

EPA Nonpoint Oil and Gas Emission Estimation Tool

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EPA Nonpoint Oil and Gas Emission Estimation Tool

- Access-based emissions estimation calculator
 - County-level activity data
 - County-level process characterization data
 - Emission factors
 - Generates county-level emission estimates by SCC
 - EIS export to National Emission Inventory (NEI)
- State application
 - Portable
 - User-defined inputs
- EPA application
 - Gapfill NEI where no state data available

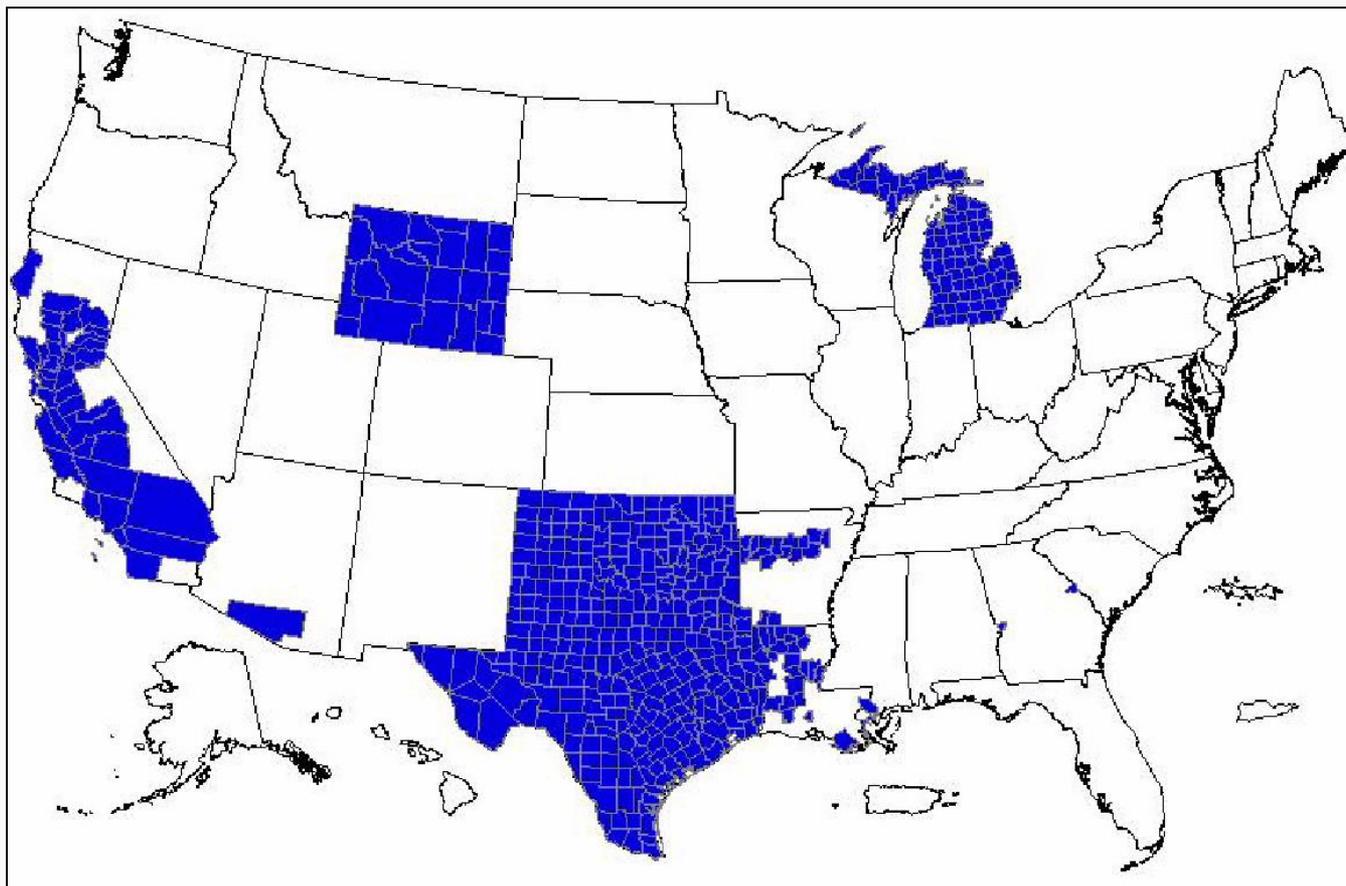


National Emission Inventory

- **Goals**
 - Complete
 - Best available information
 - Transparent
- **Triennial national emissions inventory**
 - Point sources (~100,000 facilities)
 - Nonpoint and mobile sources (county-process specific)
- **State, local, and tribal data**
 - CAA-based thresholds for point sources, states can go lower
- **States can voluntarily submit HAP and GHG data**
 - EPA augments to complete HAP inventory
 - Stationary source GHGs are not part of the official NEI



2008 NEI Nonpoint Oil and Gas





Nonpoint Estimate Needed

- ERTAC recognized need for development of national criteria and HAP emission estimates
 - First established for 2008 NEI
 - Purpose: Develop NEI methodologies for estimates
- Established National Oil and Gas Committee (2011)
 - OAQPS/EIAG, Westar/WRAP, MARAMA, CenSARA, LADCO, states
 - Prepared white paper regarding need for national estimates
 - EPA funding/resources became available to develop Tool in early 2012
- EPA Inspector General Report (February, 2013)
 - *“EPA Needs to Improve Air Emissions Data for the Oil and Natural Gas Production Sector”*
 - Concluded that “...the NEI likely underestimates oil and gas emissions”



Regulatory and Inventory Activity

- NSPS OOOO Revisions
 - Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution
 - Issued in 2012; updated in 2013 and 2014
- GHGRP Subpart W
 - Petroleum and Natural Gas Systems
 - Initial reporting for 2011
- WRAP oil and gas inventories
- CenSARA oil and gas inventories
