

Southern Ute Indian Tribe 2017 Comprehensive Emissions Inventory

Four Corners Air Quality Group Meeting, 2018



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Goals of Calendar Year 2017

Comprehensive Emissions Inventory

- ▶ Estimate emissions of criteria pollutants, hazardous air pollutants (HAPs) and greenhouse gas (GHG) from all quantifiable activities on the Reservation for calendar year 2017
 - ▶ Emphasis on oil and gas emissions
- ▶ EPA Level II Inventory - Based on guidance provided by the EPA Emission Inventory Improvement Program
 - ▶ Specific data quality objectives for accuracy, completeness, representativeness, and comparability
 - ▶ Utilize measured data when available and reputable data sources when measured data not available
- ▶ Submittal of the emissions inventory to the EPA National Emission Inventory database

Emission Sources Included



- ▶ Oil and gas sources
 - ▶ Title V sources
 - ▶ Minor sources
 - ▶ Small, unpermitted sources
- ▶ Other Point and Non-point sources
 - ▶ Mobile
 - ▶ Landfills
 - ▶ Gravel Pits
 - ▶ Residential Heating
 - ▶ Airports
 - ▶ Gas Stations
 - ▶ Wildfires
 - ▶ Biogenic
 - ▶ Agricultural Burning



Utilization of Measured Data



- ▶ Inventory based on measured data specific to SUIT Reservation
 - ▶ Produced Water and Condensate Flash Liberation Sampling data collected in September 2016 (ratios of gas to water, gas to condensate)
 - ▶ Averaged extended natural gas analysis
 - ▶ Reported production data from Colorado Oil and Gas Conservation Commission
 - ▶ Actual equipment and activity counts from an information collection request



Oil and Gas Information Collection Request (ICR)



- ▶ An ICR was sent to all known operators on the Reservation on June 18th, 2018
- ▶ Issued under the Tribe's Clean Air Act Section 114 information collection request authority
- ▶ Microsoft Excel based
- ▶ 80-day return deadline
- ▶ Developed to be simple and yet collect the information necessary to calculate emissions



What Sources Were Subject to the Information Request?

The following oil and gas sources operating within the exterior boundaries of the Reservation:

- ▶ **Registered sources:** sources with emissions equal to or greater than the thresholds that require registration under the Tribal Minor New Source Review (TMNSR) program at 40 CFR Part 49.
- ▶ **Non-registered sources:** an oil and gas source with emissions below the thresholds that require registration under the TMNSR Program.

Tribal Minor New Source Review Program Emission Thresholds						
Pollutant	NOx	CO	SO ₂	PM	VOC	PM10
Emission Threshold (ton/yr)	10	10	10	10	5	5

Summary of Information Requested for Non-registered Sources



- ▶ Total Reservation-wide equipment counts for engines, dehydration units, heaters, boilers, tanks, and fugitive emissions components (not by source location)
- ▶ Number and duration of activities including compressor blowdowns, and well completion/re-completion venting
- ▶ Assumed values provided in ICR for various data values, equipment, activities, and production types
 - ▶ Operators provided opportunity to override assumed values with information more representative of their operations.

A Quick Example...



Engines				
Total number of engines operating at non-registered sources on the Southern Ute Indian Reservation:				
	Assumed	Operator Input		
Average Operating Hours:	8760		hrs/yr	
Average Brake Specific Fuel Consumption (BSFC): (Spark Ignition Engines)	7500		Btu/hp-hr	
Average Brake Specific Fuel Consumption (BSFC): (Compression Ignition Engines)	7000		Btu/hp-hr	
Please list the total number of natural gas-fired engines in each category below:				
	Spark-Ignited			
HP Range	2SLB (Nat Gas-Fired)	4SLB (Nat Gas-Fired)	4SRB (Nat Gas-Fired)	Diesel
0-50				
51-100				
101-200				
201-300				
301-400				
401-500				
501-600				
601-700				
701-800				
801-900				
901-1000				
1001+				

*Engines assumed to operate 24 hours per day for 365 days per year. Average BSFC from EPA AP-42 Chapter 3 and Caterpillar Gas Engine Rating Pro

Summary of Information Requested for Registered Sources



- ▶ AQP sent each operator a list of their company's most current information from the EPA TMNSR registration for reconciliation and updating
- ▶ Information requested on an emission unit basis
- ▶ Additional information requested for exempt emission units and pollutants:
 - ▶ Engines < 50 hp
 - ▶ Heaters <10 MMBtu/hr
 - ▶ HAP emissions
 - ▶ GHG emissions

