

Supplement to: Limited Maintenance Plan for Connecticut's Fine Particulate Matter (PM_{2.5}) Maintenance Area.

Motor Vehicle Assessment:

This supplement to Connecticut's Limited Maintenance Plan demonstrates that our maintenance area is expected to have limited growth in onroad motor vehicle PM_{2.5} emissions, as well as passing a motor vehicle regional emissions analysis test.

Increases in emissions from on-road mobile sources must be taken into account over the 10 year plan to help ensure that PM_{2.5} concentrations will remain below the NAAQS. Section 3 of the LMP guidance¹ suggests the use of the following equation to assess the impact of future emission increases from motor vehicle travel:

$$\text{Projected Design Value in 2033} = \text{ADV} + (\text{VMT}_{\text{pi}} \times \text{DV}_{\text{mv}}) \leq \text{MOS}$$

Where:

ADV = the area's average design value in µg/m³ for the period used to demonstrate limited maintenance plan qualification. The average of the maximum 24-hr Design Value for the maintenance area, taken from table 2-4 of the plan, was used. This value is **21.2 µg/m³**.

VMT_{pi} = the projected % increase in vehicle miles traveled (VMT) between 2017 and 2033 (final year of the second 10-year limited maintenance plan period). Connecticut DEEP consulted with the Connecticut Department of Transportation (CTDOT) and was provided a VMT projected growth of **5.65%** from 2017 to 2033. Therefore, the projected increase in VMT (VMT_{pi}) is 0.0565. The LMP Supplement for MVA spreadsheet is attached and is summarized in Table 1 below.

Table 1: Connecticut DOT VMT data for the Maintenance Area.

Maintenance Area Annual VMT				
2017 Annual VMT	2033 Annual VMT	2017-2033 Difference	VMT _{pi}	Percent Difference
14,706,677,090	15,538,338,058	831,660,968	0.0565	5.65%

¹ [Guidance on the Limited Maintenance Plan Option for Moderate PM_{2.5} Nonattainment Areas and PM_{2.5} Maintenance Areas \(EPA-420-B-22-044, October 2022\)](#)

DV_{mv} = Portion of design value for the attainment year (2017) inventory in $\mu\text{g}/\text{m}^3$ that is derived from on-road emissions. This calculation is shown below.

MOS = Margin of safety for the relevant PM_{2.5} standard in $\mu\text{g}/\text{m}^3$ for a given area. For this demonstration, Connecticut DEEP is utilizing data from the entire maintenance area, using the monitor with the maximum design value of the past five years. The Critical Design Value for Connecticut's maintenance area was discussed in section 2.2 of the plan and equates to **33.0 $\mu\text{g}/\text{m}^3$** . The CDV of **33.0 $\mu\text{g}/\text{m}^3$** was selected as the MOS for this computation.

$$\text{DV}_{\text{mv}} = \text{ADV} \times \text{O}$$

Where **O** = ratio of onroad emissions to total emissions in 2017 from attached spreadsheet.

$$\text{Therefore, } \text{DV}_{\text{mv}} = 21.2 \mu\text{g}/\text{m}^3 \times (0.246) = 5.2 \mu\text{g}/\text{m}^3$$

Knowing the values of the three variables, the projected design value in 2033 can be readily computed:

$$\begin{aligned} \text{Projected design value in 2033} &= \text{ADV} + (\text{VMT}_{\text{pi}} \times \text{DV}_{\text{mv}}) \leq \text{MOS} \\ &= 21.2 \mu\text{g}/\text{m}^3 + (0.0565 \times 5.2 \mu\text{g}/\text{m}^3) \end{aligned}$$

$$\text{Projected design value in 2033} = 21.49 \mu\text{g}/\text{m}^3 < \text{MOS}$$

The projected design value in 2033 is 21.49 $\mu\text{g}/\text{m}^3$ which is less than the 33.0 $\mu\text{g}/\text{m}^3$ MOS value. Therefore, this demonstrates that the Connecticut maintenance area meets the motor vehicle regional emissions analysis test.