- State oil and gas inventories (Texas, Wyoming, Pennsylvania)



Tool Project Objectives

- Tool development effort funded in early 2012
- Develop a nonpoint methodology to estimate CAPs and HAP emissions for 2011
- Implement methodology to develop county-level emission estimates
- Develop a tool using Microsoft® Access
- Make available to States and local agencies to develop emission inventories based on user supplied activity and emissions inputs



Tool Development

- Based on estimation methodologies developed by CenSARA
 - TX, OK, KS, NE, LA, AR, IA, MO
 - Basin level spatial resolution
 - Technical approaches were sound and based on new data
 - Data from operator surveys, permit reviews, literature reviews, the Climate Registry, and previous studies
- Expanded coverage to all states
 - Initially populated with process data averaged from the CenSARA basins
- National activity data compiled
 - DrillingInfo
 - State databases and websites



Covered Processes

- Artificial Lift Engines
- Associated Gas Venting
- Condensate Tanks
- Crude Oil Tanks
- Dehydrators
- Drilling Rigs
- Fugitive Emissions
- Gas-Actuated Pneumatic Pumps
- Heaters
- Hydraulic Fracturing Pumps
- Lateral Compressor Engines
- Liquids Unloading
- Hydrocarbon Liquids Loading
- Mud Degassing
- Pneumatic Devices
- Produced Water Tanks
- Well Completion Venting
- Wellhead Compressor Engines



Tool Structure

- **Access-based**
 - Portable
 - States can use tool independently, or provide data to EPA for inclusion
 - Handles large data sets
 - Combination of tables, queries, and macros
- **Generates county-level estimates**
 - SCC-specific (currently includes 51 SCCs)
 - Pollutant-specific
 - Annual estimates
- **User-specified geographic coverage**
- **User-specified source category coverage**



Tool Functionality Updates

- National Oil and Gas Committee review
- State user review
- Improved spatial resolution of process data to county level
- Separated coalbed methane wells
- Point source subtraction utility
- EIS data export function
- Addition of reference fields

