

NEW MEXICO OZONE ATTAINMENT INITIATIVE

2014 and 2028 Emissions Development

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NM OAI Study Webinar

February 1, 2021

DEVELOPMENT OF 2028 MODELING EMISSIONS

01

Natural Emissions

02

Anthropogenic Emission Data Sources

03

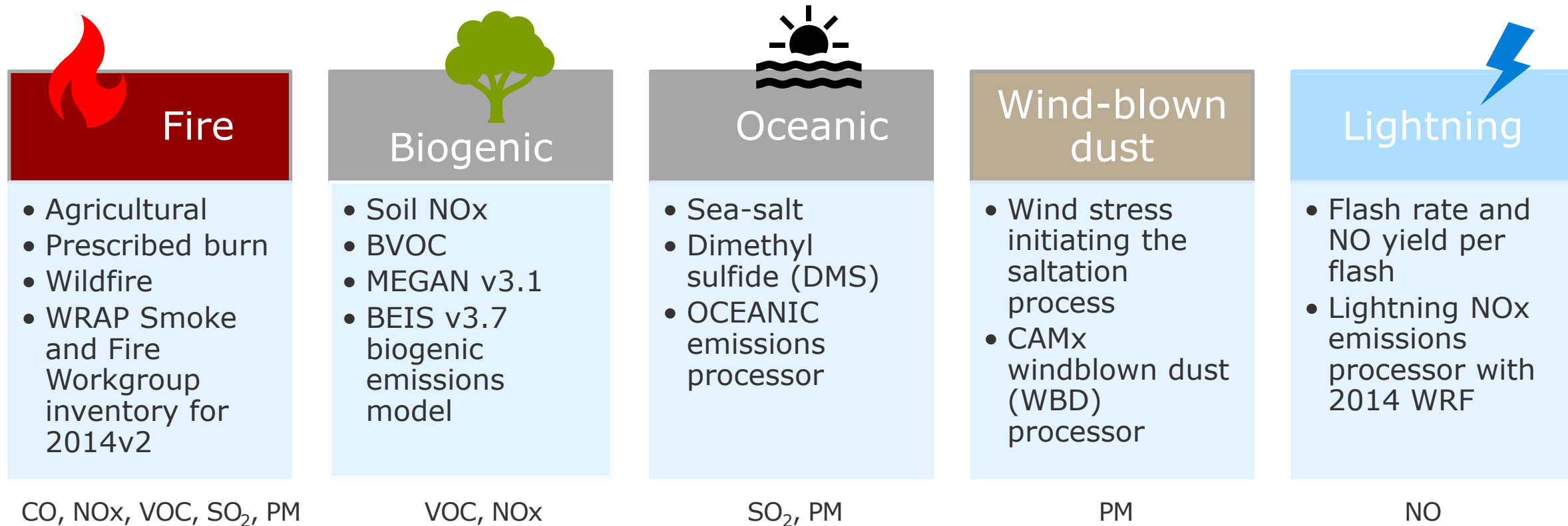
SMOKE Emissions Modeling

04

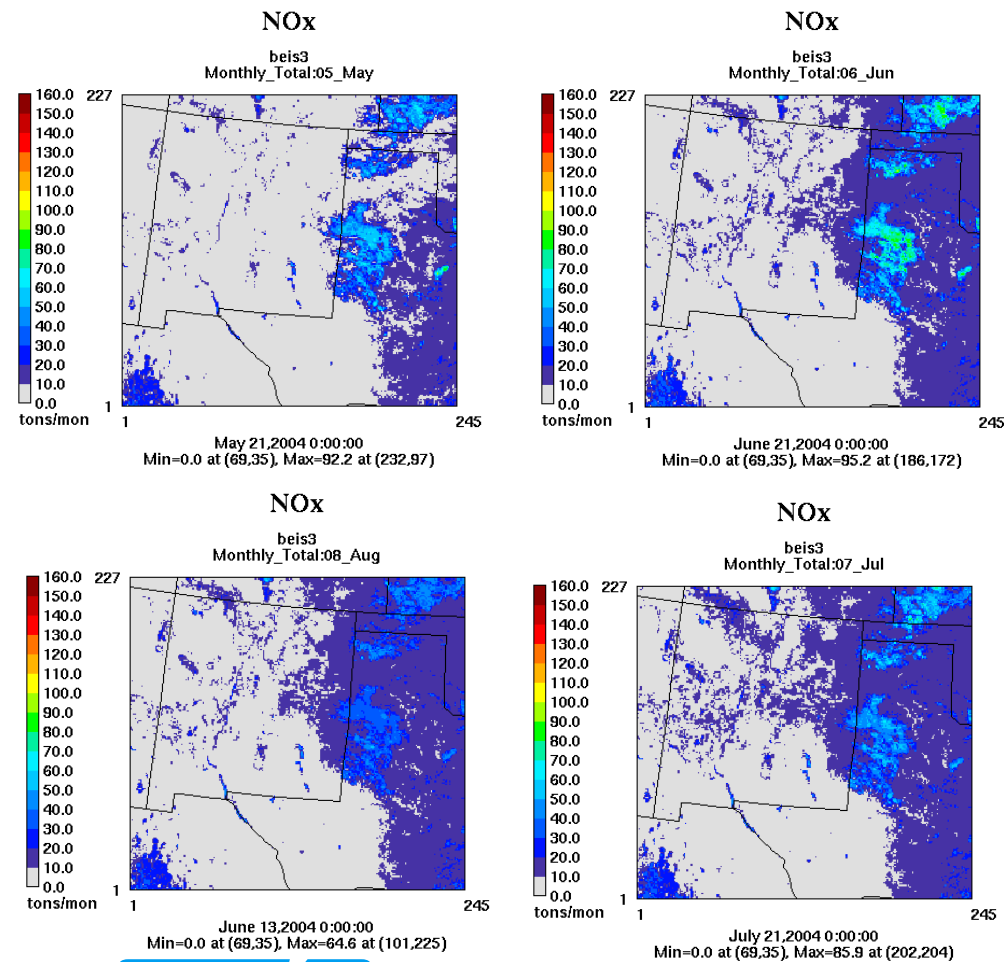
Summary of 2014 and 2028 Emissions

NATURAL EMISSIONS

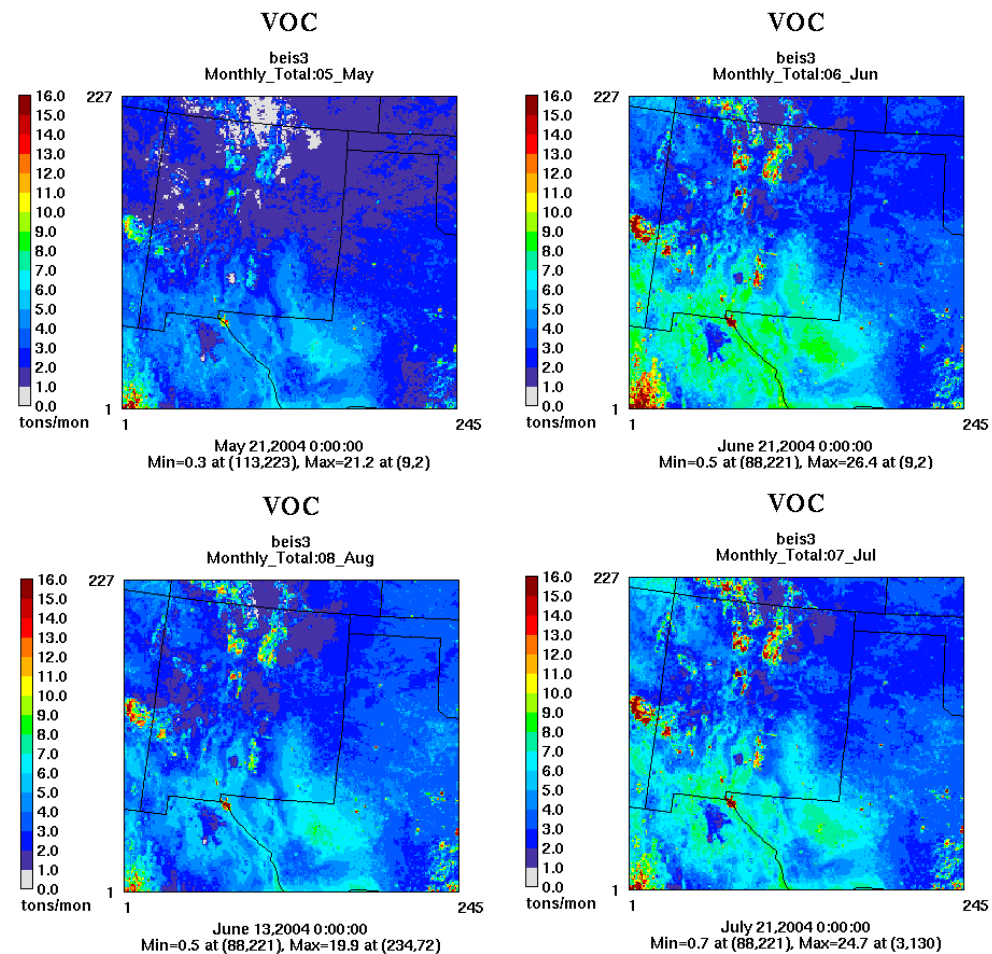
Remained the same between 2014 and 2028



BEIS V3.7 EMISSIONS



Tons/month		MEGAN	BEIS3	Abs Diff	Ratio
				(BEIS3-MEGAN)	(BEIS3/MEGAN)
May	NOX	35,050	10,602	-24,448	0.30
	VOC	128,323	159,809	31,486	1.25
Jun	NOX	42,445	13,134	-29,311	0.31
	VOC	267,055	256,379	-10,676	0.96
Jul	NOX	51,639	12,838	-38,801	0.25
	VOC	317,697	251,562	-66,135	0.79
Aug	NOX	41,002	11,923	-29,079	0.29
	VOC	354,570	216,032	-138,538	0.61



