

Direct and Rebuttal Testimony of Dennis McNally

Conclusion

The ozone air quality benefits of the proposed rule are quite modest, and what impacts the rule does have are primarily the result of the NO_x control measures. Additional controls on oil and gas VOC emissions are not an effective means of controlling ambient ozone levels in New Mexico, except for possibly in a very limited area in northeastern San Juan County.

NMED Modeling Approach

- ▶ Models consistent with industry standards
 - WRF meteorological model
 - SMOKE emissions model
 - CAMx photochemical model
- ▶ I have no reason to disagree with the NMED emissions estimates
- ▶ I have no reason to doubt the modeling based on the model performance evaluation

Analysis Approach

- ▶ NMED assessed model impacts both in absolute and relative sense
 - Absolute: The concentrations straight out of the model
 - Relative: Observations scaled based on the changes in the model estimated concentrations
- ▶ I prefer the relative approach
 - Consistent with EPA guidance for models in State Implementation Plans (SIPs)
 - Recognizes the uncertainty in the model estimates
 - Should use observations that are centered on the base modeled year

2028 Model Projections

Table 7-1. Current year DVC₂₀₁₂₋₂₀₁₆ and projected 2028 Base Case ozone DVFs at New Mexico monitoring sites within the 4-km NM domain.

AQS_ID	2012-2016 DVC (ppb)	2028 Base DVF Base (ppb)	Difference 2028 DVF minus DVC ₂₀₁₂₋₁₆ (ppb)	Site Name	State	County
Northern New Mexico						
350390026	64.0	60.8	-3.2	Coyote Ranger District	NM	Rio Arriba
350431001	64.0	58.4	-5.6	Bernalillo (E Avenida)	NM	Sandoval
350450009	64.3	61.0	-3.3	Bloomfield	NM	San Juan
350450018	67.0	64.8	-2.2	Navajo Lake	NM	San Juan
350451005	63.7	60.8	-2.9	Substation	NM	San Juan
350490021	64.3	60.6	-3.7	Santa Fe Airport	NM	Santa Fe
Bernalillo County						
350010023	66.3	60.9	-5.4	Del Norte HS	NM	Bernalillo
350010024	68.0	62.3	-5.7	South East Heights	NM	Bernalillo
350010029	66.0	61.0	-5.0	South Valley	NM	Bernalillo
350010032	67.0	62.6	-4.4	Westside	NM	Bernalillo
350011012	65.0	59.1	-5.9	Foothills	NM	Bernalillo
Southern New Mexico						
350130008	66.3	60.0	-6.3	La Union	NM	Doña Ana
350130017	67.0	61.9	-5.1	Sunland Park City Yard	NM	Doña Ana
350130020	67.0	62.3	-4.7	Chaparral	NM	Doña Ana
350130021	72.0	67.0	-5.0	Desert View	NM	Doña Ana
350130022	71.3	66.1	-5.2	Santa Teresa	NM	Doña Ana
350130023	65.0	60.3	-4.7	Solano	NM	Doña Ana
350151005	69.0	66.7	-2.3	Carlsbad	NM	Eddy
350171003	62.0	59.0	-3.0	Chino Copper Smelter	NM	Grant
350250008	66.0	64.0	-2.0	Hobbs Jefferson	NM	Lea
350290003	66.0	62.7	-3.3	Deming Airport	NM	Luna
350610008	66.3	62.2	-4.1	Los Lunas (Los Lentos)	NM	Valencia

Maximum Impacts

- 5.6 ppb in Northern NM
- 5.9 ppb in Bernalillo County
- 5.2 ppb in Southern NM

Rule Emissions Impacts

- ▶ Emission impact of rule per NMED
 - Oil and Gas NO_x
 - 102,311 tpy to 56,015 tpy (45% reduction)
 - Oil and Gas VOC
 - 211,592 tpy to 105,172 tpy (50% reduction)

Impact of Proposed Rule

Table 8-1. Observed ozone DVC₂₀₁₂₋₂₀₁₆ and projected 2028 ozone DVFs for the 2028 Base Case and 2028 O&G Control strategy and differences in the 2028 ozone DVFs (DVF_{Cntl} - DVF_{Base}).

