

**TEXAS 2005 PERIODIC EMISSIONS INVENTORY
AREA, AND NONROAD MOBILE SOURCES**

for

Ozone Nonattainment Areas

**Houston/Galveston
Beaumont/Port Arthur
Dallas/Fort Worth
El Paso**

Carbon Monoxide Nonattainment Area

El Paso

Consolidated Emissions Inventory

Statewide

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2005 Emissions Inventory

In accordance with the Environmental Protection Agency's (EPA) Consolidated Emissions Reporting Rule (CERR) the Texas 2005 Periodic Emissions Inventory (PEI) has been developed for reactive volatile organic compounds (VOC), oxides of nitrogen (NO_x), carbon monoxide (CO), particulates (PM₁₀) and (PM_{2.5}), sulfur dioxide (SO₂), and ammonia from area, and non-road mobile sources. As directed by the CERR the areas covered by the PEI includes statewide coverage as well as the four ozone nonattainment areas in Texas: Houston/Galveston, Beaumont/Port Arthur, Dallas/Fort Worth, and El Paso. In addition the El Paso county CO nonattainment area and the statewide Toxics emissions inventory are incorporated in this report. Emissions are reported on an annual basis as well as a daily basis representing a typical peak weekday averaged over the peak season.

Area Sources

The 2005 Area Source PEI was developed by growing the latest revised 2002 emissions inventory. The final version of the 2002 EI was compiled from several projects which improved the inventory. These are discussed below.

Growth Factor Development

Under contract new emission factors for area sources were developed. Data from the Regional Economic Models, Inc. (REMI) and Economy.com, a provider of economic analysis and forecasting information were used as inputs to the EPA's Economic Growth Analysis System (EGAS), version 5.0. The results were updated sets of growth factors to be used in developing the 2005 PEI.

Non-road Mobile Sources

The new NONROAD model developed for Texas (discussed below) was used to generate the 2005 EI for the sources covered by the model. The new Texas model uses the EPA NONROAD, version 2005, with updated activity data for specific Texas counties and sources.

Growth factors for the three categories not included in NONROAD—locomotives, aircraft, and commercial marine vessels—were developed to grow these source's emissions to 2005. The growth factors were developed using fuel data differences from 2002 to 2005. This data came from the Energy Information Administration. In addition, a contractor is developing improved growth factors for these categories. These will be available after August 31, 2007.

Final 2002 Emissions Inventory

The 2002 EI continued to be updated throughout 2006. Some of the work was performed under contracts which did not expire until August, 2006. However, the results of these updates and amendments produced a higher quality inventory.

Area Sources

Since the 2005 EI was grown from the 2002 EI, it is important to discuss the updates to the 2002. Some of the more significant projects which updated the area source EI are discussed here.

Stage II and Onboard Canisters – VOC Emissions from gas stations with Stage II controls were adjusted to account for emission reductions from the on-board canisters in new automobiles.

Stage I and Stage II EI – The gas station EI was updated using survey data collected by contractor on actual gasoline throughput at individual gas stations.

Gas Production Compressors – Three major projects contributed to improving the EI for compressors. These included conducting surveys of sites and actual testing of compressor engines to establish emission factors for EI calculations.

Non-road Mobile Sources

NONROAD Model – A “Texas Version” of the NONROAD model was developed by contractor, providing a county-level and aggregated regional emissions inventory. This included area-specific equipment populations, activities, growth, and temporal allocation files. In addition, this version of NONROAD was updated to include NH₃ emission factors for the different engine fuel types.

Non-road Mobile Equipment Populations – Surveys of equipment populations and other data on populations were collected on selected categories of non-road mobile equipment. The data was used to update the NONROAD model, replacing default data. These projects affected the following categories: diesel construction equipment, industrial equipment: cranes, forklifts, terminal tractors, and transportation refrigeration units.

Locomotives – A model was developed by contractor to calculate emissions from locomotives. The Texas Railroad Emission Inventory Model (TREIM) estimates and spatially allocates locomotive emissions. Inputs to the model include fuel use rates and train type and counts. An important attribute of this model is the geographic information system (GIS) component. The railroad companies submitted their railway activity data with segment identification codes, that were matched to railway segments in GIS shape files developed for this model. The advantage to having the railway activity and emissions data available in a GIS format is that emissions can be calculated at the segment level and viewed at a sub-county level.

Commercial Marine Vessels (CMV) – Over the past years there have been survey projects which updated the CMV EI. Two affecting the 2002 EI were a contracted project which estimated emissions from various shipping in the Texas state waters in the Gulf of Mexico. This included vessels associated with fishing, oil production support, pipe laying, dredging, and military operations. The second project estimates emissions from the “Routine Vessels” that visit the Port of Houston as part of their normal routes. It was determined that these vessels that return to the Port of Houston account for most of the emissions from ocean going vessels.

The 2005 Area and Non-road Mobile EIs benefited from all these updated projects focused on the 2002 EI.