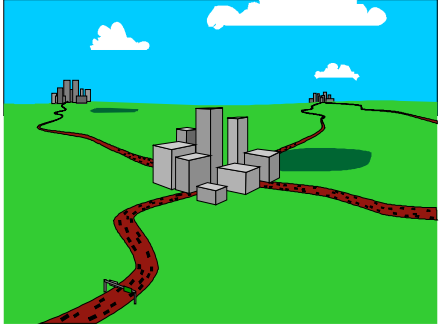
ANTHRO EMISSION DATA SOURCES



- 2014 anthropogenic emissions from 2014v2 scenario of the WRAP/WAQS RH modeling
 - Onroad emissions generated using SMOKE-MOVES processing for the 4-km domain
 - O&G emissions based on state-of-the-science WRAP OGWG emission estimates
 - NMED found a generator engine missing in 2014v2 inventory (94 tpy NO_x)
 - Consistent emissions data between the Regional Haze and OAI studies
- 2028 anthropogenic emissions based on the WRAP/WAQS 2028 on-the-books scenario (2028OTBa2 only with actual 2014 fires)
 - O&G emissions based on inventory developed by Ramboll (presented in Jan 11th meeting)
 - Onroad emissions created using SMOKE-MOVES
 - Fixed double counting of NM sources
 - Updated San Juan Generating Station (NO_x 7,391 TPY) and added Lordsburg Generating Station
 - Updated three O&G sources: Chaco Gas Plant (NO_x 2,053 tpy), Carlsbad CS, and Mountainair CS (NO_x 645 tpy)

EMISSION PROCESSING FOR AQM

Start With



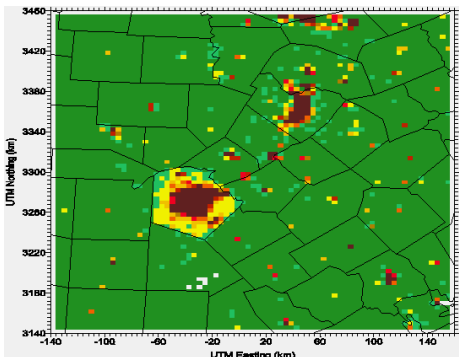
Annual Estimates (tons/year)

County Totals

Criteria Pollutants (NO_x, CO, VOC)



Model Ready



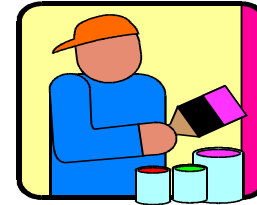
Hourly

Gridded

Speciated

Inventory Components

Total Inventory



Area



Points



Motor
Vehicles



Biogenics

EMISSION PROCESSING STEPS

Merge Components

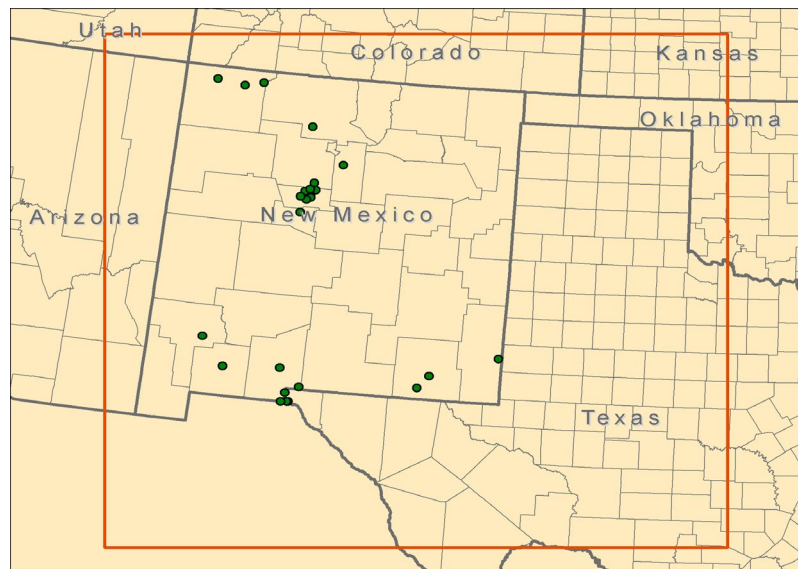
Model Inputs

SMOKE PROCESSING SECTORS

US-Anthro



Sector	Description
afdust_adj	- Area fugitive dust
ag	- Agricultural ammonia sources
nonpt	- Other nonpoint sources
np_oilgas_wrap	- Non-point Oil and Gas for 7 WRAP States (CO, MT, NM, ND, SD, UT, WY)
np_oilgas	- Non-point Oil and Gas
nonroad	- Non-road mobile
rail	- Locomotive
onroad	- On-road mobile
ptegu	- EGU point sources
ptnonipm	- Non-EGU point sources
pt_oilgas_wrap	- Point Oil and Gas for 7 WRAP States (CO, MT, NM, ND, SD, UT, WY)
pt_oilgas_wrap	- Point Oil and Gas
rwc	- Residential Wood Combustion



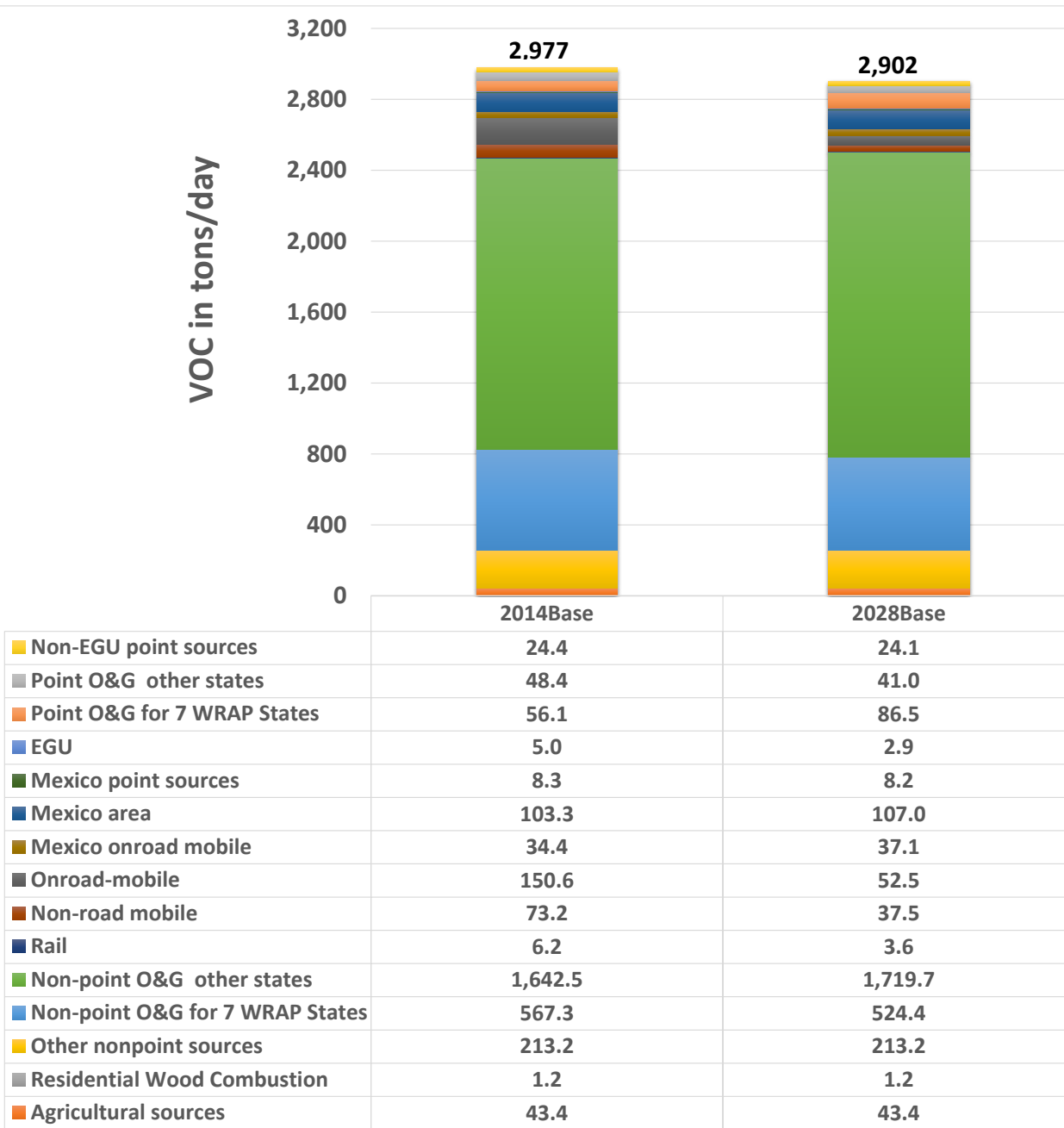
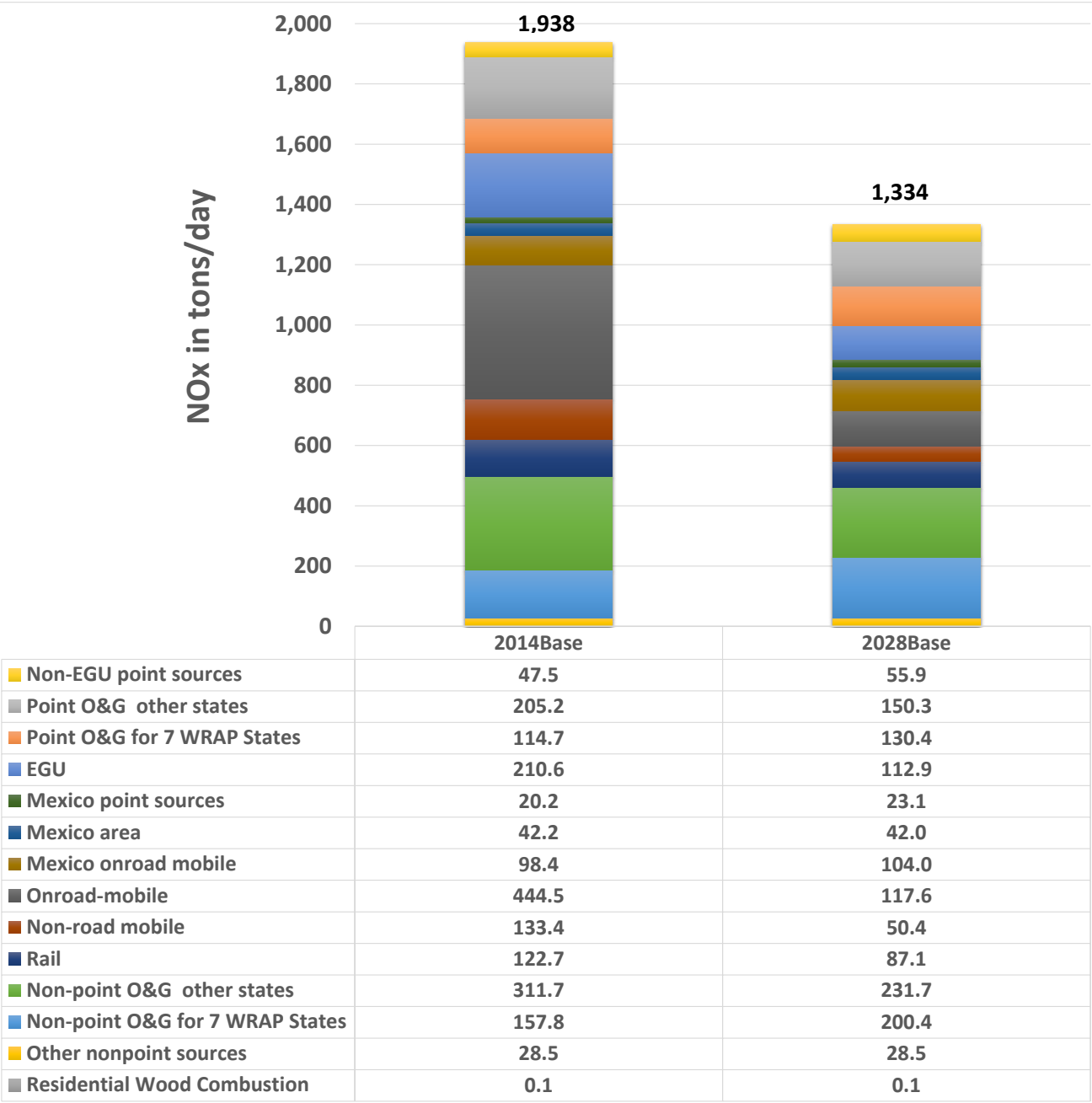
New Mexico 4-km Domain