AQS_ID	2012-16	Projected 2028 DVF			Site Name	State	County
	DVC (ppb)	Base (ppb)	Cntl (ppb)	Cntl - Base			
Northern New Mexico							
350390026	64.0	60.8	60.0	-0.8	Coyote Ranger District	NM	Rio Arriba
350431001	64.0	58.4	58.1	-0.3	Bernalillo (E Avenida)	NM	Sandoval
350450009	64.3	61.0	60.2	-0.8	Bloomfield	NM	San Juan
350450018	67.0	64.8	63.3	-1.5	Navajo Lake	NM	San Juan
350451005	63.7	60.8	59.6	-1.2	Substation	NM	San Juan
350490021	64.3	60.6	60.4	-0.2	Santa Fe Airport	NM	Santa Fe
Bernalillo County							
350010023	66.3	60.9	60.7	-0.2	Del Norte HS	NM	Bernalillo
350010024	68.0	62.3	62.0	-0.3	South East Heights	NM	Bernalillo
350010029	66.0	61.0	60.5	-0.5	South Valley	NM	Bernalillo
350010032	67.0	62.6	62.1	-0.5	Westside	NM	Bernalillo
350011012	65.0	59.1	58.8	-0.3	Foothills	NM	Bernalillo
Southern New Mexico							
350130008	66.3	60.0	59.8	-0.2	La Union	NM	Doña Ana
350130017	67.0	61.9	61.8	-0.1	Sunland Park City Yard	NM	Doña Ana
350130020	67.0	62.3	62.2	-0.1	Chaparral	NM	Doña Ana
350130021	72.0	67.0	66.8	-0.2	Desert View	NM	Doña Ana
350130022	71.3	66.1	66.0	-0.1	Santa Teresa	NM	Doña Ana
350130023	65.0	60.3	60.2	-0.1	Solano	NM	Doña Ana
350151005	69.0	66.7	66.4	-0.3	Carlsbad	NM	Eddy
350171003	62.0	59.0	58.9	-0.1	Chino Copper Smelter	NM	Grant
350250008	66.0	64.0	63.3	-0.7	Hobbs Jefferson	NM	Lea
350290003	66.0	62.7	62.5	-0.2	Deming Airport	NM	Luna
350610008	66.3	62.2	62.0	-0.2	Los Lunas (Los Lentos)	NM	Valencia

Maximum Impacts

- 1.5 ppb in Northern NM
- 0.5 ppb in Bernalillo County
- 0.7 ppb in Southern NM

NMED APCA CAMx Simulation

- ▶ NMED conducted a source apportionment simulation to look at the contribution of Oil and Gas emissions after the controls were put into place
- ▶ This is NOT the contribution of the Rule, but provides a relative view of ozone formed from Oil and Gas VOC versus Oil and Gas NOx emissions AFTER the rule emission reductions are applied

Oil and Gas APCA Results

Ozone Monitor ID	Station Name	County	NM O&G NOx Contrib.	NM O&G VOC Contrib.
			PPB	PPB
Northern New Mexico				
350390026	Coyote Ranger District	Rio Arriba	0.7	0.1
350450009	Bloomfield	San Juan	1.9	0.3
350450018	Navajo Lake	San Juan	2.6	0.5
350451005	Substation	San Juan	1.6	0.5
Central New Mexico				
350010023	Del Norte HS	Bernalillo	0.4	0.0
350010024	South East Heights	Bernalillo	0.4	0.0
350010029	South Valley	Bernalillo	0.6	0.0
350010032	Westside	Bernalillo	0.6	0.1
350011012	Foothills	Bernalillo	0.3	0.0
350431001	Bernalillo (E Avenida)	Sandoval	0.4	0.0
350490021	Santa Fe Airport	Santa Fe	0.5	0.1
Southern New Mexico				
350130008	La Union	Dona Ana	0.4	0.0
350130017	Sunland Park City Yard	Dona Ana	0.3	0.0
350130020	Chaparral	Dona Ana	0.2	0.0
350130021	Desert View	Dona Ana	0.4	0.1
350130022	Santa Teresa	Dona Ana	0.5	0.1
350130023	Solano	Dona Ana	0.4	0.0
350151005	Carlsbad	Eddy	0.9	0.1
350171003	Chino Copper Smelter	Grant	0.1	0.0
350250008	Hobbs Jefferson	Lea	1.9	0.0
350290003	Deming Airport	Luna	0.3	0.0
350610008	Los Lunas (Los Lentos)	Valencia	0.5	0.1

