# Instructions for Determining the $PM_{2.5}$ Plant Site Emission Limit and Netting Basis OAR 340-200-0020(75)

State of Oregon Department of Environmental Quality

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## $PM_{2.5}$ permitting concepts

Background

The new $PM_{2.5}$ rules became effective on May 1, 2011.These instructions are based on the new definition of "$PM_{2.5}$ fraction" and the revised definition of "netting basis" in OAR 340 Division 200.

$PM_{2.5}$ has been indirectly regulated through $PM_{10}$ and total particulate matter for years. Because of this, the Environmental Quality Commission added $PM_{2.5}$ to the program in a manner that avoids imposing retroactive violations on sources who have complied with existing permitting requirements for particulate matter. Therefore, a baseline emission rate for $PM_{2.5}$ will not be established since most sources have a netting basis for $PM_{10}$ that is different from the baseline emission rate.

These instructions do not apply to sources with Basic or General ACDPs. Basic ACDPs do not have PSELs. General ACDPs cannot be modified for a specific source. The $PM_{2.5}$ Generic PSEL will be added to General ACDPs when they are renewed. In the mean time, a source may remain assigned to a General ACDP if the source continues to meet the qualifications of the General ACDP.

$PM_{2.5}$ fraction

The "$PM_{2.5}$ fraction" means the fraction of $PM_{10}$ that is $PM_{2.5}$ for each emissions unit[1] that is included in the netting basis and PSEL.The $PM_{2.5}$ fraction may be different for each emissions unit

[1] Emissions unit for Title V sources or emissions point for ACDP sources

at a source and should be obtained from source test data, AP-42, or other trade association information.

Letting "f" represent the $PM_{2.5}$ fraction, then in general:

**($PM_{2.5}$ emission rate) = f * ($PM_{10}$ emission rate)**.

The above calculation must be done for each emissions unit at a facility that emits $PM_{2.5}$ for the PSEL described in these instructions.

$PM_{2.5}$ and $PM_{10}$ Significant Emission Rates (SER)
The $PM_{2.5}$ SER is 10 tons per year (tpy).
The $PM_{10}$ SER is 15 tpy.

$PM_{2.5}$ and $PM_{10}$ Generic PSELs
The $PM_{2.5}$ Generic PSEL is 9 tpy.
The $PM_{10}$ Generic PSEL is 14 tpy.

$PM_{2.5}$ and $PM_{10}$ de minimis is 1 tpy.

**General concepts applicable to the $PM_{2.5}$ PSEL and netting basis**

The $PM_{2.5}$ PSEL is calculated from the $PM_{10}$ PSEL in effect on May 1, 2011.The initial $PM_{2.5}$ netting basis is calculated from the $PM_{10}$ PSEL and netting basis in effect on May 1, 2011. After the initial $PM_{2.5}$ netting basis has been established, it is subject to the same rules that affect the netting basis for other pollutants, such as unassigned emission reductions or increases approved through the major New Source Review program and will be adjusted accordingly.

The rules allow for a one-time *5 ton true-up* (see the Internal Management Directive IMD AQ-00-0015 "$PM_{2.5}$ True-Up" at http://www.deq.state.or.us/aq/permit/tv/ed600.htm). The purpose of the true-up is to establish a $PM_{2.5}$ netting basis for sources requiring a netting basis adjustment of up to 5 tons to avoid exceedance of the $PM_{2.5}$ SER while their $PM_{10}$ PSEL is within an SER of their $PM_{10}$ netting basis. The possibility for this situation exists because the $PM_{2.5}$ SER is 5 tpy less than the $PM_{10}$ SER. To avoid creating a retroactive violation from a compliant source, the rules allow DEQ to add up to 5 tpy to the initial $PM_{2.5}$ netting basis. Note that this adjustment does not apply if the $PM_{10}$ PSEL is a SER or more over the $PM_{10}$ netting basis; in this case the source is not disadvantaged if the $PM_{2.5}$ PSEL is also a SER or more over the $PM_{2.5}$ netting basis (see 0).
In the event that the $PM_{10}$ PSEL and/or netting basis and/or unassigned emissions in effect on May 1, 2011 is/are found to be incorrect, the corrections should be made first to establish the correct $PM_{10}$ PSEL and/or netting basis and/or unassigned emissions that should have been in effect on May 1, 2011. If the correction requires additional analysis for $PM_{10}$ (e.g., an air quality analysis in accordance with the PSEL rules), the $PM_{2.5}$ PSEL should also be reviewed for any similar type analysis.