Non-US Anthro & Natural

Sector	Description
onroad_mex	- Mexico onroad mobile
othar	- Mexico area
othpt	- Mexico point sources
MEGAN/BEIS	- Biogenic
LtNOx	- Lightning Nox
AG fire	- Ag Fire
RX fire	- Prescribed Fire
WF fire	- Wild Fire
Ptfire_othna	- Mexico fire
WBD	- Windblown Dust

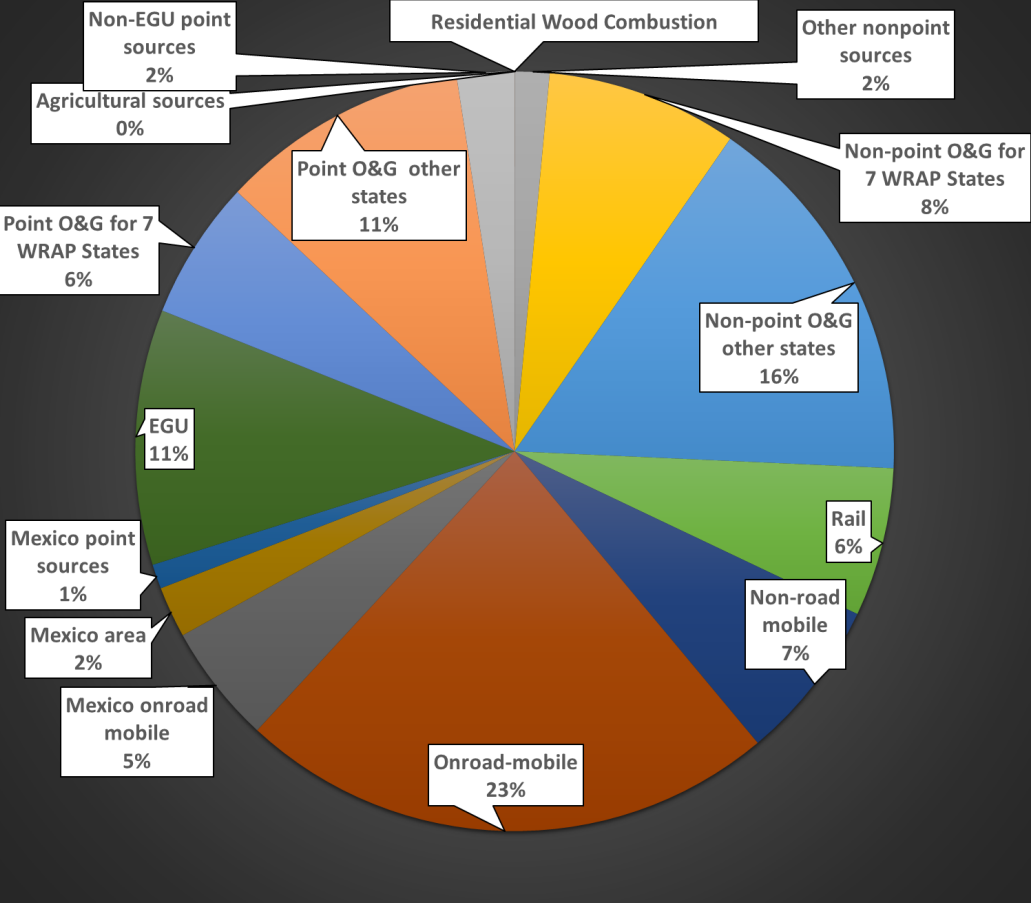


NEW MEXICO 4-KM EMISSIONS COMPARISON:



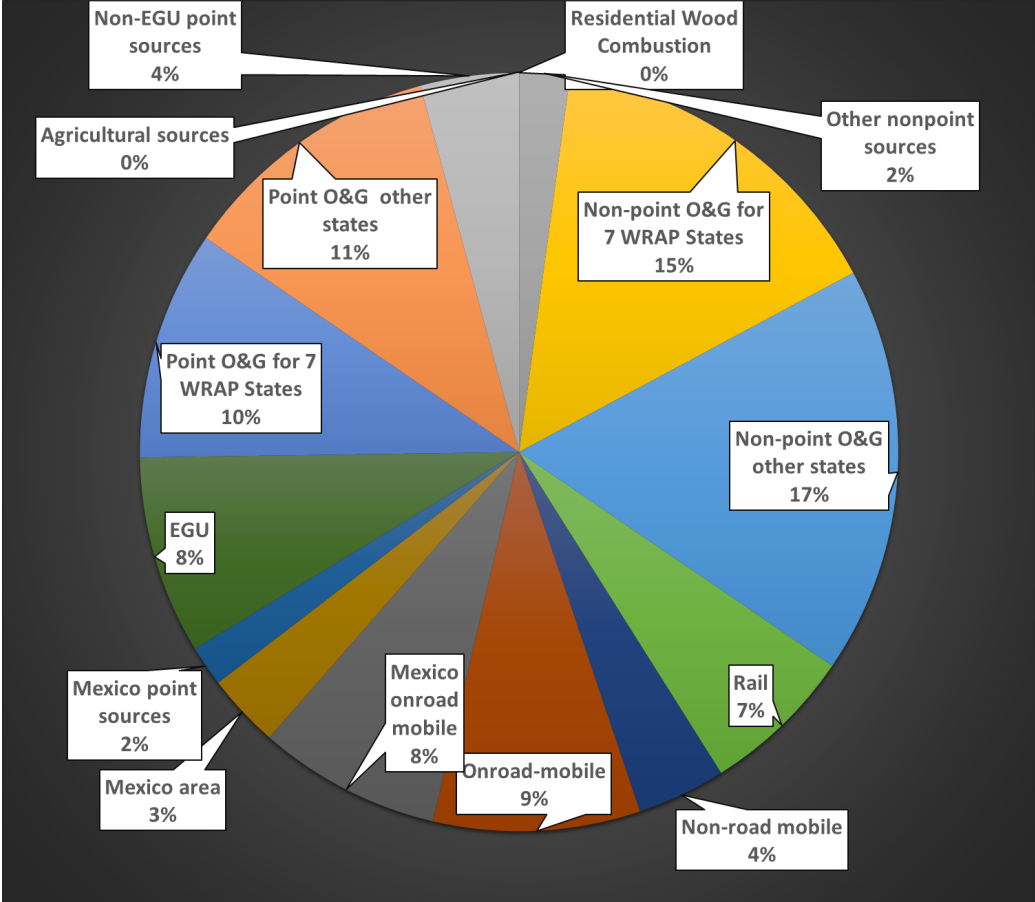
NEW MEXICO 4-KM NOx COMPARISON

2014 NOx



1,938 TPD

2028 NOx

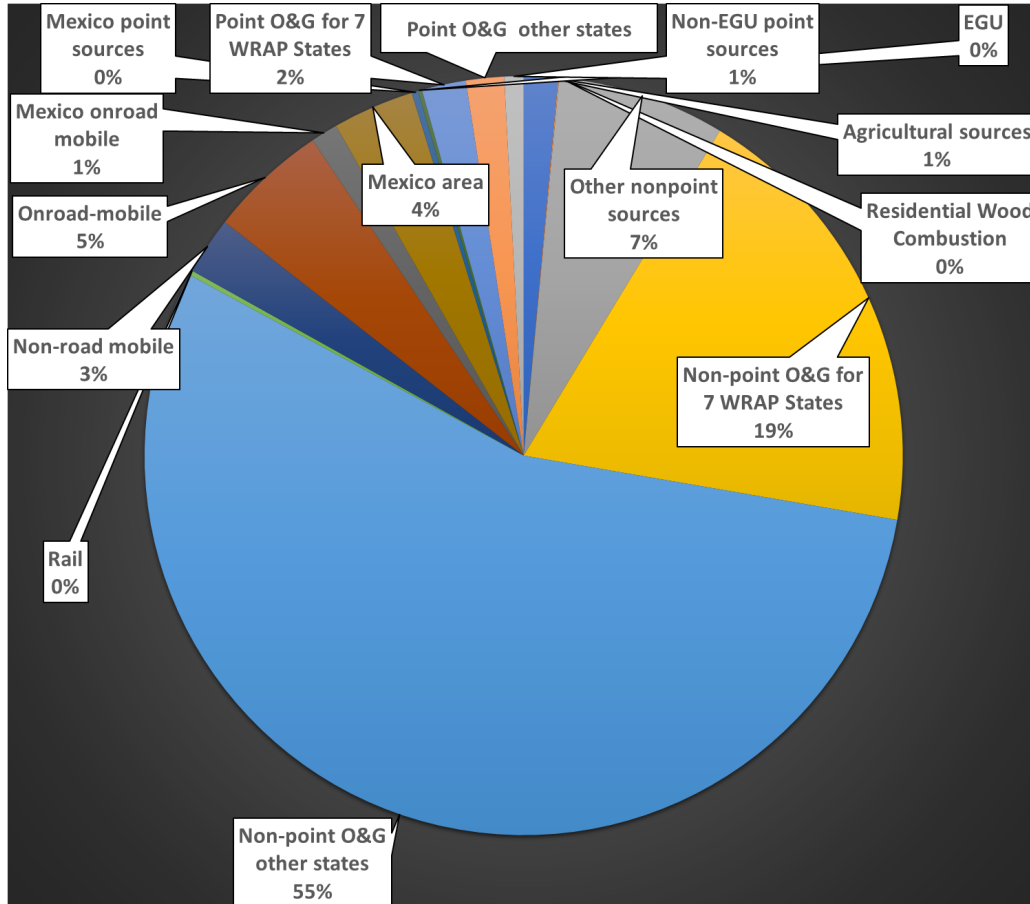


1,334 TPD

-604 TPD (31.1%) Reduction

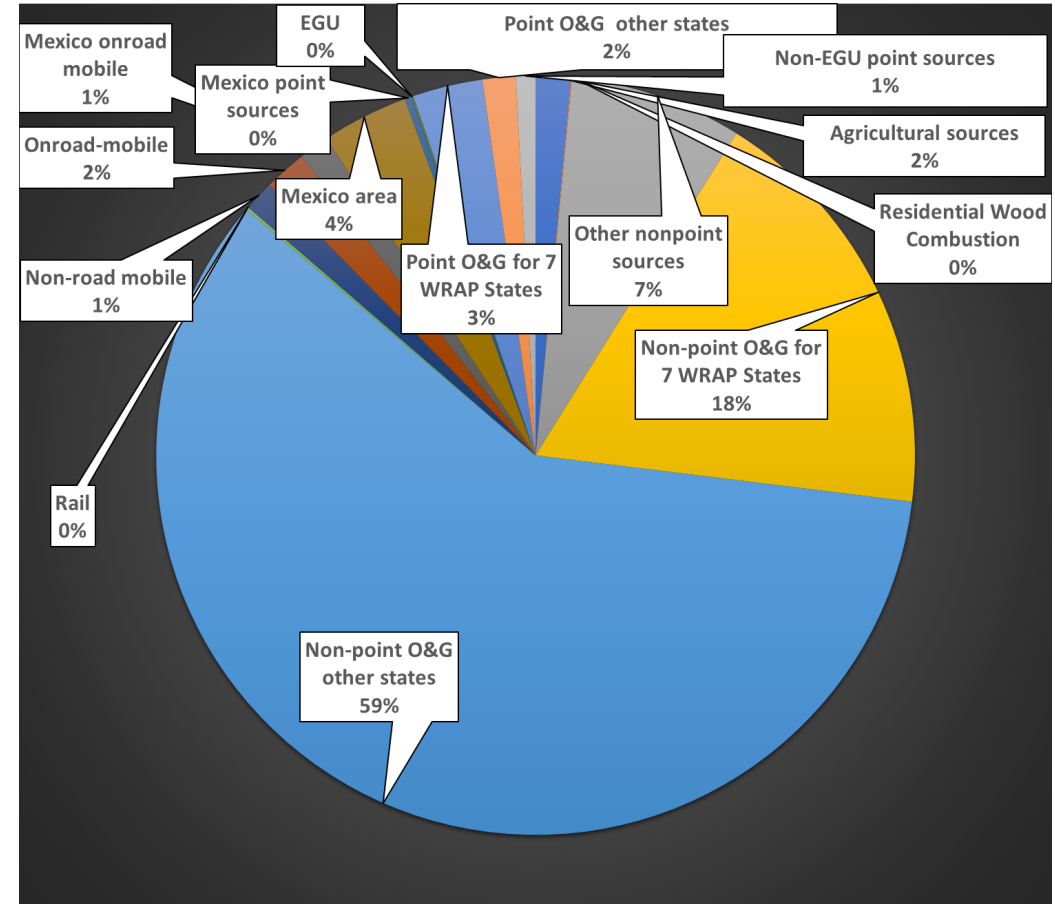
NEW MEXICO 4-KM VOC COMPARISON

2014 VOC



2,977 TPD

2028 VOC

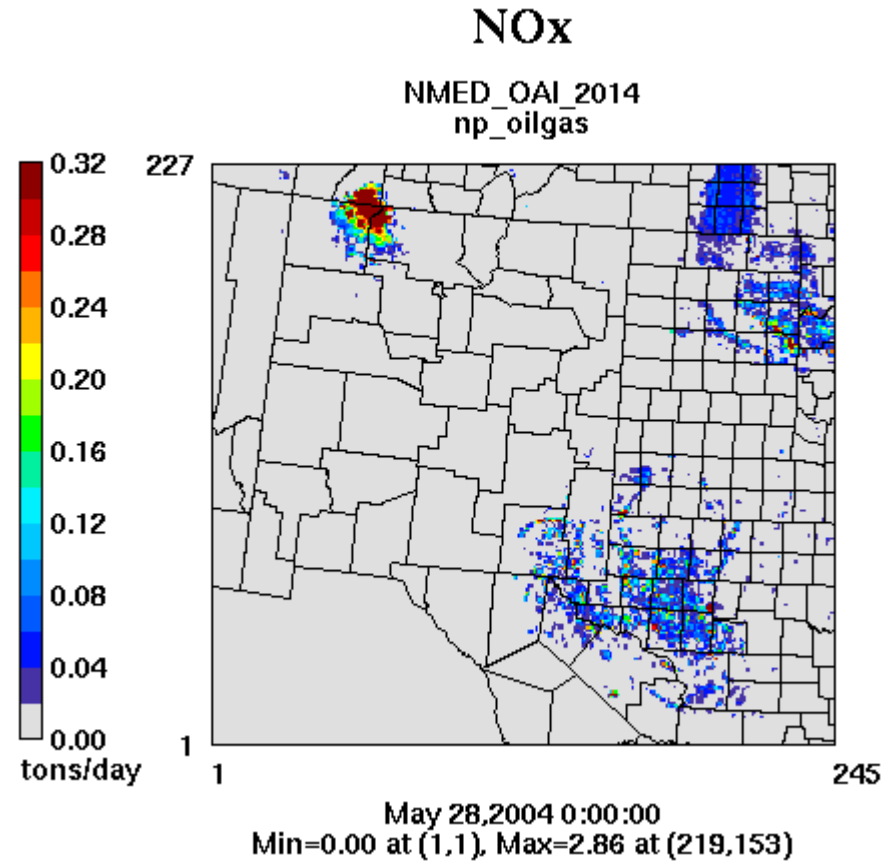


2,902 TPD

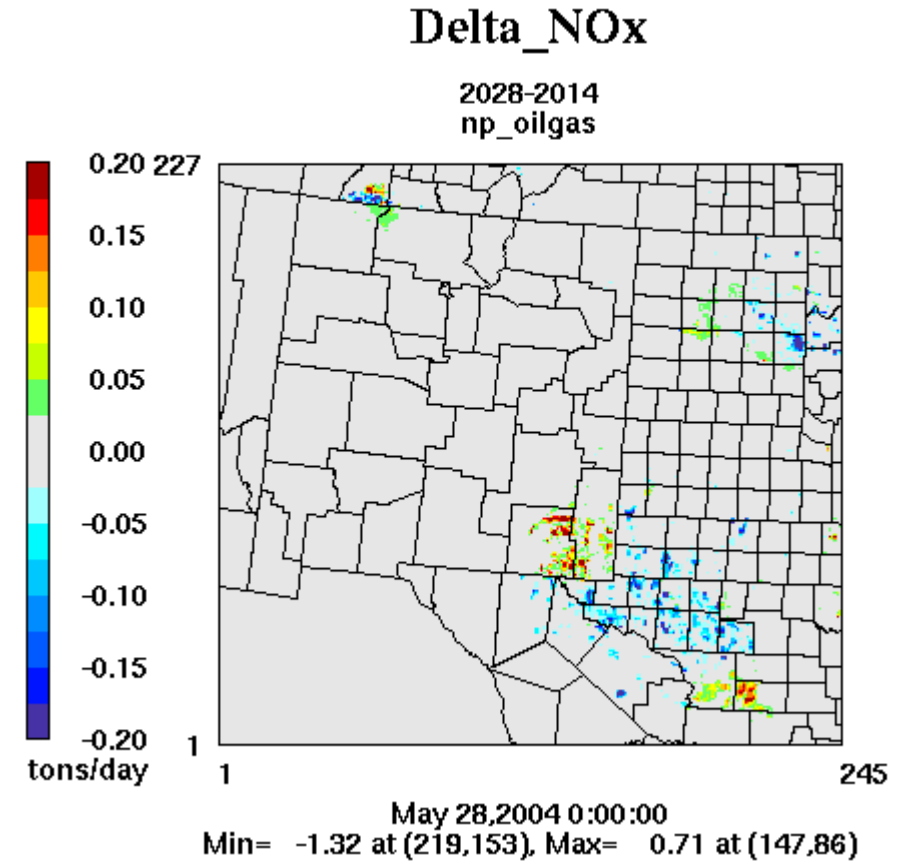
-75 TPD (2.5%) Reduction

NON-POINT O&G EMISSIONS: NOx

2014

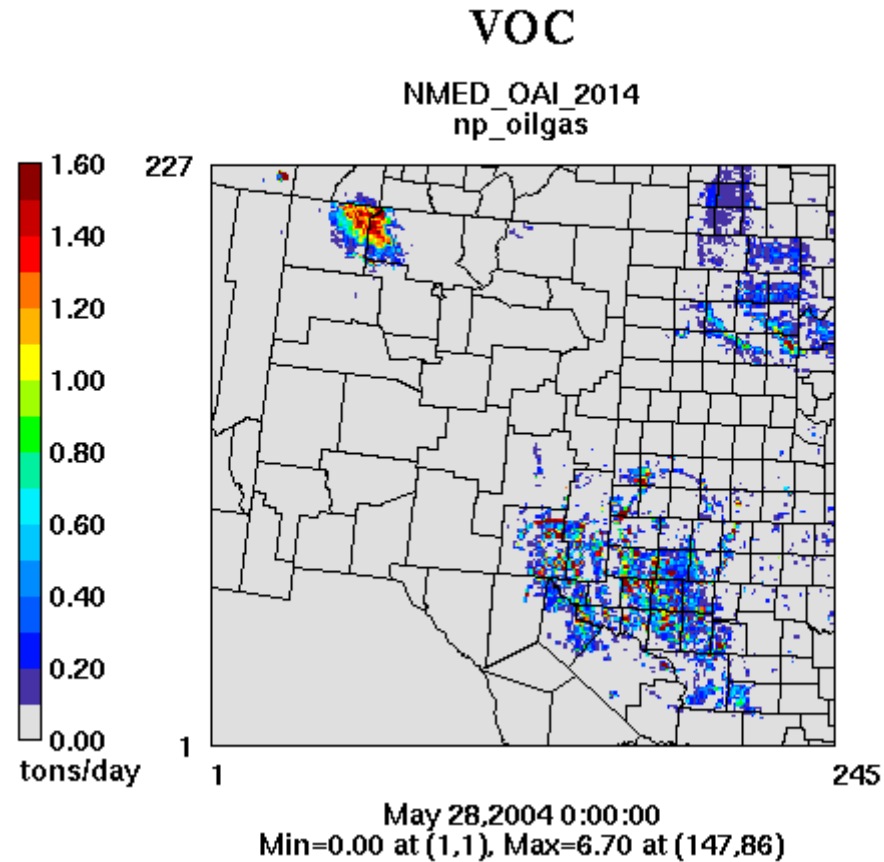


Difference plot (2028 – 2014)