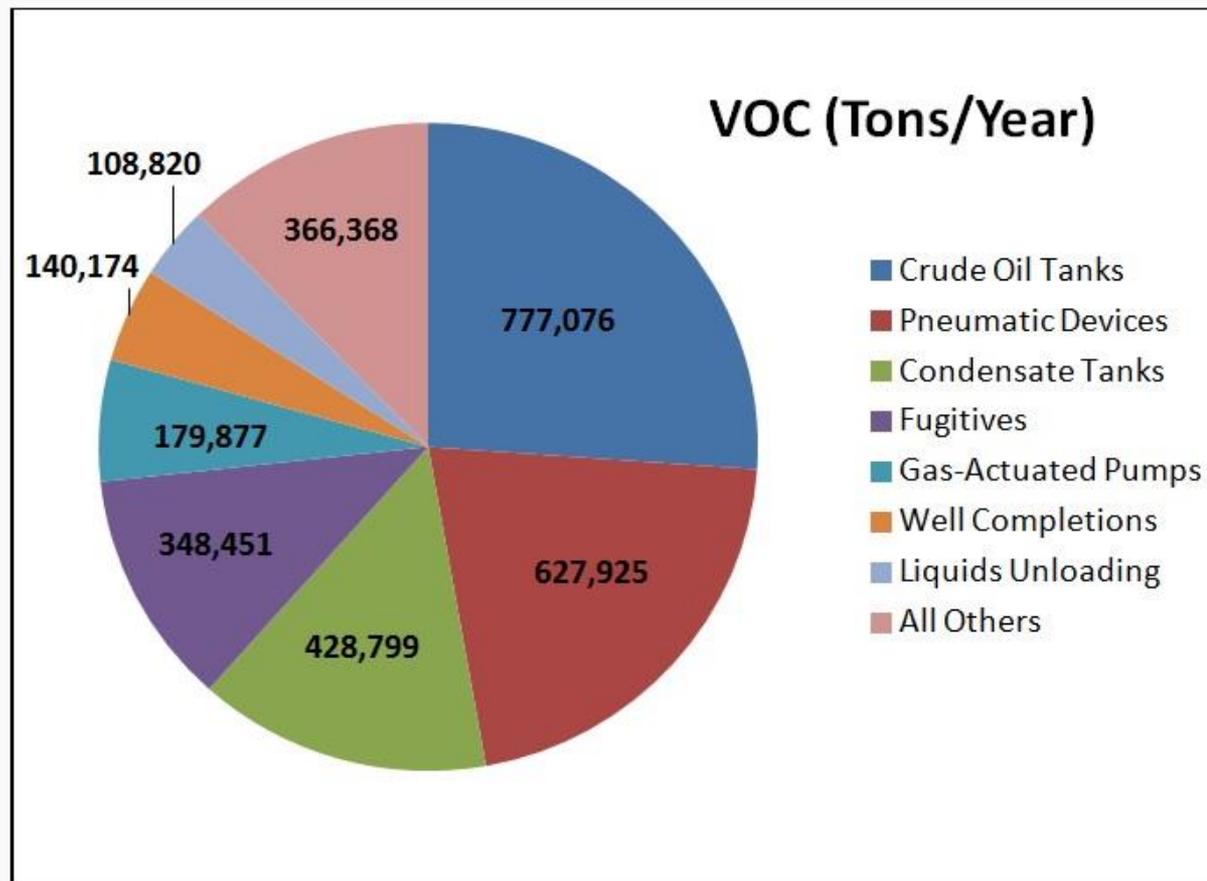


Tool Process/Activity Updates

- WRAP inventory efforts
 - Specific basins in CO, ND, NM, MT, UT, WY
- State input and review
 - KS, MI, ND, NM, NV, NY, OH, TX, UT, WV
- EPA inventory efforts
 - GHGRP Subpart W
 - National GHG EI
- EPA regulatory efforts
 - NSPS OOOO updates