**$PM_{2.5}$ PSEL**

Calculate the $PM_{2.5}$ emissions for each emissions unit at the source from the $PM_{10}$ emissions[2] for each emissions unit as:

**($PM_{2.5}$ emission rate) = f * ($PM_{10}$ emission rate)**

Calculate the facility-wide $PM_{2.5}$ emissions by summing the $PM_{2.5}$ emissions for all emissions units. If the $PM_{10}$ PSEL includes 1 ton for aggregate insignificant activities[3], add 1 ton to the $PM_{2.5}$ PSEL for the aggregate insignificant activities. If the $PM_{2.5}$ PSEL <10, the source may have a Generic PSEL of 9 tpy.

***Example 1***: Single emissions unit

| Emissions unit | $PM_{10}$ tpy | f | $PM_{2.5}$ tpy |
|---|---|---|---|
| EU1 | 13 | 0.6 | 8 |

***Example 2***: Multiple emissions units

| Emissions unit | $PM_{10}$ tpy | f | $PM_{2.5}$ tpy |
|---|---|---|---|
| EU1 | 13 | 0.9 | 11.7 |
| EU2 | 24 | 0.4 | 9.6 |
| EU3 | 55 | 0.7 | 38.5 |
| AI | 1 | | 1 |
| Total | 93 | | 61 |

**$PM_{2.5}$Netting Basis**

Calculate the $PM_{2.5}$ netting basis using the ratio (R) of the $PM_{2.5}$ PSEL to the $PM_{10}$ PSEL. If the PSELs are the Generic PSEL, use the portion of the PSEL attributable to actual emission units at the source.

**R = $PM_{2.5}$ PSEL/$PM_{10}$ PSEL**

***Example 3***: R for Generic PSEL

| Emissions unit | $PM_{10}$ tpy | f | $PM_{2.5}$ tpy |
|---|---|---|---|
| EU1 | 4 | 0.9 | 3.6 |
| EU2 | 3 | 0.4 | 1.2 |
| EU3 | 2 | 0.7 | 1.4 |
| Total | 9 | | 6.2 |
| Generic PSEL | 14 | | |
| R | 6.2/9 = 0.69 | | |

[2] $PM_{10}$ emissions for each emissions unit mean the portion of the $PM_{10}$ PSEL for each emissions unit.
[3] Aggregate insignificant activities are identified in many, but not all, permits.

The $PM_{2.5}$ netting basis equals R times the $PM_{10}$ netting basis:

**PM2.5 netting basis = R * $PM_{10}$ netting basis**

If the $PM_{10}$ netting basis is zero, the $PM_{2.5}$ netting basis will be zero.

***Example 4***: $PM_{2.5}$ netting basis:

| | | |
|---|---|---|
| $PM_{10}$ PSEL | = | 93 |
| $PM_{2.5}$ PSEL | = | 61 |
| R | = | 61/93 |
| | = | 0.656 |
| $PM_{10}$ netting basis | = | 80 |
| $PM_{2.5}$ netting basis | = | R * 80 |
| | = | 0.656 * 80 |
| | = | 52.48 (rounded to 52) Evaluate $PM_{2.5}$ netting basis ("true-up"): |

If $PM_{2.5}$ PSEL $\leq$ ($PM_{2.5}$ netting basis + 9) then no adjustment to $PM_{2.5}$ netting basis is needed.

***Example 5***: no true-up needed because $PM_{2.5}$ PSEL $\leq$ $PM_{2.5}$ netting basis + 9:

| | | |
|---|---|---|
| $PM_{10}$ PSEL | = | 93 |
| $PM_{2.5}$ PSEL | = | 93 |
| R | = | 93/93 |
| | = | 1.0 |
| $PM_{10}$ netting basis | = | 88 |
| $PM_{2.5}$ netting basis | = | R * 88 |
| | = | 1.0 * 88 |
| | = | 88 |

$PM_{2.5}$ PSEL = 93 $\leq$ $PM_{2.5}$ netting basis + 9 = 88 + 9 = 97

If $PM_{2.5}$ PSEL $\geq$ $PM_{2.5}$ netting basis + 10; and $PM_{10}$ PSEL $\geq$ ($PM_{10}$ netting basis + 15) then no adjustment to $PM_{2.5}$ netting basis is needed.