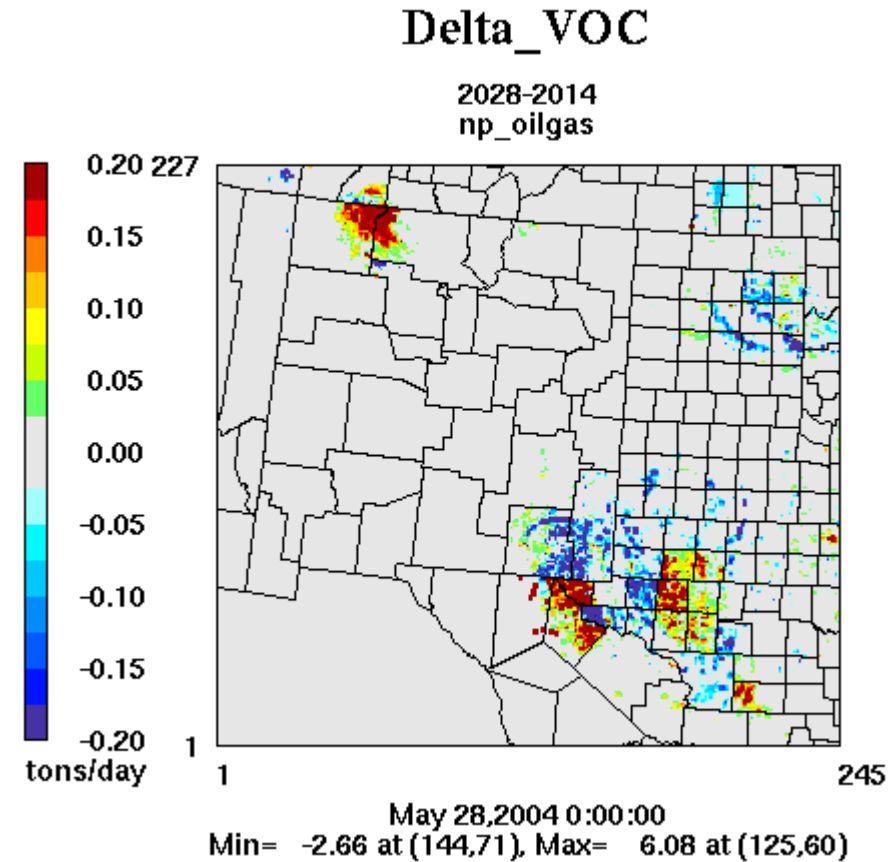


NON-POINT O&G EMISSIONS: VOC

2014

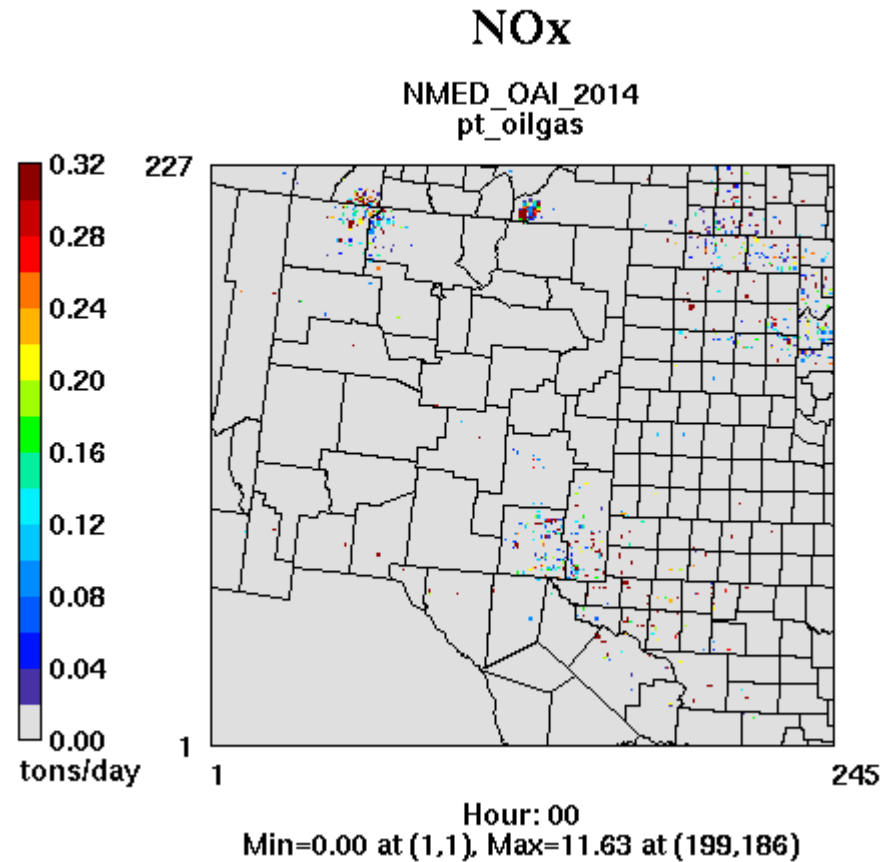


Difference plot (2028 – 2014)

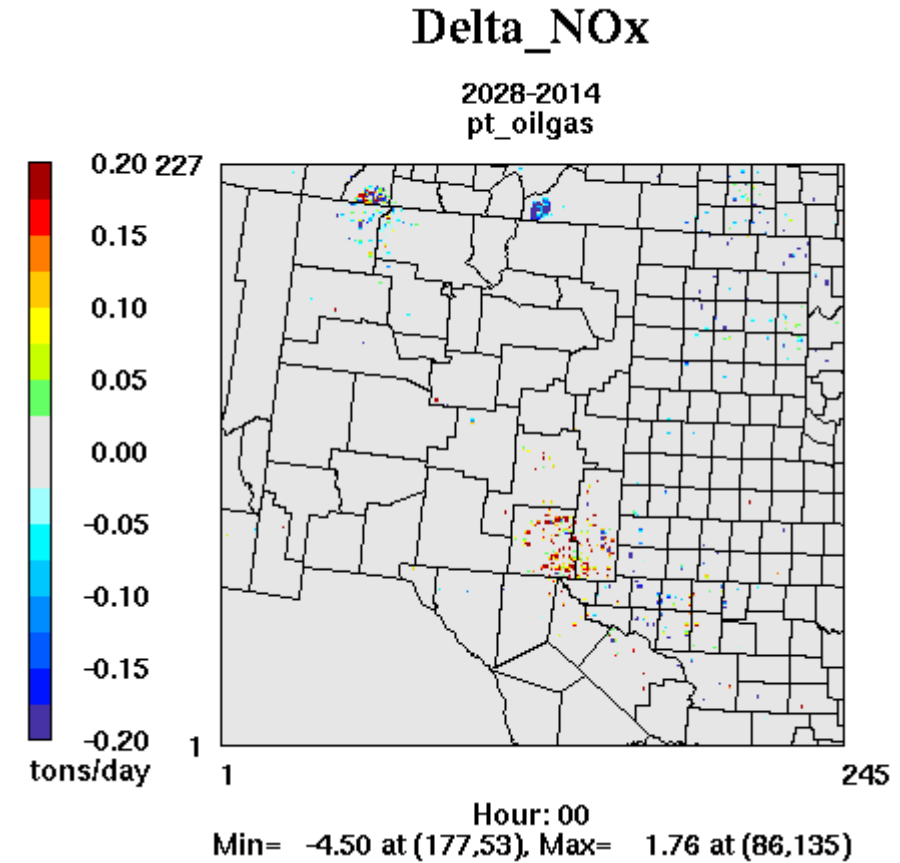


POINT O&G EMISSIONS: NOX

2014

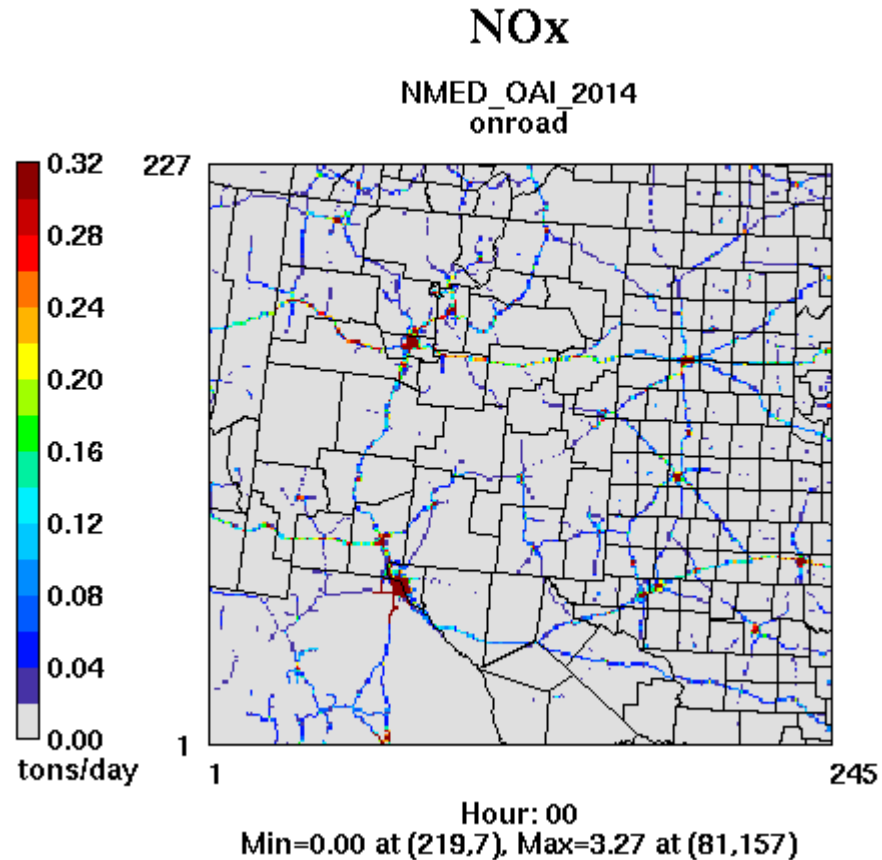


Difference plot (2028 – 2014)

