

# **Appendix H**

**Connecticut's Methodology for Developing Locomotive Emissions  
for the 2007 MANE-VU Inventory**

The 2007 locomotive emissions were grown from 2005 survey data using the activity data and locomotive emission calculation methods from CT DEEP's draft 2005 periodic emissions inventory (2005 PEI), as documented in the 2005 PEI excerpt found in Section 3.6 of Appendix F.

Growth of the 2005 locomotive fuel use to 2007 was based on the adjusted sales of Distillate Fuel Oil and Residual Fuel Oil Adjusted Sales Data presented in Table 23 (see below) of the Department of Energy (DOE) / Energy Information Administration (EIA) reports prepared by the Energy Information Administration, the independent statistical and analytical agency within the Department of Energy.

The 2005 data was obtained from DOE/EIA-0535(05) Distribution Category UC-950, Fuel Oil and Kerosene Sales 2005, dated November 2006, issued by the Energy Information Administration Office of Oil and Gas U.S. Department of Energy Washington DC 20585, available at the following website: [http://www.eia.doe.gov/pub/oil\\_gas/petroleum/data\\_publications/fuel\\_oil\\_and\\_kerosene\\_sales/historical/2005/pdf/foksall.pdf](http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/fuel_oil_and_kerosene_sales/historical/2005/pdf/foksall.pdf)

The 2007 data was obtained from DOE/EIA-0535(07) Distribution Category UC-950, Fuel Oil and Kerosene Sales 2007, dated December 2008, issued by the Energy Information Administration Office of Oil and Gas U.S. Department of Energy Washington DC 20585, available at the following website: [http://www.eia.doe.gov/pub/oil\\_gas/petroleum/data\\_publications/fuel\\_oil\\_and\\_kerosene\\_sales/historical/2007/pdf/foksall.pdf](http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/fuel_oil_and_kerosene_sales/historical/2007/pdf/foksall.pdf)

**DOE/EIA Table 23. Sales for Transportation Use:  
Distillate Fuel Oil and Residual Fuel Oil Adjusted  
Sales Data (1000 gallons)**

<b>Year</b>	<b>Growth Factor</b>		
	<b>2005</b>	<b>2007</b>	<b>2005 to 2007</b>
<b>Fuel Use 1,000 gallons</b>	3,715	4,306	1.159

2005 coal locomotive emissions from entertainment rail are a small contributor and were reported for 2007 as the same values as reported for 2005.

Emission factors used for the 2007 particulate matter emission factors are presented in the table that follows. All other supporting information for the 2007 locomotive emission estimates can be found in Appendix F.

## Particulate Matter Emission Factors

SCC8_DESC	SCC	Pollutant	Emission Factor Lbs/1000 Gal	Emission Factor Grams/Gal	fuel sulfur (%)	Reference
Line Haul Locomotives: Class I Operations	2285002006	NOx	595.251	270		1(A)
Line Haul Locomotives: Class II / III Operations	2285002007	NOx	595.251	270		1(A)
Line Haul Locomotives: Passenger Trains (Amtrak)	2285002008	NOx	595.251	270		1(A)
Line Haul Locomotives: Commuter Lines	2285002009	NOx	595.251	270		1(A)
Yard Locomotives	2285002010	NOx	798.078	362		1(A)
Line Haul Locomotives: Class I Operations	2285002006	PM10	14.771	6.7		1(A)
Line Haul Locomotives: Class II / III Operations	2285002007	PM10	14.771	6.7		1(A)
Line Haul Locomotives: Passenger Trains (Amtrak)	2285002008	PM10	14.771	6.7		1(A)
Line Haul Locomotives: Commuter Lines	2285002009	PM10	14.771	6.7		1(A)
Yard Locomotives	2285002010	PM10	20.283	9.2		1(A)
Line Haul Locomotives: Class I Operations	2285002006	PM 2.5	13.294	6.03		1(A)
Line Haul Locomotives: Class II / III Operations	2285002007	PM 2.5	13.294	6.03		1(A)
Line Haul Locomotives: Passenger Trains (Amtrak)	2285002008	PM 2.5	13.294	6.03		1(A)
Line Haul Locomotives: Commuter Lines	2285002009	PM 2.5	13.294	6.03		1(A)
Yard Locomotives	2285002010	PM 2.5	18.254	8.28		1(A)
All	All	SO2	18.359	8.33	0.1332	1(B), 2

### Emission Factor Reference List:

- Reference 1 EPA Contract No.: 68-D-02-063, Work Assignment No.: 3-01, entitled "DOCUMENTATION FOR AIRCRAFT, COMMERCIAL MARINE VESSEL, LOCOMOTIVE, AND OTHER NONROAD COMPONENTS OF THE NATIONAL EMISSIONS INVENTORY" Volume I - Methodology Dated September 30, 2005  
[ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002nei\\_mobile\\_nonroad\\_methods.pdf](ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002nei_mobile_nonroad_methods.pdf)
- 1(A) Appendix C, Table C-1 Criteria Pollutant Emission Factors
- 1(B) Appendix C, page C-3
- Reference 2 EPA. April 2009. Suggested National Average Fuel Properties. EPA-420-B-09-018  
<http://www.epa.gov/otaq/models/nonrdmdl/nonrdmdl2008/420b09018.pdf>