Summary of ICR Return Rate



Calendar Year 2015 Emission Inventory

- ▶ ICR sent to 40 owner/operators
- ▶ 35 ICRs returned: 87.5% return rate

Calendar Year 2017 Emission Inventory

- ▶ ICR sent to 31 owner/operators
- ▶ 31 ICRs returned: 100% Return rate

Emissions Calculation Methods



- ▶ Oil and Gas
 - ▶ Title V, synthetic minor, and registered minor sources emissions directly from operator reported data
 - ▶ Non-registered oil and gas emissions calculated using AQP's Microsoft Excel based emission calculators and measured and reported data
 - ▶ Emission estimation software including EPA Tanks 4.09d and GRI-GLYCalc
- ▶ Point and Non-Point Sources
 - ▶ Emissions calculated using the appropriate emission estimation software or reputable emission factors and calculation methodologies
 - ▶ AQP scaled down emissions reported to 2014 NEI for La Plata and Archuleta counties to only include emissions on the Reservation

Quality Assurance Review



- ▶ Emissions Inventory validation by third party contractor, including:
 - ▶ Development of Quality Assurance Plan
 - ▶ Review of all data, data sources, engineering assumptions, emission factors, emission calculations, and final report
 - ▶ Advise AQP of deficiencies and recommended corrective mechanisms
 - ▶ Prepare QA/QC Report summarizing results of review to validate accuracy of emissions inventory
 - ▶ Review to be completed November 2018

Emission Inventory Completion Dates



- ▶ **November 2018**
 - Address changes suggested by third-party quality assurance review
- ▶ **January 2019**
 - Emissions Reported to National Emissions Inventory (NEI) Database
- ▶ **July 2019**
 - NEI data available to the public
- ▶ **September 2019**
 - Final Report available to public on Air Quality Program webpage



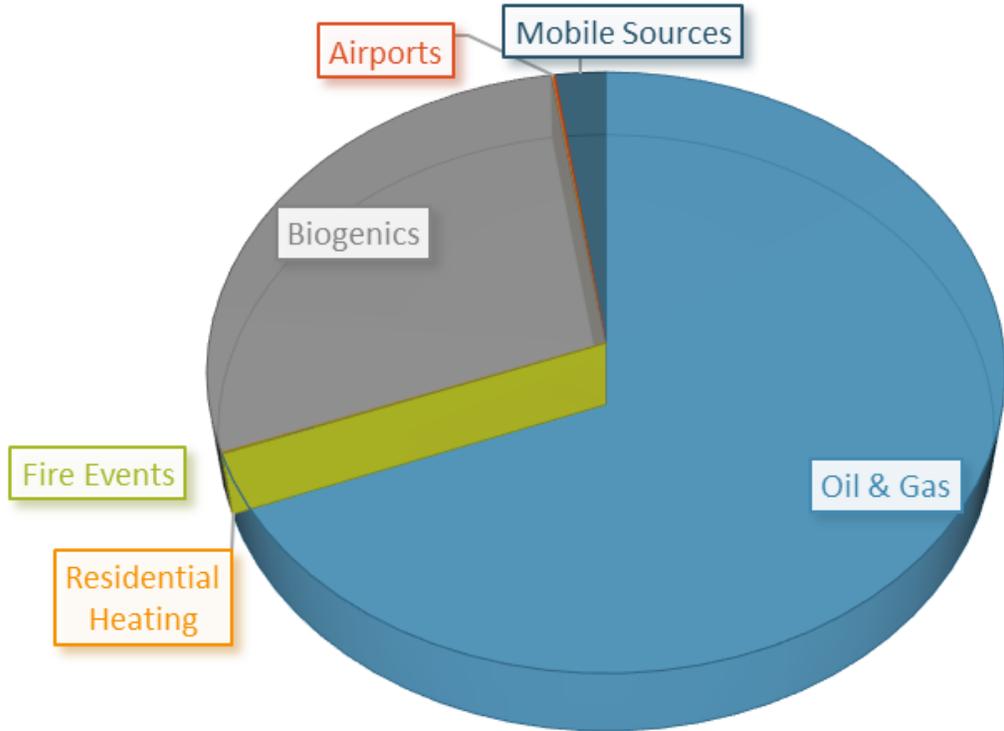
Preliminary Calendar Year 2017 Results - Oil and Gas Source Counts