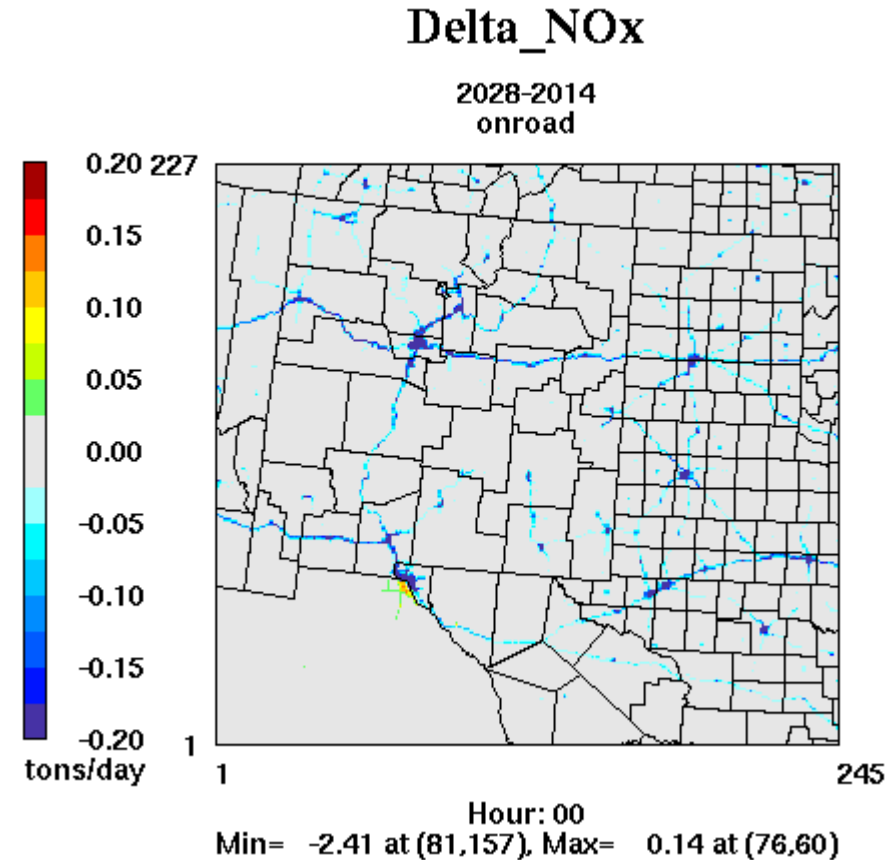


ONROAD EMISSIONS: NOx

2014



Difference plot (2028 – 2014)

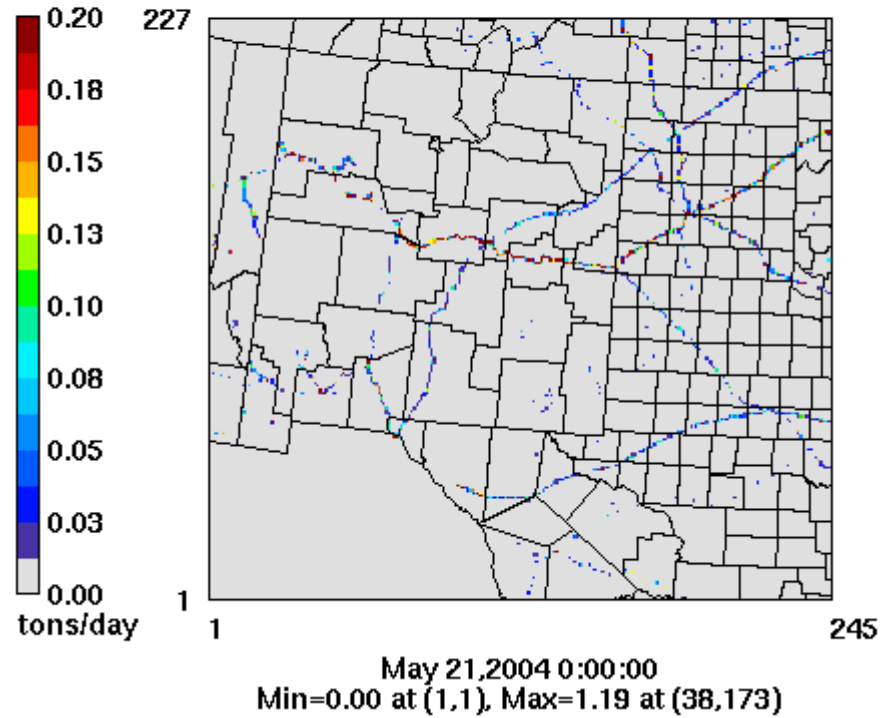


RAIL EMISSIONS: NOx

2014

NOx

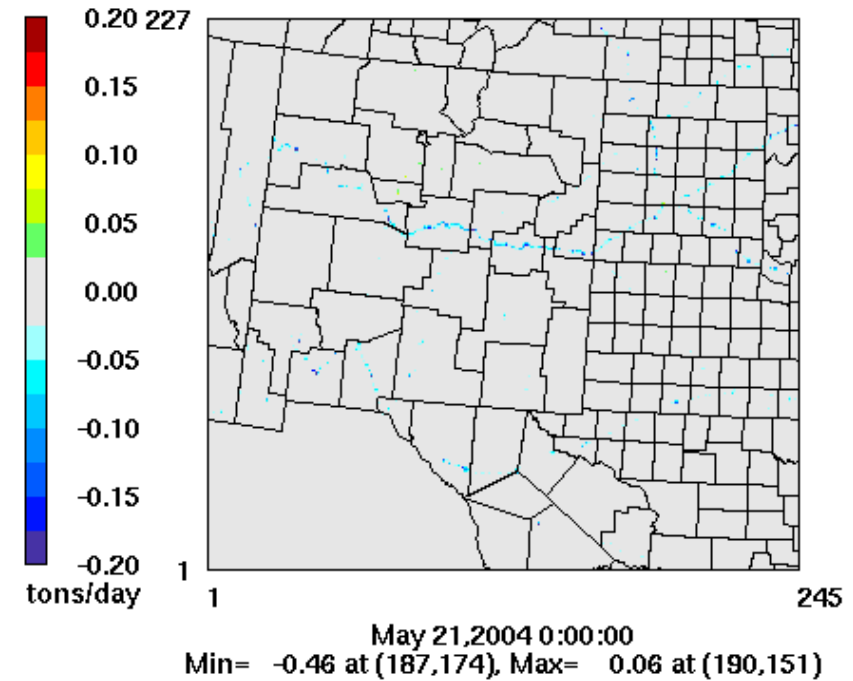
NMED_OAI_2014
rail



Difference plot (2028 – 2014)

