

# LANE REGIONAL AIR PROTECTION AGENCY

## TITLE 40

### AIR QUALITY ANALYSIS REQUIREMENTS

#### **Section 40-0010 Purpose**

- (1) This title contains the definitions and requirements for air quality analysis. This title does not apply unless a rule in another title refers to this title or a section in this title. For example, title 38 New Source Review, refers to provisions in this title for specific air quality analysis requirements.

#### **Section 40-0020 Definitions**

The definitions in LRAPA title 12, title 29, OAR 340-204-0010 and this section apply to this title. If the same term is defined in this section and LRAPA title 12, title 20, or OAR 340-204-0010, the definition in this section applies to this title.

- (1) "Allowable emissions" means the emissions rate of a stationary source calculated using the maximum rated capacity of the source (unless the source is subject to federally enforceable limits which restrict the operating rate, or hours of operation, or both) and the most stringent of the following:
  - (a) The applicable standards as set forth in 40 CFR parts 60, 61, 62 and 63;
  - (b) The applicable SIP emissions limitation, including those with a future compliance date; or
  - (c) The emissions rate specified as a federally enforceable permit condition.
- (2) "Baseline concentration" means:
  - (a) The ambient concentration level for sulfur dioxide and PM<sub>10</sub> that existed in an area during the calendar year 1978. Actual emission increases or decreases occurring before January 1, 1978 must be included in the baseline calculation, except that actual emission increases from any major source or major modification on which construction commenced after January 6, 1975 must not be included in the baseline calculation;
  - (b) The ambient concentration level for nitrogen oxides that existed in an area during the calendar year 1988.
  - (c) The ambient concentration level for PM<sub>2.5</sub> that existed in an area during the calendar year 2007.
  - (d) If no ambient air quality data is available in an area, the baseline concentration may be estimated using modeling based on actual emissions for the years specified in paragraphs (a) through (c).

- (3) "Baseline concentration year" means the calendar year used to determine the baseline concentration for a particular regulated pollutant in a particular designated area.
- (4) "Competing PSD increment consuming source impacts" means the total modeled concentration above the modeled Baseline Concentration resulting from increased and decreased emissions of all other sources since the baseline concentration year that are expected to cause a significant concentration gradient in the vicinity of the source. Determination of significant concentration gradient may take into account factors including but not limited to ROI formula, spatial distribution of existing emission sources, topography, and meteorology. Allowable Emissions may be used as a conservative estimate of increased emissions, in lieu of actual emissions, in this analysis.
- (5) "Competing AAQS source impacts" means total modeled concentrations of the subject pollutant resulting from allowable emissions of all other sources expected to cause a significant concentration gradient in the vicinity of the source or sources under consideration. Determination of significant concentration gradient may take into account factors including but not limited to ROI formula, spatial distribution of existing emission sources, topography, and meteorology.
- (6) "FLAG" refers to the Federal Land Managers' Air Quality Related Values Work Group Phase I Report -REVISED, published at 75 Federal Register 66125, October 27, 2010.
- (7) "General background concentration" means impacts from natural sources and unidentified sources that were not explicitly modeled, and may be determined based on either this as site-specific ambient monitoring or, with LRAPA approval, on representative ambient monitoring from another location.
- (8) "Nitrogen deposition" means the sum of anion and cation nitrogen deposition expressed in terms of the mass of total elemental nitrogen being deposited. As an example, nitrogen deposition for  $\text{NH}_4\text{NO}_3$  is 0.3500 times the weight of  $\text{NH}_4\text{NO}_3$  being deposited.
- (9) "Predicted maintenance area concentration" means the future year ambient concentration predicted by LRAPA in the applicable maintenance plan as follows:
- (a) [Reserved]
- (10) "Range of influence formula" or "ROI formula" means the calculation of the distance in kilometers from the source impact area of the new or modified source to other emission sources that could impact that area. If there is no source impact area, the distance is calculated from the new or modified source. Any location that is closer to the source than the ROI may be considered to be "within the range of influence" of the source. The ROI formula is as follows:
- (a) For PSD Class II and Class III areas, the Range of Influence formula of a competing source (in kilometers) is defined by:
- (A)  $\text{ROI (km)} = \text{Q (tons/year)} / \text{K (tons/year km)}$ .

(B) Definition of factors used in paragraph (a):

- (i) Maximum ROI is 50 km.
- (ii) Q is the emission rate of the potential competing source in tons per year.
- (iii) K (tons/year km) is a regulated pollutant specific constant as follows:
  - (I) For PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>x</sub> and NO<sub>x</sub>, K = 5;
  - (II) For CO, K = 40; and
  - (III) For lead, K = 0.15.

