Clarification of Monitoring Rule Provisions Involving Comparisons to the NAAQS

Sampling Frequency and Minimum Monitoring Requirements

<u>71 FR 61299, §58.12(d)(1) says:</u>

Manual PM2.5 samplers at SLAMS stations other than NCore stations must operate on at least a 1-in-3 day schedule at sites without a collocated continuously operating PM2.5 monitor. For SLAMS PM2.5 sites with both manual and continuous PM2.5 monitors operating, the monitoring agency may request approval for a reduction to 1-in-6 day PM2.5 sampling at SLAMS stations or for seasonal sampling from the EPA Regional Administrator. The EPA Regional Administrator may grant sampling frequency reductions after consideration of factors, including but not limited to the historical PM2.5 data quality assessments, the location of current PM2.5 design value sites, and their regulatory data needs. Sites that have design values that are within plus or minus 10 percent of the NAAQS; and sites where the 24-hour values exceed the NAAQS for a period of 3 years are required to maintain at least a 1-in-3 day sampling frequency. Sites that have a design value within plus or minus 5 percent of the daily PM2.5 NAAQS must have an FRM or FEM operate on a daily schedule.

Q. How should the 24-hour design values be calculated to determine which PM2.5 sites must be operated on a daily schedule?
A. Design values should be calculated according to 40 CFR Part 50 Appendix N – Interpretation of the National Ambient Air Quality Standards for PM2.5. Rounding conventions should follow paragraph 4.3(b) of Appendix N (i.e., to the nearest 1 ug/m3). Appropriately rounded 24-hour design values should be compared to the plus or minus 5 percent criteria to determine the required sampling frequency (only design values of 34, 35, and 36 ug/m3 are within plus or minus 5 percent). This test is applicable only to the <u>maximum</u> 24-hour design value site within a particular area, not all sites in that area.

Example 1.
The 24-hour design value site for a nonattainment area has the following 98th percentile readings for the most recent 3 years of data:
Year 1: 33.5 ug/m3
Year 2: 36.4 ug/m3
Year 3: 37.4 ug/m3

Calculate 3-year average: 33.5+36.4+37.4 = <u>35.7666…</u> ug/m3
24-hour design value (round 3-year average to nearest whole number) = <u>36</u> ug/m3
Absolute value of (36/35) = 2.9% different from daily PM2.5 NAAQS
Is the design value within plus or minus 5 % of daily PM2.5 NAAQS? Yes
Daily sampling frequency required? <u>Yes</u>

Example 2.
The 24-hour design value site for an MSA has the following 98th percentile readings for the most recent 3 years of data:
Year 1: 31.9 ug/m3

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Year 2: 34.2 ug/m3
Year 3: 34.0 ug/m3

Calculate 3-year average: 31.9+34.2+34.0 = 33.3666… ug/m3
24-hour design value (round 3-year average to nearest whole number) = 33 ug/m3
Absolute value of (33/35) = 5.7% different from daily PM2.5 NAAQS
Is the design value within plus or minus 5 % of daily PM2.5 NAAQS ? No
Daily sampling frequency required? No

Example 3.
The 24-hour design value site for a nonattainment area has the following 98th percentile readings for the most recent 3 years of data:
Year 1: 37.0 ug/m3
Year 2: 35.5 ug/m3
Year 3: 37.9 ug/m3

Calculate 3-year average: 37.0+35.5+37.9 = 36.8 ug/m3
24-hour design value (round 3-year average to nearest whole number) = 37 ug/m3
Absolute value of (37/35) = 5.7% different from daily PM2.5 NAAQS
Is the design value within plus or minus 5 % of daily PM2.5 NAAQS ? No
Daily sampling frequency required? No

Q. What "boundaries" should be used for defining a maximum site for the sites that are not inside designated attainment/nonattainment areas for purposes of establishing daily PM2.5 sampling frequency requirements?
A. The rule does not specify, but MSA boundaries would be an appropriate choice for such boundaries in situations where there are no designated attainment/nonattainment areas. The daily sampling requirement does not apply to non-required PM2.5 monitors that are located outside of MSA boundaries, even if such monitors have design values that are within plus or minus 5% of the daily NAAQS. States operating such monitors would be encouraged, but not required, to sample on a daily basis.

Q. How should the following rule language in §58.12 (d)(1) be interpreted?
Sites that have design values that are within plus or minus 10 percent of the NAAQS;
A. This refers to sites (with both manual and continuous PM2.5 monitors operating) that have design values within plus or minus 10 percent of either the annual or 24-hour PM2.5 NAAQS.