Statewide O&G Totals:

NOx: 56,015 tpy

VOC: 105,172 tpy

Maximum VOC Contribution

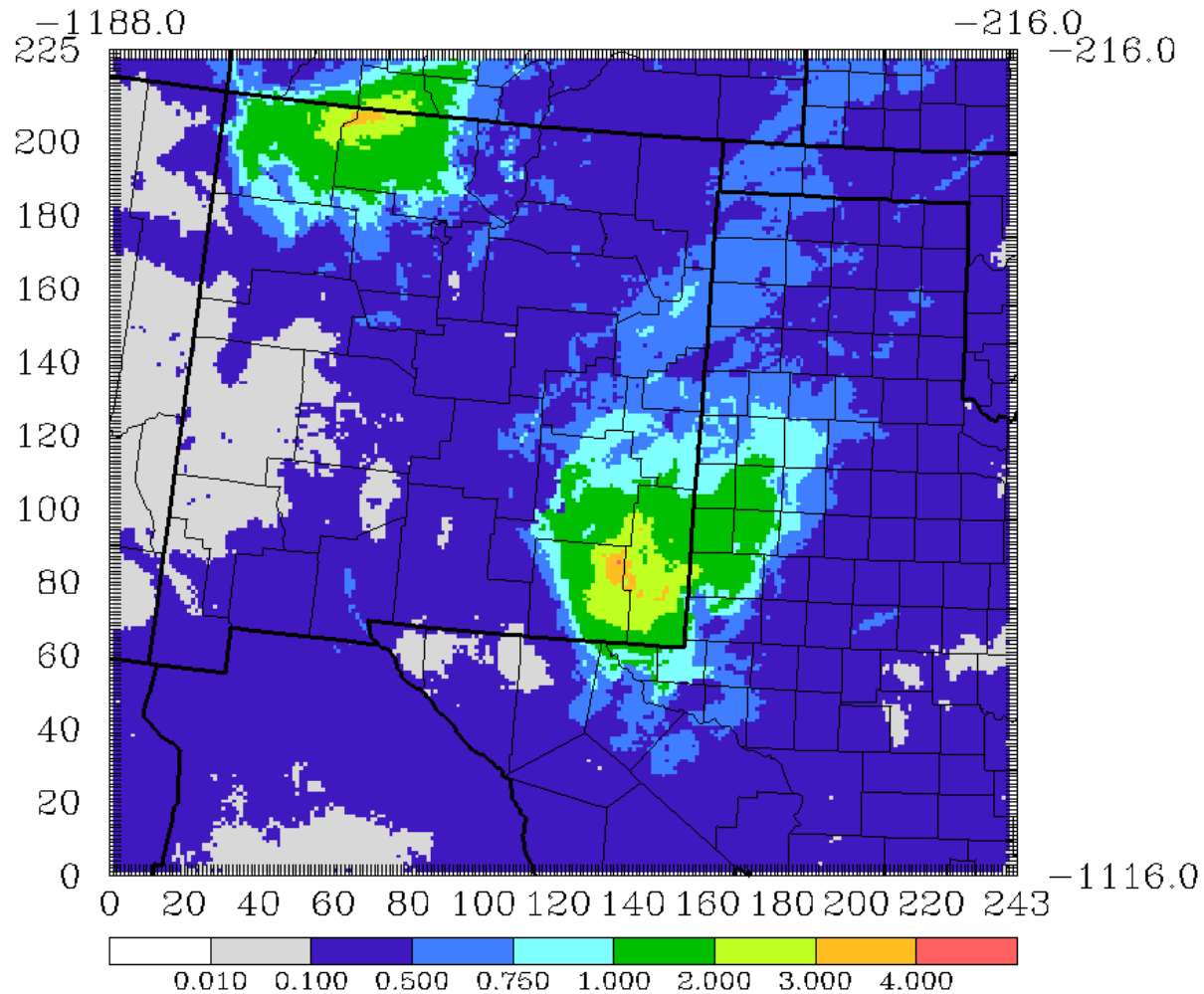
0.5 ppb in San Juan County

0.1 ppb in Bernalillo County

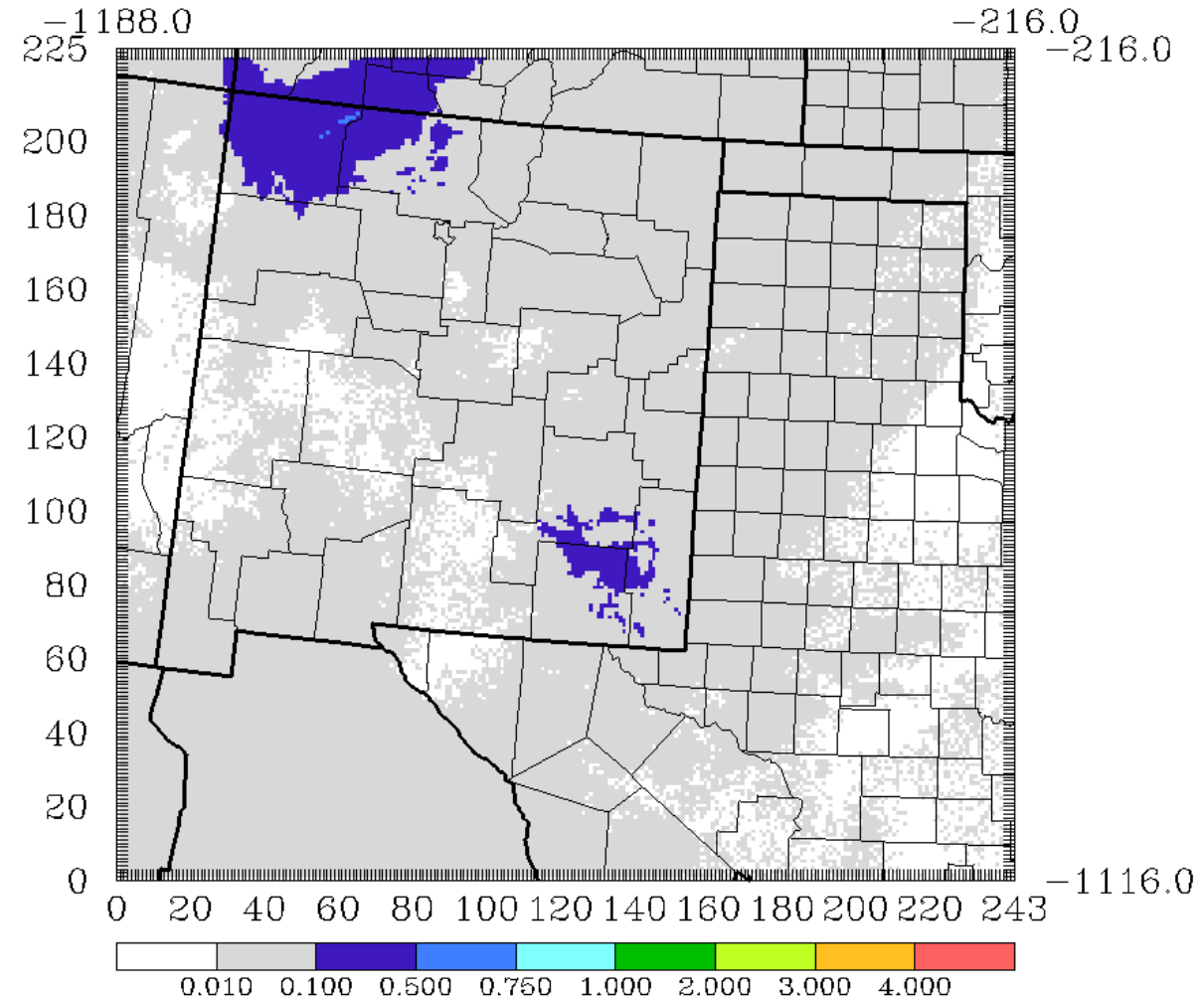
0.1 ppb in Southern NM

Ozone Attributable to NM O&G Emissions

NO_x 56,015 tpy



VOC 105,172 tpy



NPS Ethane Analysis

- ▶ In the NPS testimony they present ethane as a surrogate for VOC emissions
 - Ethane is useful as a tracer for oil and gas emission sources
 - Misleading since ethane is not regulated as a VOC by EPA since it is “negligibly reactive”

Conclusion

The ozone air quality benefits of the proposed rule are quite modest, and what impacts the rule does have are primarily the result of the NO_x control measures. Additional controls on oil and gas VOC emissions are not an effective means of controlling ambient ozone levels in New Mexico, except for possibly in a very limited area in northeastern San Juan County.