(b) For PSD Class I areas, the Range of Influence of a competing source includes emissions from all sources that occur within the modeling domain of the source being evaluated. LRAPA determines the modeling domain on a case-by-case basis.

(11) "Single source impact" means the modeled impacts from an increase in emissions of regulated pollutants from a source without including the impacts from other sources.

(12) "Source impact area" means an area, or locations, where predicted impacts from the source or modification equal or exceed the Class II significant impact levels set out in Table 1 of LRAPA title 12. This definition only applies to PSD Class II areas and is not intended to limit the distance for PSD Class I modeling.

(13) "Sulfur deposition" means the sum of anion and cation sulfur deposition expressed in terms of the total mass of elemental sulfur being deposited. As an example, sulfur deposition for (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> is 0.2427 times the weight of (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> being deposited.

#### **Section 40-0030 Procedural Requirements**

When required to conduct an air quality analysis under this title:

- (1) The owner or operator of a source must submit a modeling protocol to LRAPA and have it approved before submitting a permit application; and
- (2) In addition to the requirements defined in 37-0040 for permit applications, the owner or operator of a source must submit all information necessary to perform any analysis or make any determination required under this title. Such information may include, but is not limited to:
  - (a) Emissions data for all existing and proposed emission points from the source or modification. This data must represent maximum emissions for the averaging times by regulated pollutant consistent with the ambient air quality standards in Title 50 – Ambient Air Standards.
  - (b) Stack parameter data, height above ground, exit diameter, exit velocity, and exit temperature, for all existing and proposed emission points from the source or modification,
  - (c) An analysis of the air quality and visibility impact of the source or modification, including meteorological and topographical data, specific details of models used, and other information necessary to estimate air quality impacts; and

- (d) An analysis of the air quality and visibility impacts, and the nature and extent of all commercial, residential, industrial, and other source emission growth, that has occurred since the baseline concentration year, in the area the source or modification would significantly affect.

#### **Section 40-0040 Air Quality Models**

All modeled estimates of ambient concentrations required under this title must be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR part 51, Appendix W, "Guidelines on Air Quality Models (Revised)". Where an air quality impact model specified in 40 CFR part 51, Appendix W is inappropriate, the methods published in the FLAG are generally preferred for analyses in PSD Class I areas. Where an air quality impact model other than that specified in 40 CFR part 51, Appendix W is appropriate in PSD Class II and III areas, the model may be modified or another model substituted. Any change or substitution from models specified in 40 CFR part 51, Appendix W is subject to notice and opportunity for public comment and must receive prior written approval from LRAPA and EPA.

#### **Section 40-0045 Requirements for Analysis in Maintenance Areas**

Modeling: For determining compliance with the maintenance area impact levels established in 50-065 or OAR 340-202-0225, whichever is most recently adopted, the following methods must be used:

- (1) For each maintenance pollutant, a single source impact analysis is sufficient to show compliance with the maintenance area maximum impact levels if:
  - (a) The modeled impacts from emission increases equal to or greater than an SER above the netting basis due to the proposed source or modification being evaluated are less than the Class II Significant Air Quality Impact Levels specified in title 12, Table 1.
  - (b) The owner or operator provides an assessment of factors that may impact the air quality conditions in the area showing that the SIL by itself is protective of the maintenance area impact levels. The assessment must take into consideration but is not limited to the emission increases and decreases since the baseline concentration year from other sources that are expected to cause a significant concentration gradient in the vicinity of the source. Determination of significant concentration gradient may take into account factors including but not limited to ROI formula, spatial distribution of existing emission sources, topography, and meteorology.
- (2) If the requirement in subsection (1) is not satisfied, the owner or operator of a proposed source or modification must complete a competing source analysis to demonstrate that modeled impacts from the proposed increased emissions plus competing source impacts, plus the predicted maintenance area concentration are less than the maintenance area impact levels in 50-065 or OAR 340-202-0225, whichever is most recently adopted, for all averaging times.
- (3) Any analyses performed under this section must be done in compliance with 40-0030 and 40-0040, as applicable.