Source Type	Facility Type	Amount
Title V	large natural gas compressor stations, central delivery points, treating plants	36
Synthetic Minor NSR Sources	natural gas compression facilities, natural gas treatment plants	6
Registered Minor Sources	natural gas and oil production well sites, central delivery points, water injection facilities, gravel pit	≈300
Non-Registered Minor Sources	gas and oil production well sites, municipal solid waste disposal facility, gas compression facilities, water injection sites	≈2600

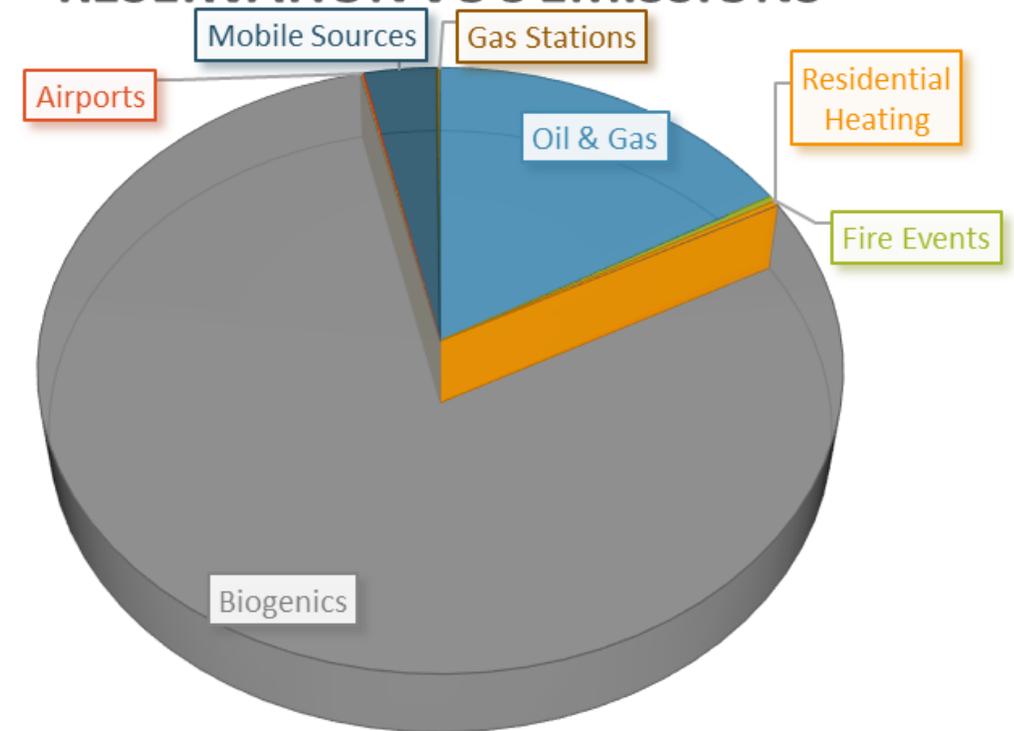
Preliminary Calendar Year 2017 Results - Reservation Wide NOx and VOC