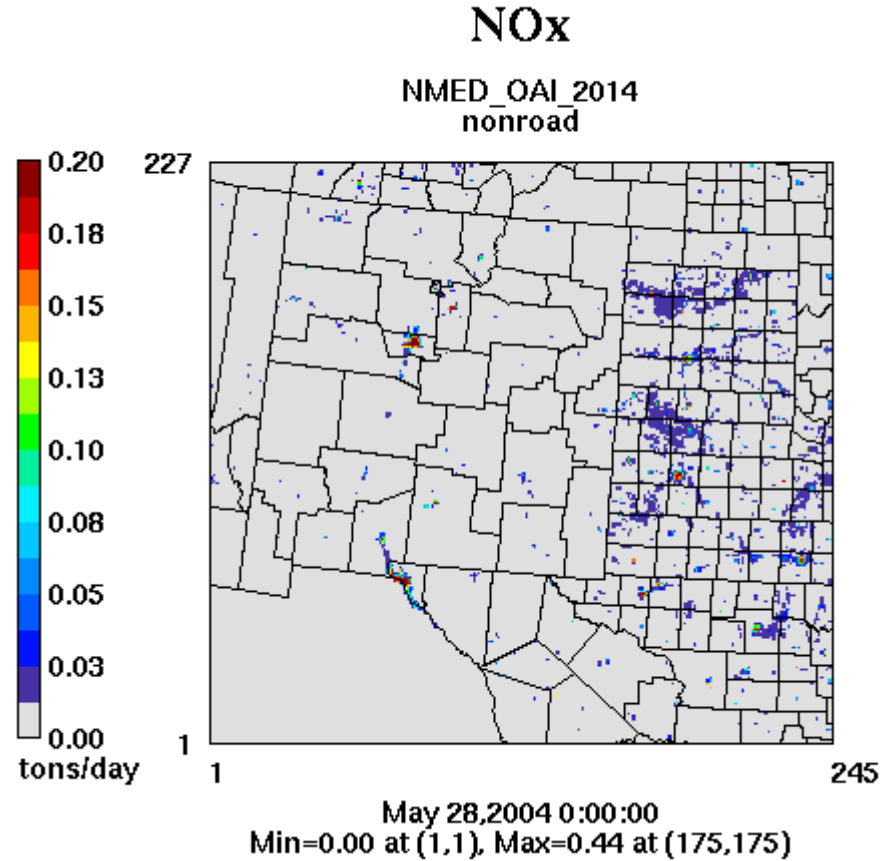
Delta_NOx

2028-2014
rail

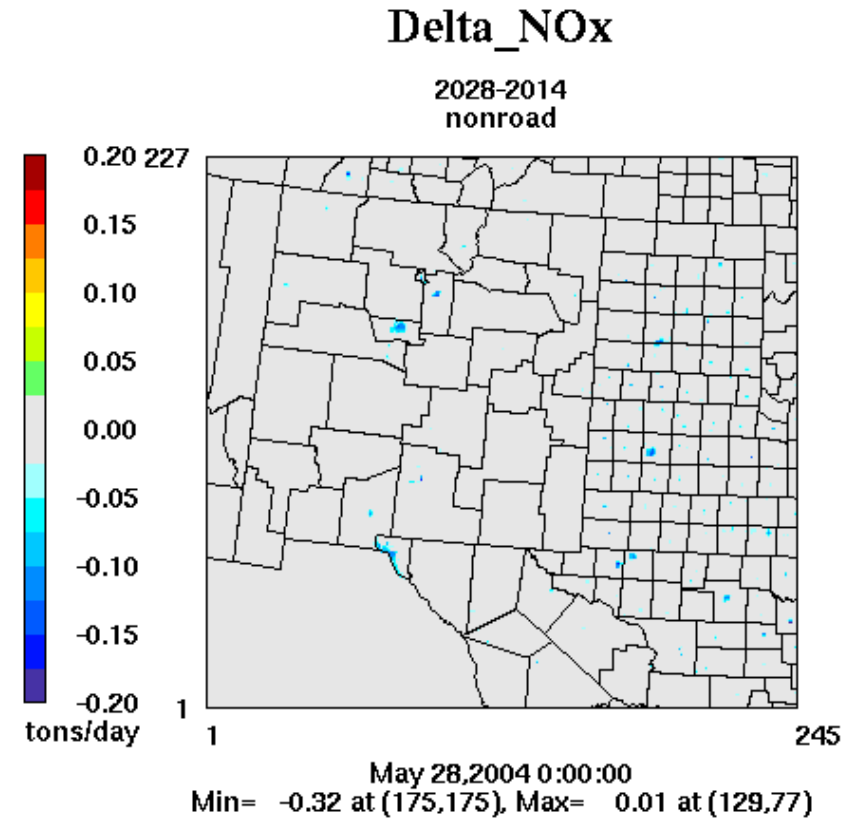


NONROAD EMISSIONS: NOx

2014



Difference plot (2028 – 2014)



CURRENT STATUS AND NEXT STEPS

- Completed 36/12/4-km 2028 emissions with updated 2028 O&G emissions for New Mexico and started CAMx runs
- Process 2028 O&G emissions for NM O&G Control Scenario
- Conduct CAMx 2028 36/12/4-km NM O&G control strategy simulation and provide ozone results to NMED

2028 O&G CONTROL SCENARIO EMISSIONS – PRELIMINARY ANALYSIS

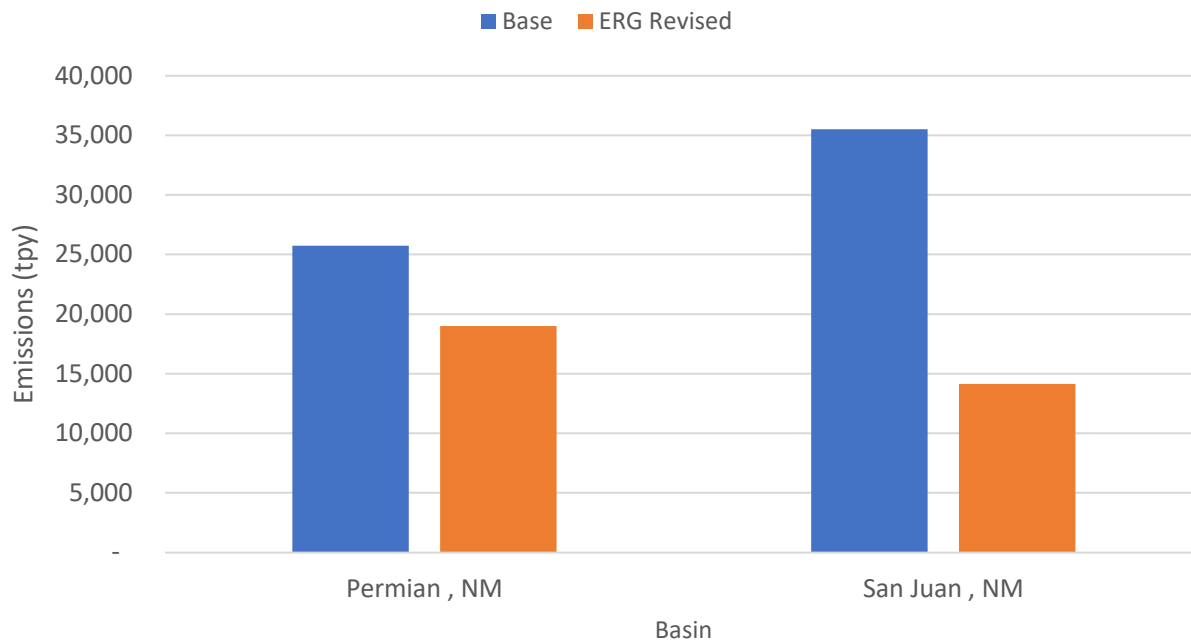
2028 O&G CONTROL SCENARIO EMISSIONS

- ERG provided revised point and nonpoint NM emissions for affected counties/SCCs/pollutants.
- 7 NM counties included in ERG's inventory
 - San Juan Basin (4 counties)
 - Permian Basin (3 counties)
- Bar chart displays by Pollutant, Basin and Source Categories (in tons/year)

NOx	Source	Base	ERG Revised	Change	Percent Change
	Nonpoint	61,245	33,144	(28,101)	-46%
	Point	41,066	22,872	(18,195)	-44%
	Total	102,311	56,015	(46,296)	-45%
VOC	Source	Base	ERG Revised	Change	Percent Change
	Nonpoint	181,252	85,564	(95,688)	-53%
	Point	30,340	19,608	(10,732)	-35%
	Total	211,592	105,173	(106,420)	-50%