#### **Section 40-0050 Requirements for Analysis in PSD Class II and Class III Areas**

Modeling: For determining compliance with the AAQS, PSD increments, and other requirements in PSD Class II and Class III areas, the following methods must be used:

- (1) For each regulated pollutant, a single source impact analysis is sufficient to show compliance with the AAQS and PSD increments if:
  - (a) The modeled impacts from emission increases equal to or greater than an SER above the netting basis due to the proposed source or modification being evaluated are less than the Class II significant impact levels specified in title 12, Table 1; and
  - (b) The owner or operator provides an assessment of factors that may impact the air quality conditions in the area to show that the SIL by itself ensures that the proposed source or modification will not cause or contribute to a new violation of an AAQS and PSD increment. The assessment must take into consideration but is not limited to the following factors:
    - (A) The background ambient concentration relative to the AAQS;
    - (B) The emission increases and decreases since the baseline concentration year from other sources that are expected to cause a significant concentration gradient in the vicinity of the source. Determination of significant concentration gradient may take into account factors including but not limited to ROI formula, spatial distribution of existing emission sources, topography, and meteorology.
- (2) If the requirement in subsection (1) is not satisfied, the owner or operator of a proposed source or modification being evaluated must complete a competing source analysis as follows:
  - (a) For demonstrating compliance with the PSD Class II and III increments (as defined in 50-055, Table 1 or OAR 340-202-0210, whichever is more current), the owner or operator of the source or modification must show that modeled impacts from the proposed increased emissions, above the modeled baseline concentration, plus competing PSD increment consuming source impacts above the modeled baseline concentration are less than the PSD increments for all averaging times; and
  - (b) For demonstrating compliance with the AAQS, the owner or operator of the source must show that the total modeled impacts plus total competing source impacts plus general background concentrations are less than the AAQS for all averaging times.
- (3) The owner or operator of a source must also provide an analysis of:
  - (a) The impairment to visibility, soils and vegetation that would occur as a result of the source or modification, and general commercial, residential, industrial and other growth associated with the source or modification. As a part of this analysis, deposition modeling analysis is required for sources emitting heavy metals above the SERs as defined in title 12, Table 2. Concentration and deposition modeling may also be required for sources emitting other compounds on a case-by-case basis; and

- (b) The air quality concentration projected for the area as a result of general commercial, residential, industrial and other growth associated with the source or modification.
- (4) Any analyses performed under this section must be done in compliance with 40-0030 and 40-0040, as applicable.

**Section 40-0060 Requirements for Demonstrating Compliance with Standards and Increments in PSD Class I Areas**

For determining compliance with AAQS and PSD increments in PSD Class I areas, the following methods must be used:

- (1) Before Jan. 1, 2003, the owner or operator of a source must model impacts and demonstrate compliance with standards and increments on all PSD Class I areas that may be affected by the source or modification.
- (2) On or after Jan. 1, 2003, the owner or operator of a source must meet the following requirements:
  - (a) For each regulated pollutant, a single source impact analysis is sufficient to show compliance with PSD increments if modeled impacts from emission increases equal to or greater than an SER above the netting basis due to the proposed source or modification being evaluated are demonstrated to be less than the Class I significant impact levels specified in title 12, Table I. If this requirement is not satisfied, the owner or operator must complete a competing source analysis to demonstrate that the increased source impacts above baseline concentration plus competing PSD increment consuming source impacts are less than the PSD Class I increments for all averaging times.
  - (b) For each regulated pollutant, a single source impact analysis is sufficient to show compliance with AAQS if modeled impacts from emission increases equal to or greater than an SER above the netting basis due to the proposed source or modification being evaluated are demonstrated to be less than the Class I significant impact levels specified in title 12, Table 1. If this requirement is not satisfied, the owner or operator must complete a competing source analysis to demonstrate compliance with the AAQS by showing that its total modeled impacts plus total modeled competing source impacts plus general background concentrations are less than the AAQS for all averaging times.
  - (c) The owner or operator also must demonstrate that the proposed source or modification will not cause or contribute to a new violation of an ambient air quality standard or PSD increment even if the single source impact is less than the significant impact levels under paragraphs (a) and (c), in accordance with 50-055, Table 1 or OAR 340-202-0210, whichever is more current.
- (3) Any analyses performed under this section must be done in compliance with 40-0030 and 40-0040, as applicable.

