

## **Section XX: Fuel Combustion—Services and Commercial**

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### EMISSION INVENTORY SOURCE CATEGORY

Services and Commercial

### EMISSION INVENTORY CODES (CES CODES) AND DESCRIPT

060-995-1220-0000 (47159) Commercial Distillate Oil Combustion

### METHOD SUMMARY

CES 47159 accounts for stationary commercial distillate oil combustion.

Energy Information Administration (2001a) State Energy Data Report , available from <http://www.eia.doe.gov/emeu/sedr/contents.html>, provides 1999 statewide fuel consumption from commercial, industrial and other sectors. From the report introduction, the commercial sector is consisted of service providing facilities and equipment of federal, state and local government and other private and public organization. The fuel consumption from offroad equipment (i.e. forklifts, bulldozers) is included in the sector of its primary use. Therefore, to avoid double-counting, commercial offroad fuel consumption must be subtracted from the EIA commercial usage data. The 1999 California statewide distillate fuel consumption is 68,208,000 gallons. The amount of fuel apportioned to Sacramento is based on percent of Sacramento commercial employment to California commercial employment, which is 3.54%. The following commercial employment categories are assumed to be included under commercial sector:

- Wholesale trade, NAICS 42
- Retail trade, NAICS 44
- Information, NAICS 51
- Finance and insurance, NAICS 52
- Real estate and rental and leasing, NAICS 53
- Professional, scientific and technical services, NAICS 54
- Management of companies and enterprises, NAICS 55
- Admin, support, waste management, remediation services, NAICS 56
- Educational services, NAICS 61
- Health care and social assistance, NAICS 62
- Arts, entertainment and recreation, NAICS 71
- Accommodation and food services, NAICS 72
- Other services (except public administration), NAICS 81
- Auxiliaries (except corporate, subsidiary and regional management), NAICS 95
- Unclassified establishments, NAICS 99

The amount of diesel consumed by commercial off-road equipment is estimated using 1999 CEIDARS NO<sub>x</sub> emissions from commercial off-road equipment area source categories, EIC 860-883-1210-000 (Lawn and Garden Equipment – Diesel) and EIC 860-885-1210-0000 (Light Commercial Equipment - Diesel) and NO<sub>x</sub> uncontrolled emission

factor of 604 lbs/mgal. Subtracting 1269 mgal/yr from off-road equipment from a total of 2415 mgal/yr from the Sacramento commercial sector, yields an estimate 1146 mgal/yr of stationary diesel consumption for Sacramento commercial sector. This is the fuel consumption estimate assumed for service and commercial diesel combustion for Sacramento county.

From district database, there are no boilers and only 3 standby gas turbine generators using distillate oil under the commercial sector. Therefore, it is assumed as all distillate fuel/diesel is combusted in internal combustion engines. Also from the permit database which contains about 800 engines (mostly standby units), it is determined that 30% of the engines are greater than 600 hp and 70% are less than 600 hp. An average emission factor is determined using these percentages and AP42. The Emission factors used are:

EMISSION FACTOR (LBS/MGAL)				
	<600	>600	AVERAGE	
PM	42.4	7.9	32.05	
SOX	7.05	7.05	7.05	
NOX	604	425	550.3	
CO	130	111	124.3	
TOG	58.9	15.1	45.76	
ROG	52.1	13.7	40.58	

ACTIVITY DATA SOURCE: Energy Information Administration, State Energy Data Report  
 EMISSION FACTOR SOURCE: AP-42, Permit Database.  
 TEMPORAL INFORMATION: Daily Activity: 24 hours/day  
 Weekly Activity: 7 days/week  
 Monthly Activity: 365 days/year  
 MOST RECENT UPDATE:  
 GROWTH PARAMETER: Commercial Employment

**EMISSION SUMMARY (1999-ANNUAL AVERAGE TONS/DAY) UNRECONCILED**

<b>CES#</b>	<b>TOG</b>	<b>ROG</b>	<b>CO</b>	<b>NOX</b>	<b>SOX</b>	<b>PM</b>	<b>PM10</b>
47159	0.08	0.07	0.22	0.96	0.01	0.06	0.06

**NEEDED CLARIFICATIONS/CORRECTIONS TO CURRENT METHOD**

None.

**FUTURE PLANS FOR METHOD UPDATE/REVISION**

The process rate and emission factors may be refined using district 2001 internal combustion engine survey.

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