

Chapter 7 Emission Inventory

7.1 Overview

The RHR at §51.308(d)(4)(v) requires a statewide emissions inventory of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any mandatory Class I area. An inventory was developed for the baseline year 2002 and projected to 2018. The pollutants inventoried include VOCs, NO_x, PM_{2.5}, coarse particulate (PM₁₀), NH₃ and SO₂.

The emissions inventory (EI) identifies the types of emission sources present in an area, the amount of each pollutant emitted, and the types of processes and control devices employed at each plant or source category. The EI provides data for a variety of air quality planning tasks, including establishing baseline emission levels, calculating emission reduction targets, developing control strategy for achieving the required emission reductions, emissions inputs into air quality simulation models, and tracking actual emission reduction against the established emissions growth and control budgets. The total anthropogenic inventory of emissions of VOC and NO_x for an area is summarized from the estimates developed for four general categories of emissions sources: point, non-point, on-road mobile, and non-road mobile. The complete base year inventory (BYI) for 2002 can be found at <http://www.deq.louisiana.gov/portal/tabid/2542/Default.aspx>.

7.2 Point Sources

The State of Louisiana compiles a statewide EI for point sources on an annual basis. The reporting requirements for the nonattainment area are in accordance with those of the CAA of 1990. Emissions data provided by the facilities are estimates of actual emissions for the facility during the previous calendar year. Estimation methodologies are required to follow state and federal guidelines utilizing AP-42 or other approved methods. Actual testing or measurement data must be substituted if available.

For the purposes of the EI, point sources are defined as stationary commercial or industrial operations that emit 100 tons or more per year of VOC or NO_x. Each facility meeting the emissions criteria submitted complete EI reports which contain site-specific data in conformance with EPA guidance for ozone maintenance areas.

7.3 Non-point Sources

Non-point sources, also known as area sources, are the many small, individually unidentified points of air pollution emissions within a specified geographical area. Typically these sources are too numerous or too small to be addressed individually and include, but are not limited to, activities such as dry cleaning, bakeries, graphic arts, auto refinishing, and consumer product usage. Emission factors used to estimate emissions are developed and applied for the aggregate source categories.

The data used for this section was provided by E.H. Pechan & Associates, Inc. through the CENRAP. The methodology for the stationary non-point source section can be found in Section C, page 26, of the *Consolidation of Emissions Inventories (Schedule 9; Work Item 3)* Appendix D of the 2002 BYI at <http://www.deq.louisiana.gov/portal/Default.aspx?tabid=2542>

7.4 On-road Mobile Sources

On-road mobile vehicles are those light and heavy duty gasoline and diesel automobiles and trucks that travel primarily on public highways. On-road mobile emissions of VOC and NO_x were estimated using EPA's MOBILE6.2 motor vehicle emissions factor model. Data and projections are based on Highway Performance Monitoring System (HPMS) data from the annual US Highway Statistics Report Section V. These can be found in Appendix J of the 2002 BYI at <http://www.deq.louisiana.gov/portal/Default.aspx?tabid=2542>

7.5 Non-road Mobile Sources

Non-road mobile sources are often included as non-point sources because of the number and size of sources. Non-road mobile sources include, but are not limited to, railroad locomotives, aircraft, commercial marine vessels, farm equipment, recreational boating, and lawn equipment.

Non-road mobile emissions data was derived from the "Emission Inventory Development for Mobile Sources and Agricultural Dust Sources for the Central States" produced by Sonoma Technology, Inc. for CENRAP in October 2004¹. The inventory was developed using NONROAD 2004, which is EPA's most current emissions factor model

¹ <http://www.deq.louisiana.gov/portal/Default.aspx?tabid=2542>

for most non-road mobile sources. For other source categories, NONROAD default activity data were used in conjunction with region specific fuels information to estimate emissions. In addition, EPA guidance documents were consulted for emissions estimation methods for locomotives and commercial marine vessels. These can be found in Appendix G of the BYI at <http://www.deq.louisiana.gov/portal/Default.aspx?tabid=2542>

7.6 Biogenic Emission Sources

Biogenic emissions were prepared with the SMOKE-BEIS3 (Biogenic Emission Inventory System 3 version 0.9) preprocessor. SMOKE-BEIS3 is a modified version of the Urban Airshed Model (UAM)-BEIS3 model. Modifications include use of MM5 data, gridded land use data, and improved emissions characterization. The emission factors that are used in SMOKE-BEIS3 are the same as the emission factors as in the Biogenic Emissions Landcover Database version 3 (BELD3) provided by EPA. A separate land classification scheme, based upon satellite (AVHRR, 1km spatial resolution) and census information, aided in defining the forest, agriculture and urban portions of each county.

A full discussion of the emissions inventories can be found in Chapter 2 of the Technical Support document (Appendix B) and a list of files names, data source and type, and a description of emissions used in the 2002 typical and 2018 Base G emissions inventories can be found in Appendix B of the same document. The 2002 emissions were grown to 2018 primarily using EGAS6, MOBILE6, and IPM for electric generating units (EGUs). A summary of the 2002 and 2018 emissions can be found in tables 7.1 and 7.2:

Table 7.1
2002 Emissions Inventory Summary

	VOC	NOX	PM 2.5	PM 10	NH3	SO2	CO
Point	89,025	312,634	60,899	73,333	9,237	286,050	285,395
Area	124,311	99,060	84,068	245,162	75,381	81,153	530,135
Non-Road	109,598	117,250	9,791	10,663	563	14,324	549,031
On-Road	64,643	15,137	2,689	3,563	3,748	4,653	899,355
Totals	387,577	544,081	157,447	332,721	88,929	386,180	2,263,916

Source 2002 Base Year Inventory/Pechan

Table 7.2
2018 Emissions Inventory Summary

	VOC	NOX	PM 2.5	PM 10	NH3	SO2	CO
Point	187,741	269,215	60,899	73,136	14,435	354,087	189,973
Area	117,600	114,374	14,536	16,936	36,896	87,538	70,116
Non-Road	64,294	106,685	7,955	8,670	72	11,584	552,246
On-Road	30,340	44,806	1,191	1,191	5,436	561	554,692
Totals	399,975	535,080	84,581	99,933	56,839	453,770	1,367,028

Source CENRAP Technical Support Document