***Example 6***: no true-up needed because $PM_{2.5}$ and $PM_{10}$ PSELs are both greater than respective SERs over the netting bases:

| | | |
|---|---|---|
| $PM_{10}$ PSEL | = | 100 |
| $PM_{2.5}$ PSEL | = | 90 |
| R | = | 90/100 |
| | = | 0.9 |
| $PM_{10}$ netting basis | = | 80 |
| $PM_{2.5}$ netting basis | = | R * 80 |
| | = | 0.9 * 80 |

= 72

$PM_{2.5}$ PSEL – $PM_{2.5}$ netting basis = 90 - 72 = 18 ( >SER); and $PM_{10}$ PSEL – $PM_{10}$ netting basis = 100 - 80 = 20 (> SER)

If $PM_{2.5}$ PSEL ≥ $PM_{2.5}$ netting basis + 10; and $PM_{10}$ PSEL > ($PM_{10}$ netting basis + 9) and ≤ ($PM_{10}$ netting basis + 14):

Adjust the $PM_{2.5}$ netting basis using the "true-up" provisions in IMD AQ-00-0015:

| | | |
|---|---|---|
| $PM_{2.5}$ netting basis | = | $PM_{2.5}$ PSEL – ($PM_{2.5}$ SER – 1) |
| | = | $PM_{2.5}$ PSEL – 9 |

***Example 7:*** true-up needed for source specific PSEL:

| | | |
|---|---|---|
| $PM_{10}$ PSEL | = | 100 |
| $PM_{2.5}$ PSEL | = | 100 |
| R | = | 100/100 |
| | = | 1.0 |
| $PM_{10}$ netting basis | = | 89 |
| $PM_{2.5}$ netting basis | = | R * 89 |
| | = | 1.0 * 89 |
| | = | 89 |

$PM_{10}$ PSEL – $PM_{10}$ netting basis = 100 – 89 = 11 (<SER)
$PM_{2.5}$ PSEL – $PM_{2.5}$ netting basis = 100 - 89 = 11 (>SER);
$PM_{2.5}$ netting basis with true-up = $PM_{2.5}$ PSEL – ($PM_{2.5}$ SER – 1) = 100 - 9 = 91

***Example 8:*** true-up needed for generic PSEL:

| | | |
|---|---|---|
| $PM_{10}$ PSEL | = | 14 |
| $PM_{2.5}$ PSEL | = | 14 |
| R | = | 14/14 |
| | = | 1.0 |
| $PM_{10}$ netting basis | = | 0 |
| $PM_{2.5}$ netting basis | = | R * 0 |
| | = | 1.0 * 0 |
| | = | 0 |

$PM_{2.5}$ PSEL – $PM_{2.5}$ netting basis = 14 - 0 = 14 (>SER)
$PM_{2.5}$ netting basis with true-up = $PM_{2.5}$ PSEL – ($PM_{2.5}$ SER – 1) = 14 - 9 = 5

**Sources on Simple ACDP will have to get a Standard ACDP**

**Or**,

Set $PM_{2.5}$ PSEL at $PM_{2.5}$ netting basis + 9

**Source can maintain Simple ACDP, but PSEL may restrict operations. No $PM_{2.5}$ netting basis on a Simple ACDP.**

**Unassigned Emissions**

If the $PM_{10}$ netting basis includes "unassigned emissions", the $PM_{2.5}$ netting basis will also include unassigned emissions.

$PM_{2.5}$ unassigned emissions equal the $PM_{10}$ unassigned emissions * R.

