.
            The average speed will be reset to this value.
  M582 Warning:
            The user supplied freeway average speed of 60.7
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

    Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
    Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                           Alcohol Blend RVP Waiver: Yes

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
    VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
   ---------------------------------------------------------------------------------------------------------------------
  Composite Emission Factors (g/mi):
      Composite CO  :     16.38     15.47     16.66     15.79      8.98     0.541     0.295     0.180     21.27    14.361
   ---------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
  Composite Emission Factors (g/mi):
      Composite CO  :    17.11      0.273     0.184
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 15.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
```

```
             there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

    Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
    Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                           Alcohol Blend RVP Waiver: Yes

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:              <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
    VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
   ---------------------------------------------------------------------------------------------------------------------
  Composite Emission Factors (g/mi):
      Composite CO  :     33.44     31.51     35.23     32.52     40.59     1.900     1.124     0.953    100.04    30.610
   ---------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
 --------------------------------------------------------------------------------------------------------------------
  Composite Emission Factors (g/mi):
      Composite CO  :    77.33      1.444     0.975
 --------------------------------------------------------------------------------------------------------------------

 * # # # # # # # # # # # # # # # # # # # # # # # # #
 * Brent Spence CO emissions 2035
 * File 1, Run 1, Scenario 16.
 * # # # # # # # # # # # # # # # # # # # # # # # # #
   M583 Warning:
              The user supplied arterial average speed of  5.0
              will be used for all hours of the day.  100% of VMT
              has been assigned to the arterial/collector roadway
              type for all hours of the day and all vehicle types.

 * Reading PM Gas Carbon ZML Levels
 * from the external data file PMGZML.CSV

 * Reading PM Gas Carbon DR1 Levels
 * from the external data file PMGDR1.CSV

 * Reading PM Gas Carbon DR2 Levels
 * from the external data file PMGDR2.CSV

 * Reading PM Diesel Zero Mile Levels
 * from the external data file PMDZML.CSV

 * Reading the First PM Deterioration Rates
 * from the external data file PMDDR1.CSV

 * Reading the Second PM Deterioration Rates
 * from the external data file PMDDR2.CSV
   M 48 Warning:
              there are no sales for vehicle class HDGV8b
   M 48 Warning:
              there are no sales for vehicle class LDDT12
   M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

    Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
    Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                           Alcohol Blend RVP Waiver: Yes

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:              <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
    VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
   ---------------------------------------------------------------------------------------------------------------------
  Composite Emission Factors (g/mi):
      Composite CO  :     22.26     20.94     23.06     21.52     32.43     1.592     0.936     0.778     59.56    20.469
   ---------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
 --------------------------------------------------------------------------------------------------------------------
```

```
 Composite Emission Factors (g/mi):
     Composite CO  :    61.79      1.179     0.796
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 17.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
                The input dIesel sulfur level of  43.0 ppm exceeds
                the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                     Calendar Year:  2035
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  19.0 (F)
               Maximum Temperature:  37.0 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
               Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     16.95     15.81     17.15     16.17     21.58     1.168     0.677     0.537     30.98     15.270
 -------------------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    41.11      0.813     0.549
-------------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 18.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 15.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
```

```
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                    ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     15.32     14.17     15.26     14.46     15.17     0.905     0.517     0.387     21.72    13.515
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                    ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :    28.90      0.587     0.396
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 19.
* # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 20.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
                there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12
  M111 Warning:
              The input dIesel sulfur level of  43.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2035
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                    ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     14.50     13.35     14.32     13.61     11.26     0.739     0.415     0.292     17.46    12.612
 -----------------------------------------------------------------------------------------------------------------------
        Veh. Type:    GasBUS     URBAN    SCHOOL
                    ------    ------    ------
          VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :    21.46      0.443     0.299
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 20.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 25.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     14.04     12.89     13.79     13.13      8.84     0.631     0.350     0.231     14.84    12.099
  -------------------------------------------------------------------------------------------------------------------
          Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    16.84      0.350     0.236
-------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 21.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 30.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.
```

```
                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.85     12.71     13.58     12.95      7.33     0.561     0.307     0.191     12.95    11.869
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    13.96      0.290     0.195
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 22.
* # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 35.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   9.0 psi
                      Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     13.88     12.76     13.64     13.00      6.42     0.516     0.279     0.165     11.55    11.863
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    12.23      0.251     0.169
-----------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 23.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 40.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     14.29     13.20     14.14     13.46      5.94     0.489     0.263     0.150     10.58    12.227
  ------------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                         ------    ------    ------
             VMT Mix:    0.0001    0.0009    0.0019
-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    11.32      0.227     0.153
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 24.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 45.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
```

```
                          Month:  Jan.
                       Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.69     13.65     14.64     13.92      5.81     0.475     0.254     0.142      9.96    12.605
  ----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.06      0.215     0.145
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 25.
* # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 50.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                          Month:  Jan.
                       Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     15.10     14.09     15.14     14.38      6.00     0.473     0.253     0.141      9.71    12.996
  ----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    11.43      0.214     0.144
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
```

```
* File 1, Run 1, Scenario 26.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 55.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  19.0 (F)
                Maximum Temperature:  37.0 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   9.5 psi
                Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     15.50     14.54     15.64     14.84      6.55     0.483     0.259     0.146      9.71    13.403
  ---------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    12.47      0.222     0.150
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 27.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 60.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
```

```
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:              <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     15.91     14.98     16.14     15.30      7.55     0.505     0.272     0.159     15.92    13.857
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    14.38      0.241     0.163
-----------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Brent Spence CO emissions 2035
* File 1, Run 1, Scenario 28.
* # # # # # # # # # # # # # # # # # # # # # # # # #
  M583 Warning:
            The user supplied arterial average speed of 65.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12
  M111 Warning:
               The input dIesel sulfur level of  43.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2035
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:  19.0 (F)
              Maximum Temperature:  37.0 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.5 psi
              Fuel Sulfur Content:   30. ppm

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

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 0.420
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.036
                                          Alcohol Blend RVP Waiver: Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:              <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2691    0.4384    0.1639              0.0355    0.0002    0.0024    0.0854    0.0049    1.0000
 -----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     16.32     15.43     16.64     15.76      9.20     0.543     0.296     0.181     22.13    14.334
 -----------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
           VMT Mix:    0.0001    0.0009    0.0019
-----------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :    17.53      0.274     0.185
-----------------------------------------------------------------------------------------------------------------------
```