**Section 40-0070 Requirements for Demonstrating Compliance with Air Quality Related Values Protection**

- (1) Sources that are not federal major sources are exempt from the requirements of this section.
- (2) When directed by title 38, the requirements of this section apply to each emissions unit that increases the actual emissions of a regulated pollutant above the portion of the netting basis attributable to that emissions unit.
- (3) LRAPA must provide notice of permit applications involving AQRV analysis to EPA and Federal Land Managers as follows:
  - (a) If a proposed major source or major modification could impact air quality related values, including visibility, deposition, and ozone impacts within a Class I area, LRAPA will provide written notice to EPA and to the appropriate Federal Land Manager within 30 days of receiving such permit application. The notice will include a copy of all information relevant to the permit application, including analysis of anticipated impacts on Class I area air quality related values. LRAPA will also provide at least 30 days notice to EPA and the appropriate Federal Land Manager of any scheduled public hearings and preliminary and final actions taken on the application;
  - (b) If LRAPA receives advance notice of a permit application for a source that may affect Class I area visibility, LRAPA will notify all affected Federal Land Managers within 30 days of receiving the advance notice;
  - (c) During its review of source impacts on Class I area air quality related values, pursuant to this rule, LRAPA will consider any analysis performed by the Federal Land Manager that is received by LRAPA within 30 days of the date that LRAPA sent the notice required by paragraph (a). If LRAPA disagrees with the Federal Land Manager's demonstration, LRAPA will include a discussion of the disagreement in the Notice of Public Hearing;
  - (d) As a part of the notification required in 31-0060, LRAPA will provide the Federal Land Manager an opportunity to demonstrate that the emissions from the proposed source or modification would have an adverse impact on air quality related values, of any federal mandatory Class I area. This adverse impact determination may be made even if there is no demonstration that a Class I PSD increment has been exceeded. If LRAPA agrees with the demonstration, it will not issue the permit.
- (4) Visibility impact analysis requirements:
  - (a) If title 38 requires a visibility impact analysis, the owner or operator must demonstrate that the potential to emit any regulated pollutant at an SER in conjunction with all other applicable emission increases or decreases, including secondary emissions, permitted since January 1, 1984 and other increases or decreases in emissions, will not cause or contribute to significant impairment of visibility on any Class I area.
  - (b) The owner or operator must conduct a visibility analysis on the Columbia River Gorge National Scenic Area if it is affected by the source;
  - (c) The owner or operator must submit all information necessary to perform any analysis or demonstration required by these rules.

- (d) Determination of significant impairment: The results of the modeling must be sent to the affected Federal Land Managers and LRAPA. The land managers may, within 30 days following receipt of the source's visibility impact analysis, determine whether or not significant impairment of visibility in a Class I area would result. LRAPA will consider the comments of the Federal Land Manager in its consideration of whether significant impairment of visibility in a Class I area will result. If LRAPA determines that significant impairment of visibility in a Class I area would result, it will not issue a permit for the proposed source.
- (5) In consultation with the Federal Land Managers under FLAG, LRAPA may require a plume blight analysis or regional haze analysis, or both.
- (6) Criteria for visibility impacts:
  - (a) The owner or operator of a source, where required by title 38, is encouraged to demonstrate that its impacts on visibility satisfy the guidance criteria as referenced in the FLAG.
  - (b) If visibility impacts are a concern, LRAPA will consider comments from the Federal Land Manager when deciding whether significant impairment will result. Emission offsets may also be considered. If LRAPA determines that significant impairment of visibility in a Class I area would result, it will not issue a permit for the proposed source.
- (7) Deposition modeling may be required for receptors in PSD Class I areas and the Columbia River Gorge National Scenic Area where visibility modeling is required. This may include, but is not limited to an analysis of nitrogen deposition and sulfur deposition.
- (8) Visibility monitoring:
  - (a) If title 38 requires visibility monitoring data, the owner or operator must use existing data to establish existing visibility conditions within Class I areas as summarized in the FLAG Report.
  - (b) After construction has been completed the owner or operator must conduct such visibility monitoring if LRAPA requires visibility monitoring as a permit condition to establish the effect of the regulated pollutant on visibility conditions within the impacted Class I area.
- (9) Additional impact analysis: The owner or operator subject to 38-0060(2) or 38-0070(3) must provide an analysis of the impact to visibility that would occur as a result of the proposed source or modification and general commercial, residential, industrial, and other growth associated with the source.
- (10) If the Federal Land Manager recommends and LRAPA agrees, LRAPA may require the owner or operator to analyze the potential impacts on other Air Quality Related Values and how to protect them. Procedures from the FLAG report must be used in this recommendation. Emission offsets may also be used. If the Federal Land Manager finds that significant impairment of visibility in a Class I area would result from the proposed activities and LRAPA agrees, LRAPA will not issue a permit for the proposed source.



- (11) Any analyses performed under this section must be done in compliance with 40-0030 and 40-0040, as applicable.