***Example 9***: unassigned emissions:

| | | |
|---|---|---|
| $PM_{10}$ PSEL | = | 125 |
| $PM_{2.5}$ PSEL | = | 120 |
| R | = | 120/125 |
| | = | 0.96 |
| $PM_{10}$ netting basis | = | 175 |
| $PM_{2.5}$ netting basis | = | R * 175 |
| | = | 0.96 * 175 |
| | = | 168 |
| $PM_{10}$ unassigned emissions | = | 50 |
| $PM_{2.5}$ unassigned emissions | = | R * $PM_{10}$ unassigned |
| | = | 0.96 * 50 = 48 |

**Documentation**

Include the following in the permit review report:

- references for the $PM_{2.5}$ fractions of the $PM_{10}$.
- calculations of the $PM_{2.5}$ PSEL, netting basis, and unassigned emissions if applicable

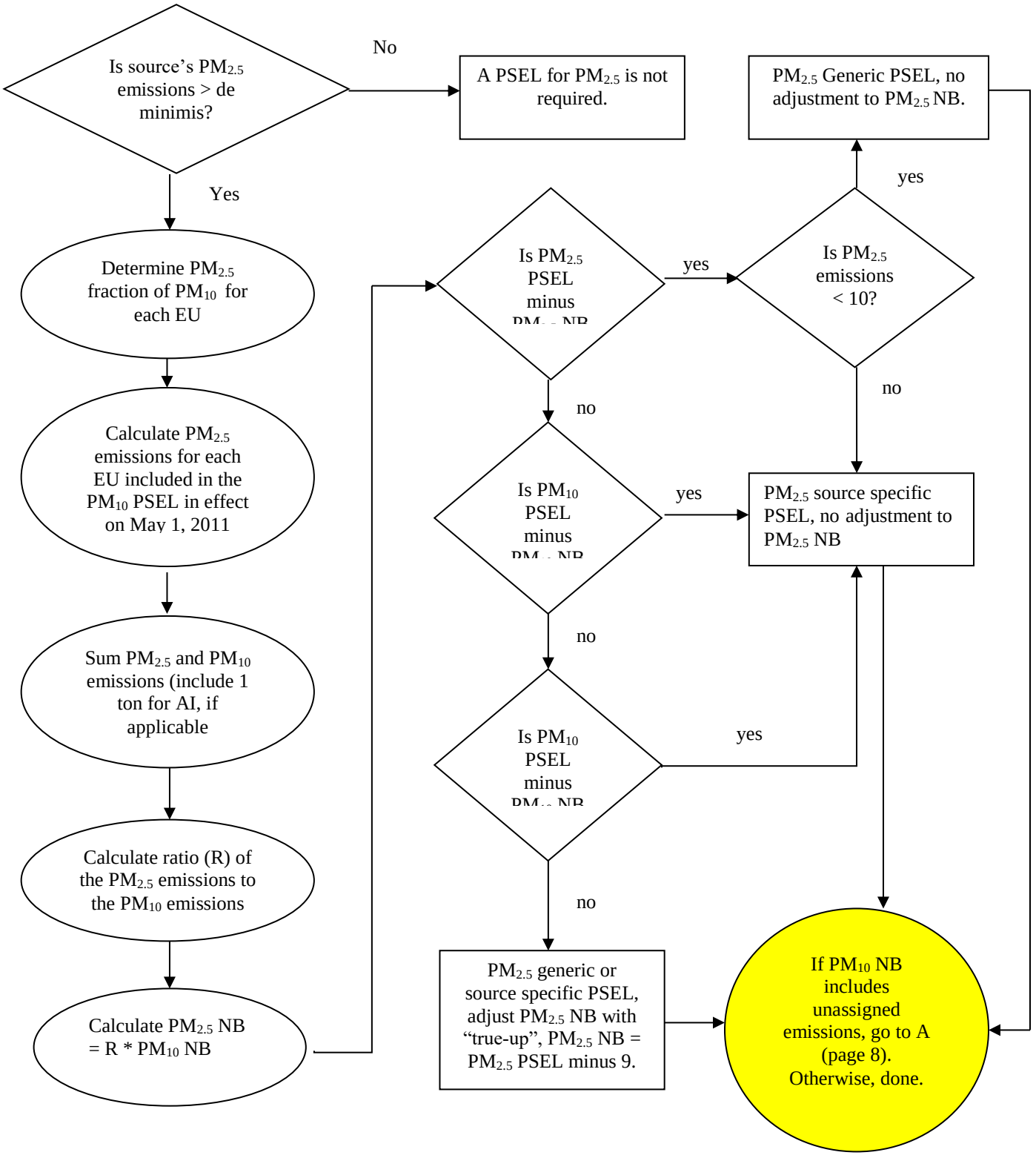
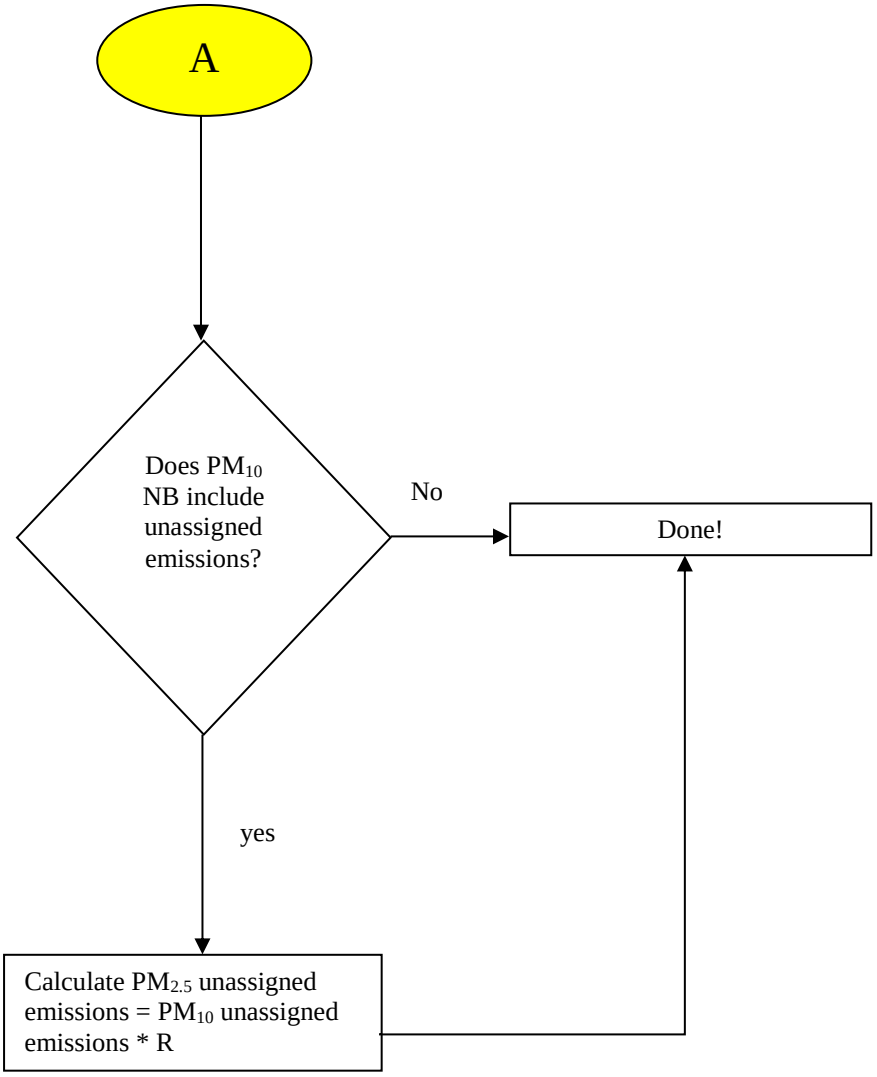
There is no previous netting basis or PSEL for $PM_{2.5}$ so there is no increase in either of these for the initial determination.

The following language can be included in the Review Report for adding PM2.5 & GHG to the PSEL:

**a.** $PM_{2.5}$ is a fraction of $PM_{10}$, and following federal law, was deemed a criteria pollutant of air quality in Oregon in May 2011. The above table does not represent an actual emissions increase, but recognition of the separate sizes of particulate matter. $PM_{2.5}$ is considered to be equal to $PM_{10}$. A Baseline Rate will not be established for $PM_{2.5}$.

**b.** Greenhouse gas emissions (GHG) is added to the PSEL in this permit. As with $PM_{2.5}$, this does not represent an increase in emissions, only recognition that GHG are now considered to be, collectively, a regulated pollutant. No Baseline Rate has been set, although this option is available for a 12 consecutive month period between January 2000 and December 2010 at the applicant's request. [Note: The last sentence applies only to sources with Standard permits who maintain Baseline Rates.]

## $PM_{2.5}$ PSEL and Netting Basis Flowchart



Flowchart begins on page 7.