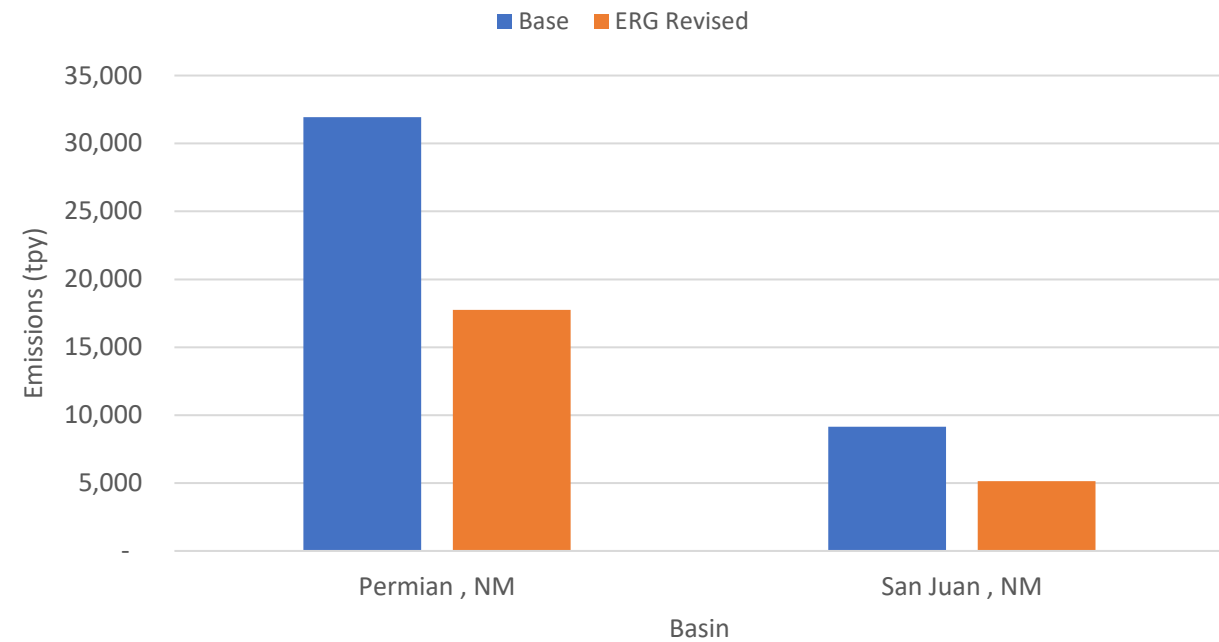
2028 O&G CONTROL SCENARIO NOX EMISSIONS

Nonpoint NOX Emissions



- 26% NOx reduction for Permian
- 60% NOx reduction for San Juan

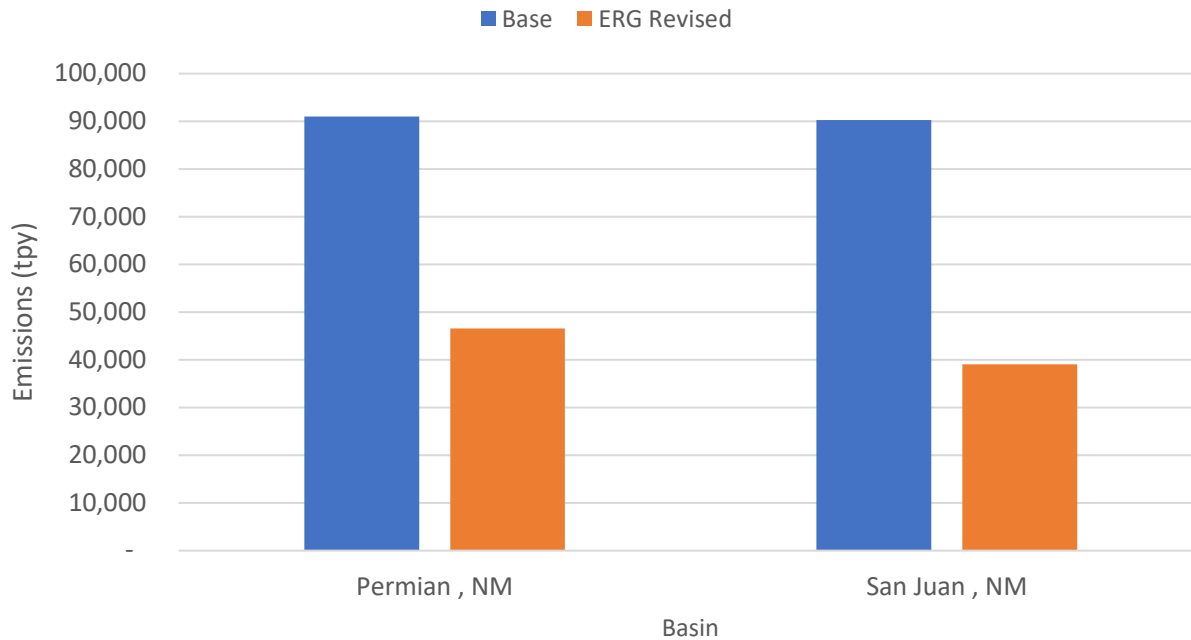
Point NOX Emissions



- 44% NOx reduction for Permian
- 44% NOx reduction for San Juan

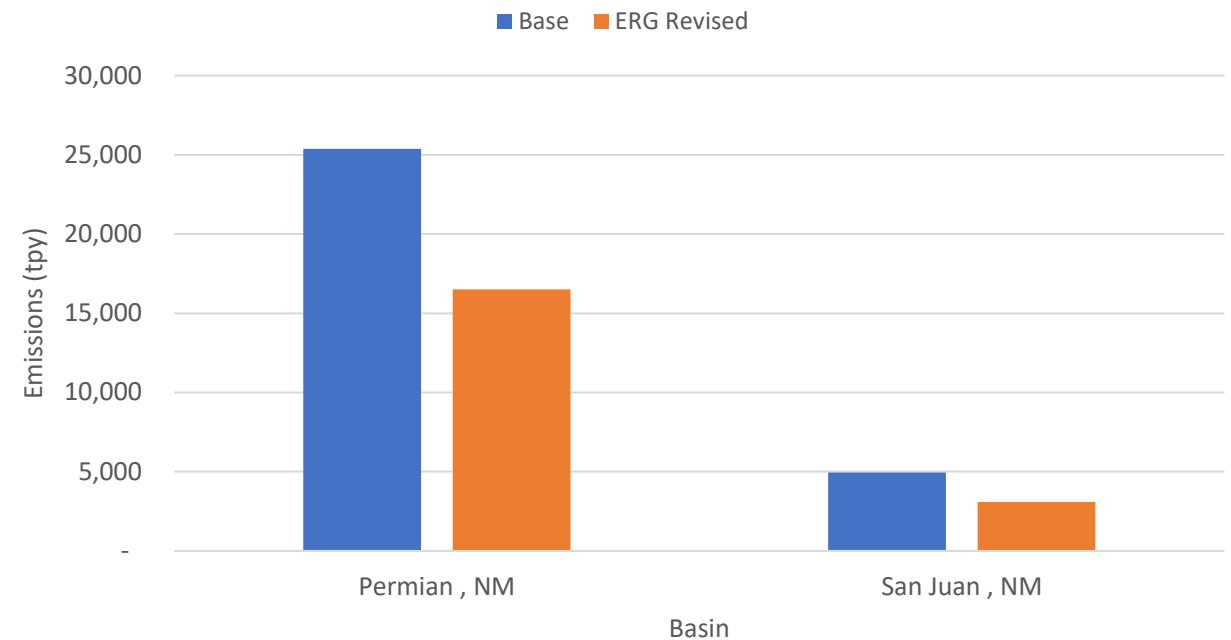
2028 O&G CONTROL SCENARIO VOC EMISSIONS

Nonpoint VOC Emissions



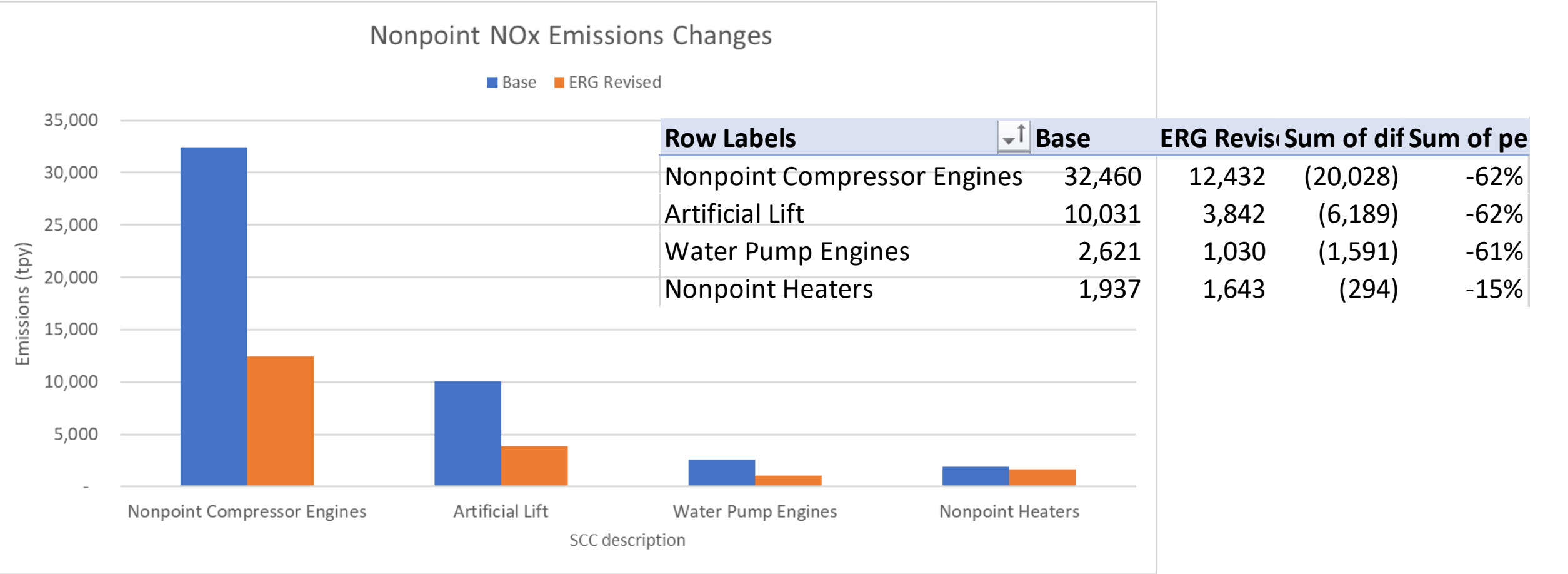
- 49% VOC reduction in Permian
- 57% VOC reduction in San Juan

Point VOC Emissions

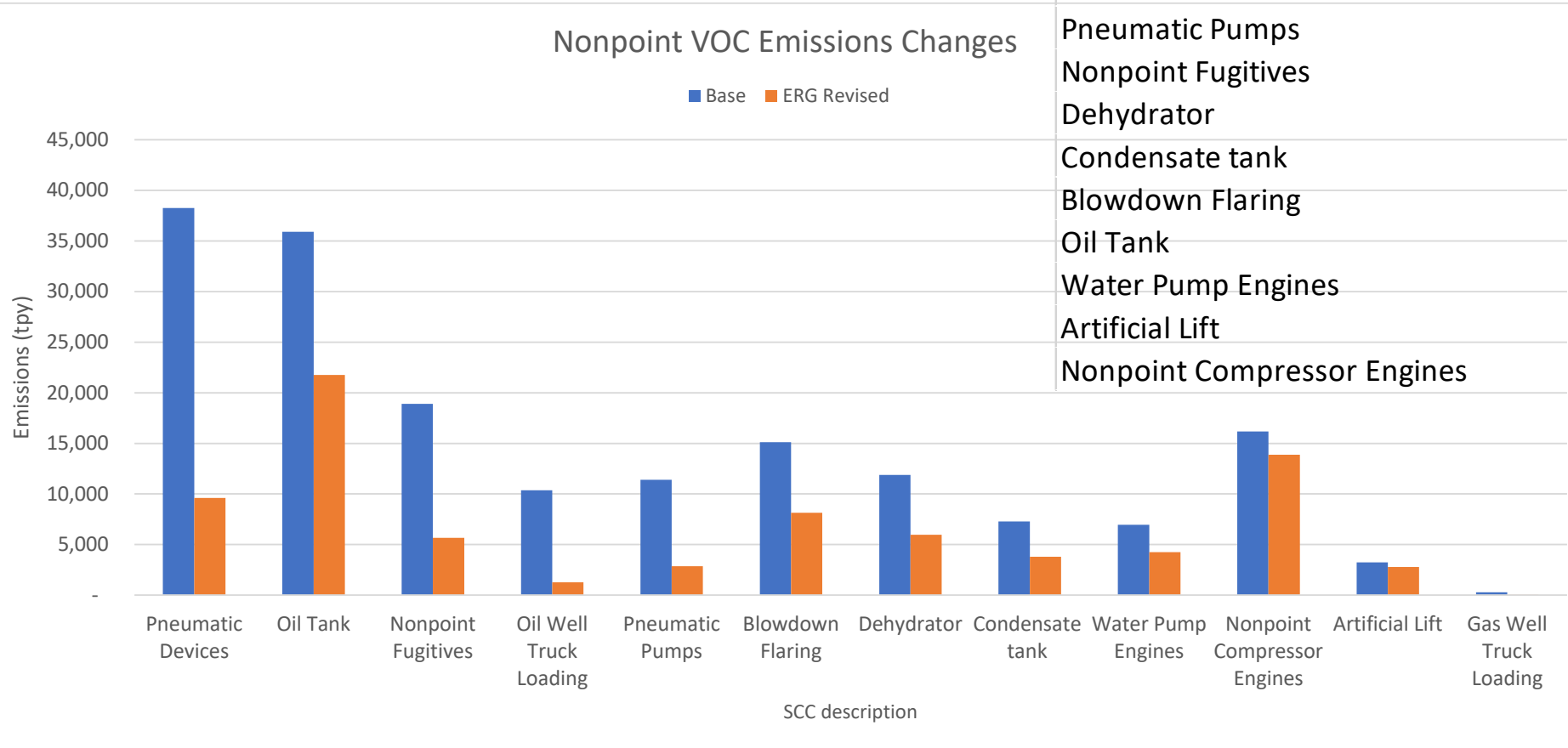


- 35% VOC reduction for Permian
- 38% VOC reduction for San Juan

NONPOINT O&G NOX CHANGE



NONPOINT O&G VOC CHANGE



Row Labels	Base	ERG Revised	Sum of dif	Sum of pe
Oil Well Truck Loading	10,353	1,273	(9,080)	-88%
Gas Well Truck Loading	292	36	(256)	-88%
Pneumatic Devices	38,240	9,598	(28,641)	-75%
Pneumatic Pumps	11,404	2,862	(8,541)	-75%
Nonpoint Fugitives	18,894	5,668	(13,225)	-70%
Dehydrator	11,870	5,964	(5,905)	-50%
Condensate tank	7,289	3,809	(3,480)	-48%
Blowdown Flaring	15,110	8,135	(6,975)	-46%
Oil Tank	35,889	21,747	(14,141)	-39%
Water Pump Engines	6,962	4,252	(2,710)	-39%
Artificial Lift	3,232	2,776	(455)	-14%
Nonpoint Compressor Engines	16,162	13,885	(2,277)	-14%