RESERVATION NOx EMISSIONS



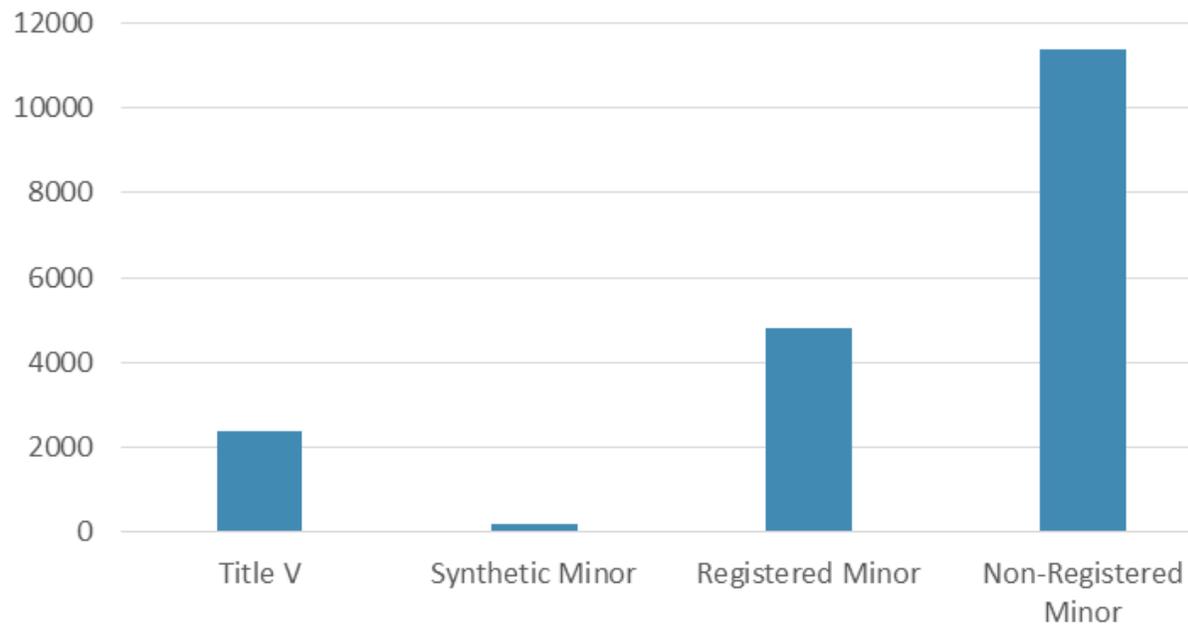
RESERVATION VOC EMISSIONS



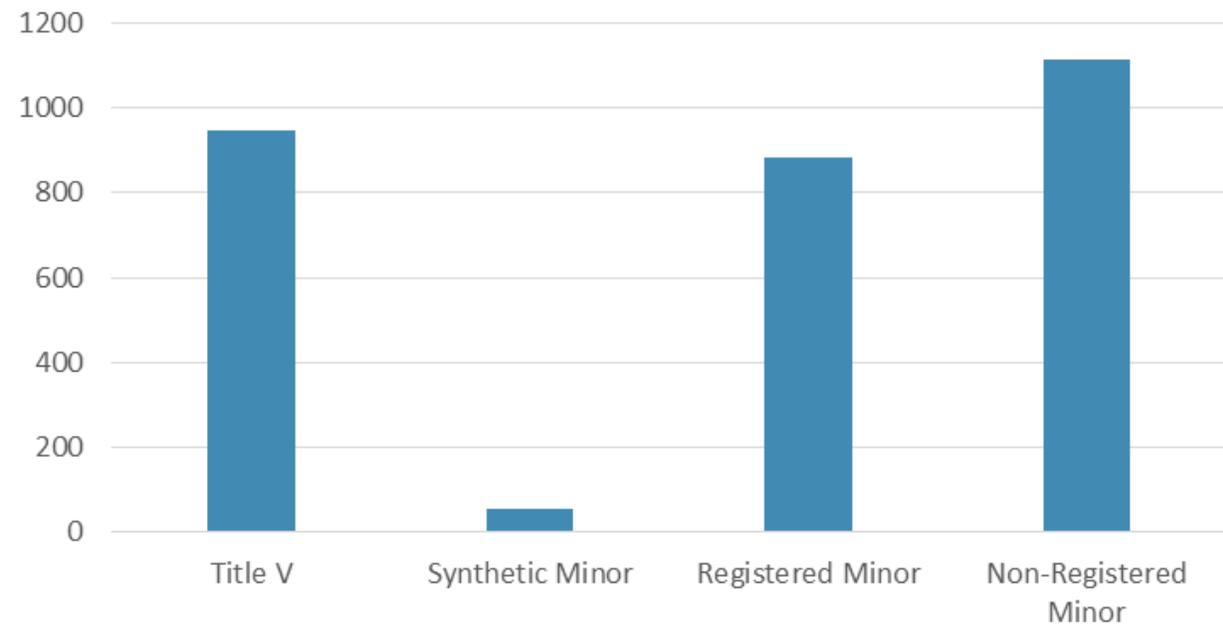
Preliminary Calendar Year 2017 Results - Oil and Gas Source NOx and VOC Comparison



Oil and Gas NOx Emissions (tons/year)



Oil and Gas VOC Emissions (tons/year)



For questions regarding the 2017 Comprehensive Emissions Inventory, please contact:



Oil and Gas Emissions

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Non-point Source Emissions and Final
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