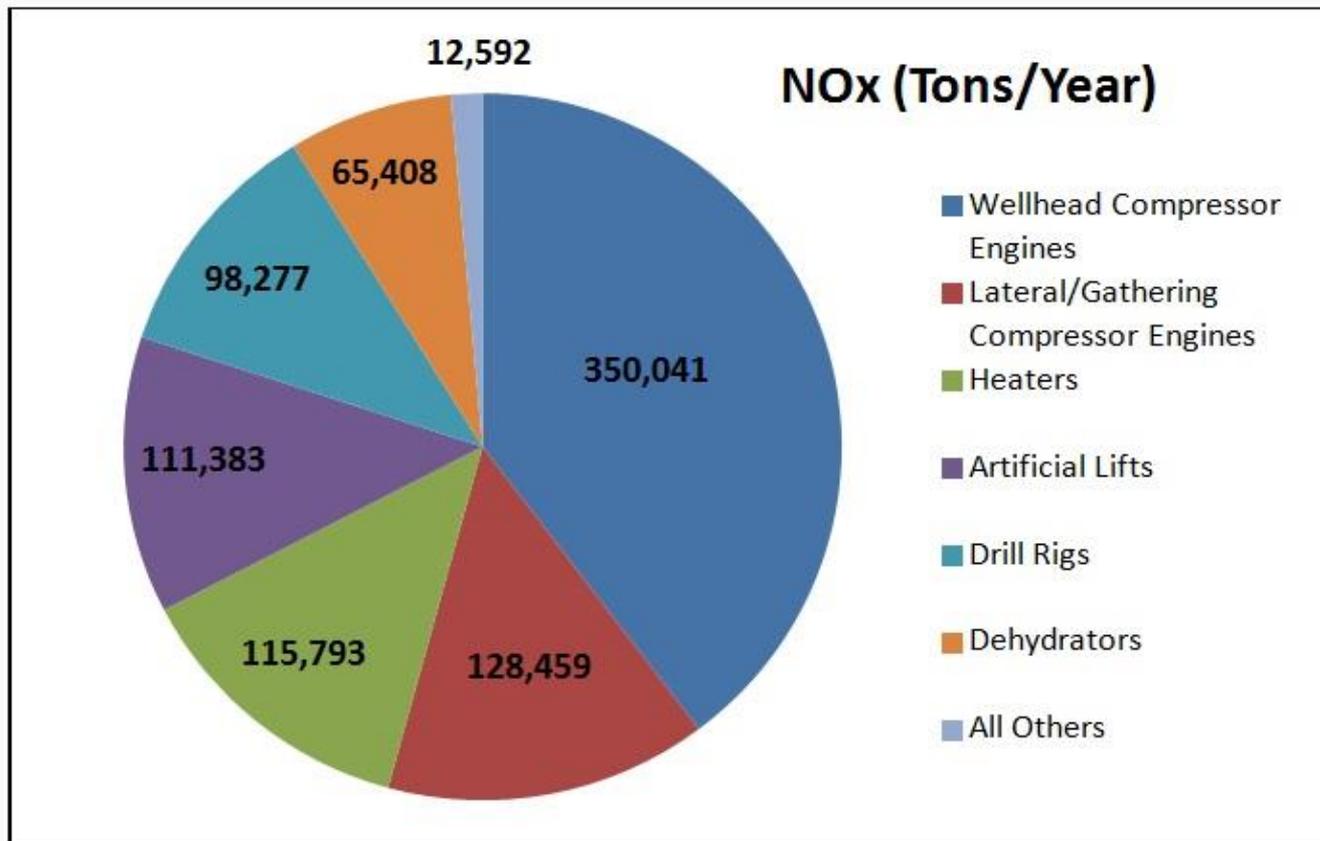


Tool Results



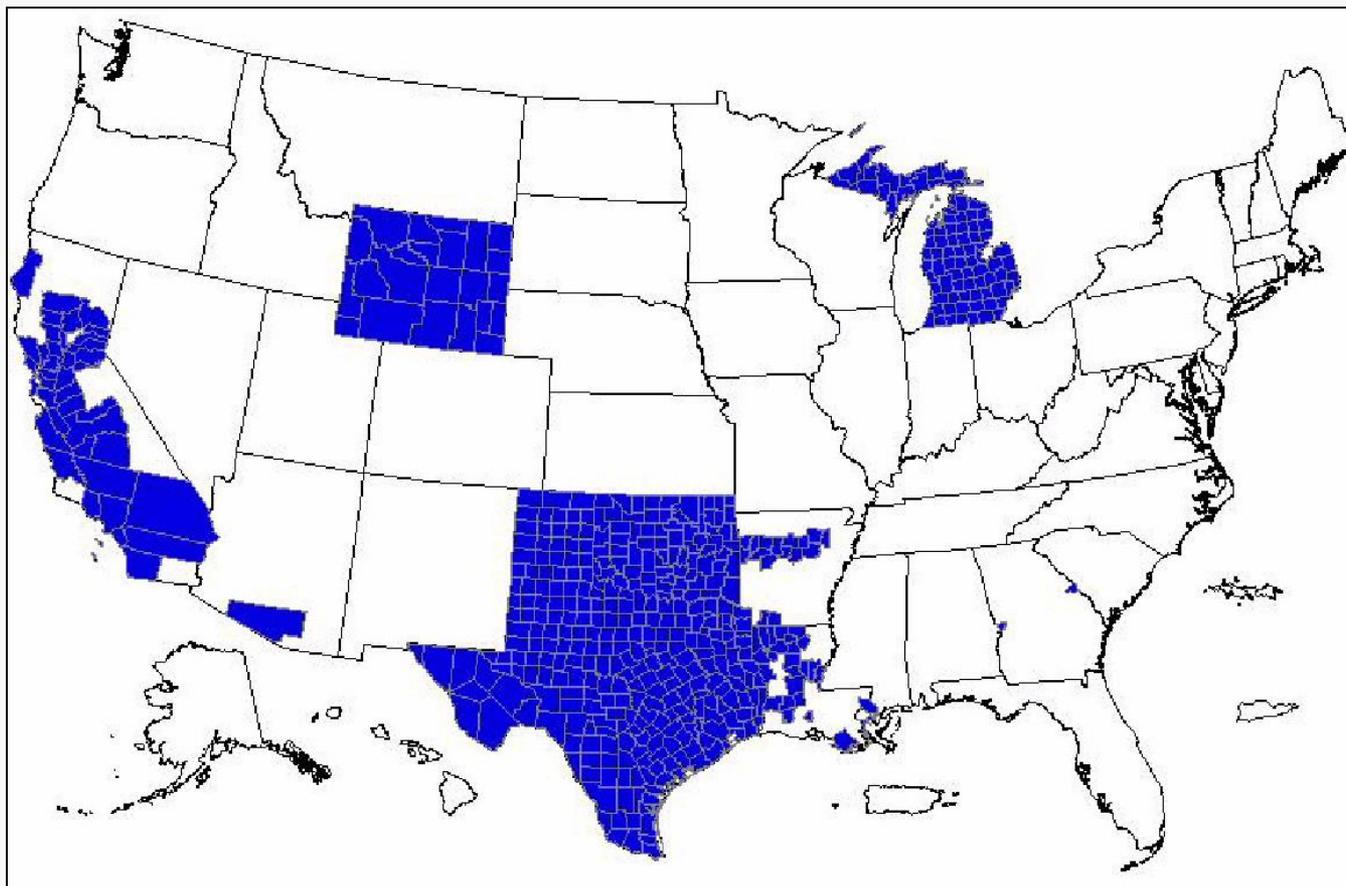


Tool Results



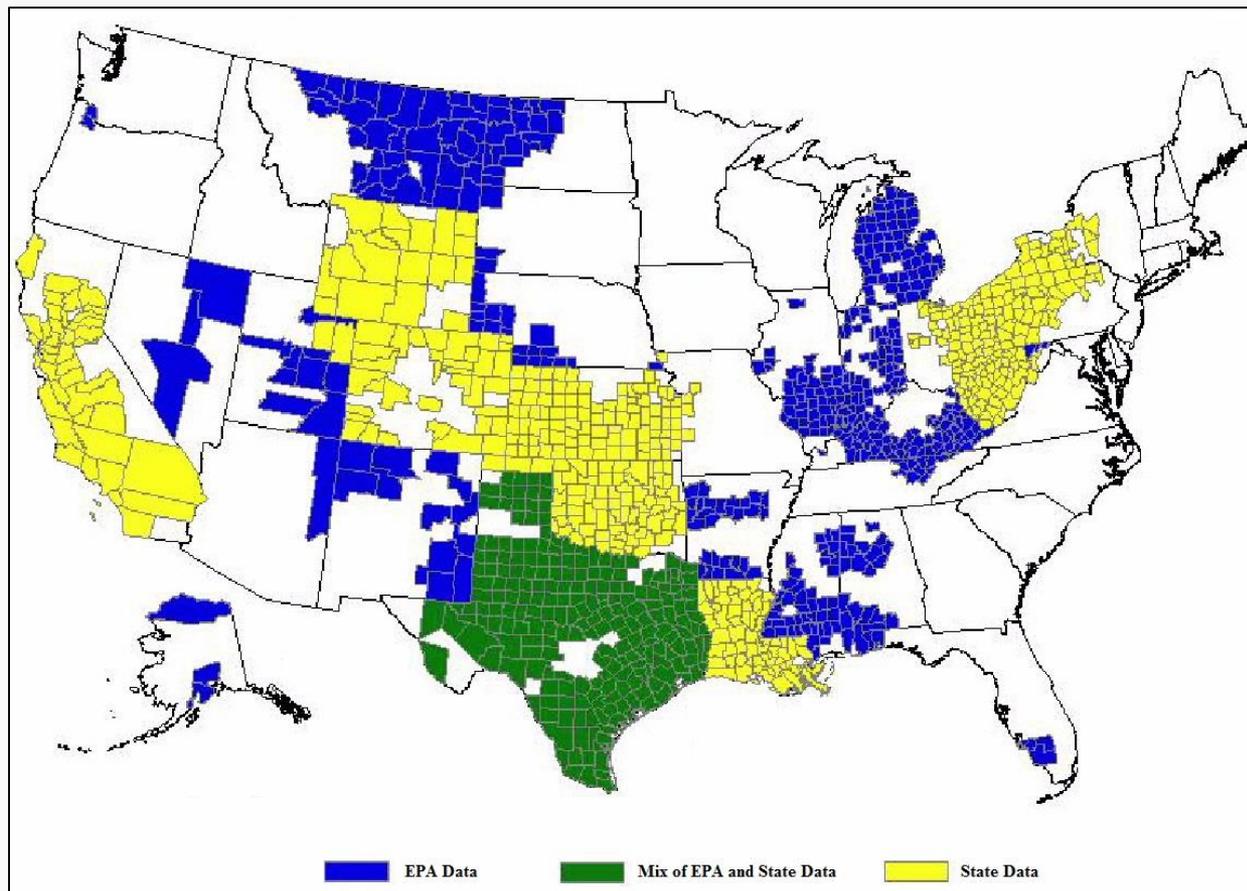


2008 NEI Nonpoint Oil and Gas





2011 NEI Nonpoint Oil and Gas





Next Steps

- Structural/Architectural updates
 - Enhanced user interface
 - Consolidation of gas composition profiles into a master table
 - Separation of exploration and production modules
- Incorporation of new data
 - GHGRP Subpart W
 - State data being compiled for 2014 NEI
- Addition of new categories
- Conventional and unconventional activity data
 - Currently only exploration
- Release of Version 1 of the 2014 NEI in Fall 2015



Questions?