

San Diego APCD  
Emissions Inventory Instructions

**COMBUSTION – DIESEL FIRED ENGINES**

Please refer to the general instructions for guidance regarding the following sections: reporting year, facility identification, permit information, device information, stack / ducted emissions, fugitive release emissions, and other activity data.

**MATERIAL/ PROCESS INFORMATION**

Fill in all the data fields and refer to EIS or EIQ spreadsheets for specific reporting instructions.

**CALCULATION METHOD SELECTION**

A05-E10 - Engine, Diesel Fired, >600 BHP, Uncontrolled

A05-E11 - Engine, Diesel Fired, >600 BHP, with Ignition Timing Retard

A05-E12 - Engine, Diesel Fired, >600 BHP, with Increased Air to Fuel Ratio

A05-E13 - Engine, Diesel Fired, >600 BHP, with Water Injection

A05-E14 - Engine, Diesel Fired, >600 BHP, with Selective Catalytic Reduction

A05-E15 - Engine, Diesel Fired, <=600 BHP, Uncontrolled

**Fuel Type:** Only diesel fuel should be reported on this form. Other liquid fuels (i.e., residual oil, jet fuel, kerosene, propane, butane, gasoline) should be reported on the COMBUSTION – LIQUID FUEL request form.

Note: only provide engine data during non-emergency use.

**Annual Fuel Usage:** Annual quantity of fuel (gallons) combusted in the inventory year

**Max Hourly Fuel Usage:** In general, the max hourly usage is the maximum quantity of fuel (gallons) combusted in a single hour, during the inventory year. If the engine did not run for an hour at the time of maximum usage, the max amount of fuel combusted during the hour should be used.

Note: If max hourly usage is not available, or provided, then the max hourly fuel usage will be assumed to be the max horsepower x fuel consumption (AP-42) x (1/diesel BTU content (AP-42)) x (1/density of diesel) x operating schedule (if less than one hour)

You may find emission factors at the Air Resources Board (ARB) webpage

<https://www.arb.ca.gov/msprog/offroad/cert/cert.php> or the Environmental Protection Agency's (EPA) webpage

<https://www.epa.gov/compliance-and-fuel-economy-data/engine-certification-data>.

**Device Operating Schedule:**

**Daily Operation (hours/day):** Report the average amount of hours the device operates in a typical day.

**Weekly Operation (days/week):** Report the average number of days the device operates in a typical week.

**Annual Operation (days/year):** Report the number of days the device operated during the Reporting Year.

**POLLUTANT NAME (lbs pollutant/1000 gallons fuel)**

Provide site specific emission factors with supporting documentation. Input emission factors into EIS for submission either through direct entry through the 'Enter Emissions Inventory Data' module or through upload of an EIQ spreadsheet. The District will use default emission factors to estimate emissions where site-specific information is not available or not documented. Control efficiencies must be included in emission factors reported.

## How to convert units of the Engine's Emission Factors (EFs)?

Converting EF from certifications for engine families:

If available, use Device/Engine Specific Certified Emissions Factors (EF) for engine families ([CARB E.O OFCI](#), [EPA Nonroad Compression Ignition](#) or Manufacturer):

### [AP-42 Section 3.3 Appendix A \(A-3, To convert from g/hp-hr to lb/Mgal\)](#):

(Density of diesel (AP-42) [Lb/gal] x diesel BTU content (AP-42) [BTU/Lb]) / BSFC: Average Brake Specific fuel consumption (AP-42) [BTU/hp-hr] / 453.59 [g/Lb] x (1000 gal/Mgal) = 43.16 [lbs-bhp-hr/g-1000 gal]

- To update **Diesel Particulate Matter (DPM, or Diesel Particulate)** Emission Factor in the correct units, you will have to update values for both PM10 and TSP too (In the case of Certified diesel engines, **DPM=TSP=PM10**):

- If certified engine family emission factor is in g/kw-hr, then:  $(\text{g/kw-hr} / 1.341 [\text{bhp/kw}]) * 43.16 [\text{lbs-bhp-hr/g-1000 gal}] = [\text{Lb/1000Gals}]$

- If certified engine family emission factor is in g/hp-hr, then:  $\text{g/hp-hr} * 43.16 [\text{lbs-bhp-hr/g-1000 gal}] = [\text{Lb/1000Gals}]$

**Note:** it is assumed that **Particulate Matter (PM)** is the same as **DPM, TSP, and PM10**

- To update **Carbon Monoxide (CO)** Emission Factor in the correct units:

- If certified engine family emission factor is in g/kw-hr, then:  $(\text{g/kw-hr} / 1.341 [\text{bhp/kw}]) * 43.16 [\text{lbs-bhp-hr/g-1000 gal}] = [\text{Lb/1000Gals}]$

- If certified engine family emission factor is in g/hp-hr, then:  $\text{g/hp-hr} * 43.16 [\text{lbs-bhp-hr/g-1000 gal}] = [\text{Lb/1000Gals}]$

- To update **Nitrogen Oxides (NOx)** Emission Factor in the correct units, if the Certified Emission Factor lists Nitrogen Oxides (NOx) separately then:

- If certified engine family emission factor is in g/kw-hr, then:  $(\text{g/kw-hr} / 1.341 [\text{bhp/kw}]) * 43.16 [\text{lbs-bhp-hr/g-1000 gal}] = [\text{Lb/1000Gals}]$

- If certified engine family emission factor is in g/hp-hr, then:  $\text{g/hp-hr} * 43.16 [\text{lbs-bhp-hr/g-1000 gal}] = [\text{Lb/1000Gals}]$

- **Or if the Certified Emission Factors is "NMHC + NOX"**, then assume: 95% is NOX and 5% VOC.

- To update **Volatile Organic Compounds (VOC)** Emission Factor in the correct units, if the Certified Emission Factor lists Volatile Organic Compounds (VOC) separately then:

- If certified engine family emission factor is in g/kw-hr, then:  $(\text{g/kw-hr} / 1.341 [\text{bhp/kw}]) * 43.16 [\text{lbs-bhp-hr/g-1000 gal}] = [\text{Lb/1000Gals}]$

- If certified engine family emission factor is in g/hp-hr, then:  $\text{g/hp-hr} * 43.16 [\text{lbs-bhp-hr/g-1000 gal}] = [\text{Lb/1000Gals}]$

- **Or if the Certified Emission Factors is "NMHC + NOX"**, then assume: 95% is NOX and 5% VOC.

**Note:** it is assumed that **Hydrocarbon (HC)** and **Non-Methane Hydrocarbon (NMHC)** are the same as **VOC (ROG)** for emissions estimation purposes, but NOT TOG. VOC should not be higher than TOG.

- To update **Total Organic Gases (TOG)** Emission Factor in the correct units, if the Certified Emission Factor lists Total Organic Gases (TOG) separately then, you will have to update value for VOC too:

- If certified engine family emission factor is in g/kw-hr, then:  $(\text{g/kw-hr} / 1.341 [\text{bhp/kw}]) * 43.16 [\text{lbs-bhp-hr/g-1000 gal}] = [\text{Lb/1000Gals}]$

- If certified engine family emission factor is in g/hp-hr, then:  $\text{g/hp-hr} * 43.16 [\text{lbs-bhp-hr/g-1000 gal}] = [\text{Lb/1000Gals}]$

**Note:** it is assumed that **Total Hydrocarbons (THC)** are the same as **Total Organic Gases (TOG)**, then assume:  $\text{VOC} = (0.884 * \text{THC})$ . VOC should not be higher than TOG.