Q. How should the following rule language in §58.12 (d)(1) be interpreted?
……; and sites where the 24-hour values exceed the NAAQS for a period of 3 years are required to maintain at least a 1-in-3 day sampling frequency.
A. Any PM2.5 site where at least one 24-hour value has exceeded the NAAQS (concentration of at least 35.5 ug/m3) for 3 consecutive years must maintain at least a

1-in-3 day sampling frequency. Note – this is an exceedance-based (not design value-based) calculation.

Q. How should the design value calculations referenced in 40 CFR Part 58 Appendix D Table D-2 (SLAMS Minimum O3 Monitoring Requirements) be interpreted?
A. Calculate the most recent design value according to 40 CFR Part 50 Appendix I – Interpretation of the 8-Hour Primary and Secondary National Ambient Air Quality Standards for Ozone, for the maximum reading site in an MSA. Note that paragraph 2.3 of Appendix I states that the third decimal place of the computed 3 year average is rounded, with values equal to or greater than 5 rounding up. Based on Table D-2, all MSA's with design values greater than or equal to 85 percent of any ozone NAAQS have greater minimum monitoring requirements (only design values of at least 0.07 ppm are greater than or equal to 85 percent).

Example 4.
The 8-hour design value site for a nonattainment area has the following 4th highest readings for the most recent 3 years of data:
Year 1: 0.070 ppm
Year 2: 0.068 ppm
Year 3: 0.062 ppm

Calculate 3-year average: 0.070+0.068+0.062 = <u>0.0666…</u> ppm
Truncate to <u>0.066</u> ppm per paragraph 2.2 of Appendix I
8-hour ozone design value (rounded to 2 decimal places) = <u>0.07</u> ppm
Value of (0.07/0.08) = 87.5% of 8-hour ozone NAAQS
Is the design value greater than or equal to 85 percent of 8-hour NAAQS? <u>Yes</u>
Higher minimum monitoring requirements in Table D-2? <u>Yes</u>

Example 5.
The 8-hour design value site for an MSA has the following 4th highest readings for the most recent 3 years of data:
Year 1: 0.060 ppm
Year 2: 0.068 ppm
Year 3: 0.062 ppm

Calculate 3-year average: 0.060+0.068+0.062 = <u>0.0633…</u> ppm
Truncate to <u>0.063</u> ppm per paragraph 2.2 of Appendix I
8-hour ozone design value (rounded to 2 decimal places) = <u>0.06</u> ppm
Value of (0.06/0.08) = 75.0% of 8-hour ozone NAAQS
Is the design value greater than or equal to 85 percent of 8-hour NAAQS? <u>No</u>
Higher minimum monitoring requirements in Table D-2? <u>No</u>

Q. How should the design value calculations referenced in 40 CFR Part 58 Appendix D Table D-5 (PM2.5 Minimum Monitoring Requirements) be interpreted?

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A. As stated earlier, design values should be calculated according to 40 CFR Part 50 Appendix N – Interpretation of the National Ambient Air Quality Standards for PM2.5. Rounding conventions should follow paragraph 4.3(a) of Appendix N (to nearest 0.1 ug/m3) for the annual PM2.5 standard design value and paragraph 4.3(b) of Appendix N (to nearest 1 ug/m3) for the 24-hour PM2.5 standard design value. Based on Table D-5, all MSA's with design values greater than or equal to 85 percent of any PM2.5 NAAQS have greater minimum monitoring requirements.

Example 6.
The maximum PM2.5 annual design value site for an MSA has the following annual averages for the most recent 3 years of data:
Year 1: 13.3182… ug/m3
Year 2: 12.6954… ug/m3
Year 3: 12.2015… ug/m3

Calculate 3-year average: 13.3182…+12.6954…+12.2015… = 12.7383… ug/m3
Annual design value (round 3-year average to nearest 0.1 ug/m3) = 12.7 ug/m3
Value of (12.7/15) = 84.7% of annual PM2.5 NAAQS
Is the design value greater than or equal to 85 percent of annual NAAQS? No
Higher minimum monitoring requirements in Table D-5? No

Example 7.
The maximum PM2.5 24-hour design value site for an MSA has the following 98th percentile readings for the most recent 3 years of data:
Year 1: 29.7 ug/m3
Year 2: 31.0 ug/m3
Year 3: 28.6 ug/m3

Calculate 3-year average: 29.7+31.0+28.6 = 29.7666… ug/m3
24-hour design value (round 3-year average to nearest 1 ug/m3) = 30 ug/m3
Value of (30/35) = 85.7% of 24-hour PM2.5 NAAQS
Design value greater than or equal to 85 percent of daily NAAQS? Yes
Higher minimum monitoring requirements in Table D-5? Yes