40 C.F.R. § 86.1113-87

Calculation and payment of penalty.

(a) The NCP for each engine or vehicle for which a compliance level has been determined under § 86.1112−87 is calculated according to the formula in paragraph (a)(1) or (a)(2) of this section depending on the value of the compliance level. Each formula contains an annual adjustment factor (AAF_i) which is defined in paragraph (a)(3) of this section. Other terms in the formulas are defined in paragraph (a)(4) of this section.

(1) If the compliance level (CL) is greater than the standard and less than or equal to X (e.g., point CL_1 in figure 1), then:

$$NCP_n = (PR_1)(CL - S)\left(\prod_{i=1}^{n} AAF_i\right)$$

where:

$PR_1 = (F)\,(MC_{50})$

(2) If the compliance level is greater than X and less than or equal to the upper limit as determined by § 86.1104−87 (e.g., point CL_2 in figure 1), then:

$$NCP_n = (COC_{50} + (PR_2)(CL - X))\left(\prod_{i=1}^{n} AAF_i\right)$$

where:

$$PR_2 = \frac{COC_{90} - COC_{50}}{UL - X}$$
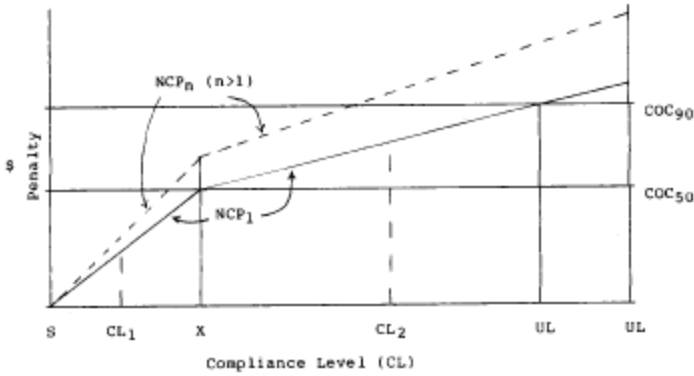
(3) AAF_i has the following values:

(i) If $frac_{i-1} = 0$, then $AAF_i = 1 + I_{i-1}$

(ii) If $frac_{i-1} > 0$, then:

$$AAF_i = 1 + I_{i-1} + A_i\left[\frac{1}{1-frac_{i-1}}\right]^i$$

Figure 1

Penalty vs. Compliance Level

If $\text{frac}_{i-1} > 0.50$, then frac_{i-1} will be set equal to 0.50.

(iii) $AAF_1 = 1$

(iv) In calculating the NCP for year n, the value frac_{i-1} for i = n will include actual NCP usage through March 31 of model year n−1 and EPA's estimate of additional usage for the remainder of model year n-1 using manufacturer input. All manufacturers using NCPs must report by subclass actual NCP and non-NCP production numbers through March 31, an estimate of NCP and non-NCP production for the remainder of the model year, and the previous year's actual NCP and non-NCP production to EPA no later than April 30 of the model year. If EPA is unable to obtain similar information from manufacturers not using NCPs, EPA will use projected sales data from the manufacturers' application for certification in computing the total production of the subclass and the frac_{i-1}. The value of frac_{i-1} will be corrected to reflect actual year-end usage of NCPs and a corrected AAF will be used to establish NCPs in future years. The correction of previous year's AAF will not affect the previous year's penalty.

(4) The terms in the above formulas have the following meanings and values, which may be determined separately for each subclass and pollutant for which an NCP is offered. The production of Federal and California designated engines or vehicles shall be combined for the purpose of this section in calculating the NCP for each engine or vehicle.

NCP_n = NCP for year n for each applicable engine or vehicle CL = Compliance level for year n for applicable engines or vehicles S = Emission standard UL = Upper limit as determined by section 86.1104−87, except that, if the upper limit is determined by section 86.1104−87(c), the value of UL in paragraph (a)(2) of this section shall be the prior emission standard for that pollutant. UL' = Upper limit as determined by section 86.1104−87(c). This value is not used in the above formulas. X = Compliance level above the standard at which NCP_1 equals COC_{50}

$$X = \frac{COC_{50}}{(F)(MC_{50})} + S$$

PR_1 = Penalty rate when CL $\leq$ X PR_2 = Penalty rate when X < CL $\leq$ applicable upper limit

$$\prod_{i=1}^{n} AAF_i = \text{Running product, i.e., } (AAF_1) \times (AAF_2) \times \cdots \times (AAF_n)$$

i = An index representing a year. It represents the same year for both Federal and California designated engines or vehicles of the same production model year. n = Index representing the number of model years for which the NCP has been available for an engine or vehicle subclass (i.e., n = 1 for the first year that the NCP is available, and

so on until n = n for the nth year that the NCP is available). The factor "n" is based on the model year the NCP is first available, as specified in section 86.1105–87 for the engine or vehicle subclass and pollutant for both Federal and California designated engines and vehicles. COC_{50} = Estimate of the average total incremental cost to comply with the standard relative to complying with the upper limit. COC_{90} = Estimate of the 90th percentile total incremental cost to comply with the standard relative to complying with the upper limit. MC_{50} = Estimate of the average marginal cost of compliance (dollars per emission unit) with the standard. F = Factor used to estimate the 90th percentile marginal cost based on the average marginal cost (the minimum value of F is 1.1, the maximum value of F is 1.3). AAF_i = Annual adjustment factor for year i, $frac_{i-1}$ = Fraction of engines or vehicles of a subclass using NCPs in previous year (year i–1). A_i = Usage adjustment factor in year i: A_i = 0.10 for i = 2; A_i = 0.08 for i<2. I_i = Percentage increase in overall consumer price index in year i.