

PINEDALE ANTICLINE ANNUAL PLANNING MEETING 2011

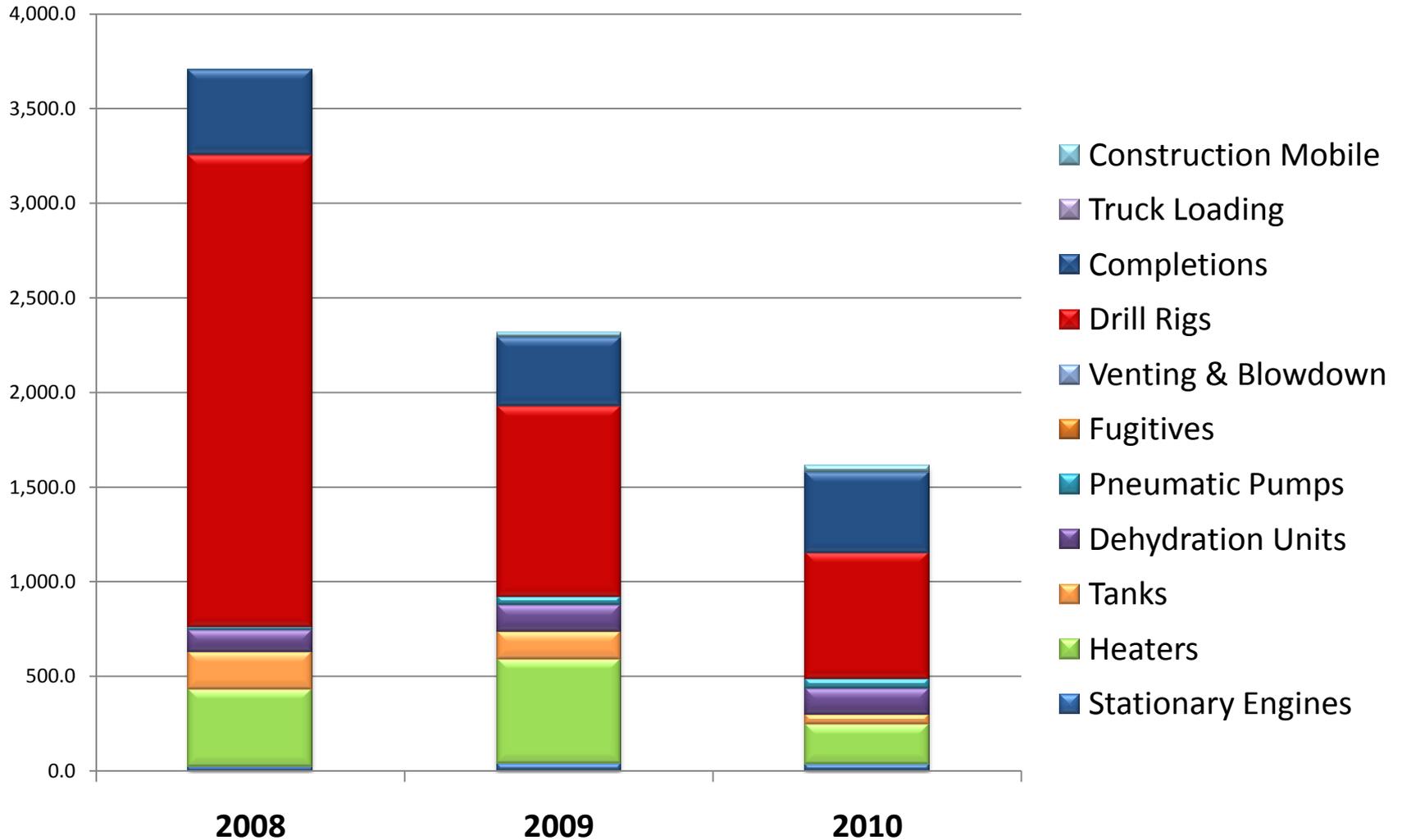
Air Quality Division

August 8, 2011

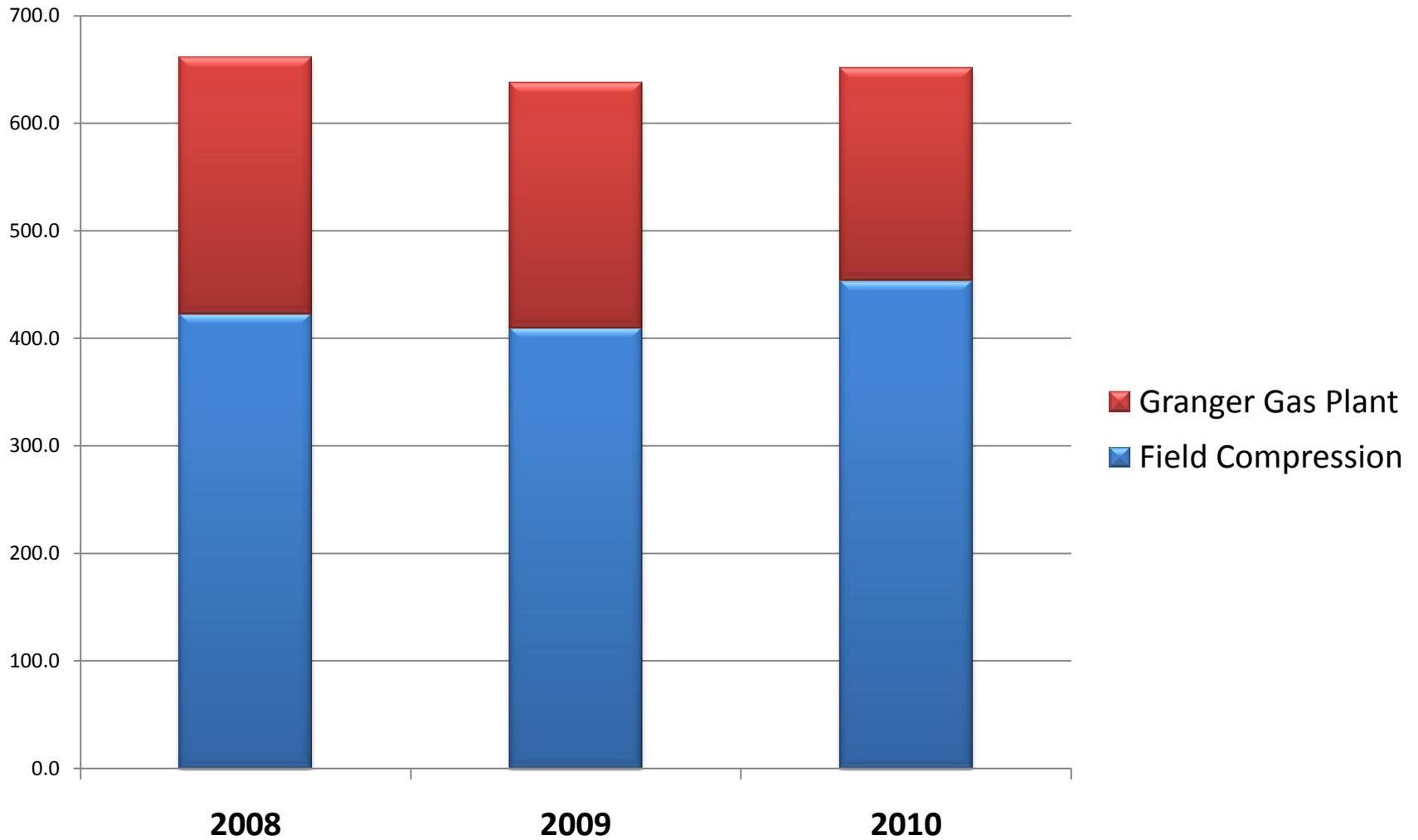
Emissions Inventory

- Production and drilling emissions from
 - Ultra
 - Shell
 - Questar
 - Anschutz
 - Yates
 - Newfield
- Field Compression
 - Pinedale
 - Paradise
 - Falcon
- Granger Gas Plant

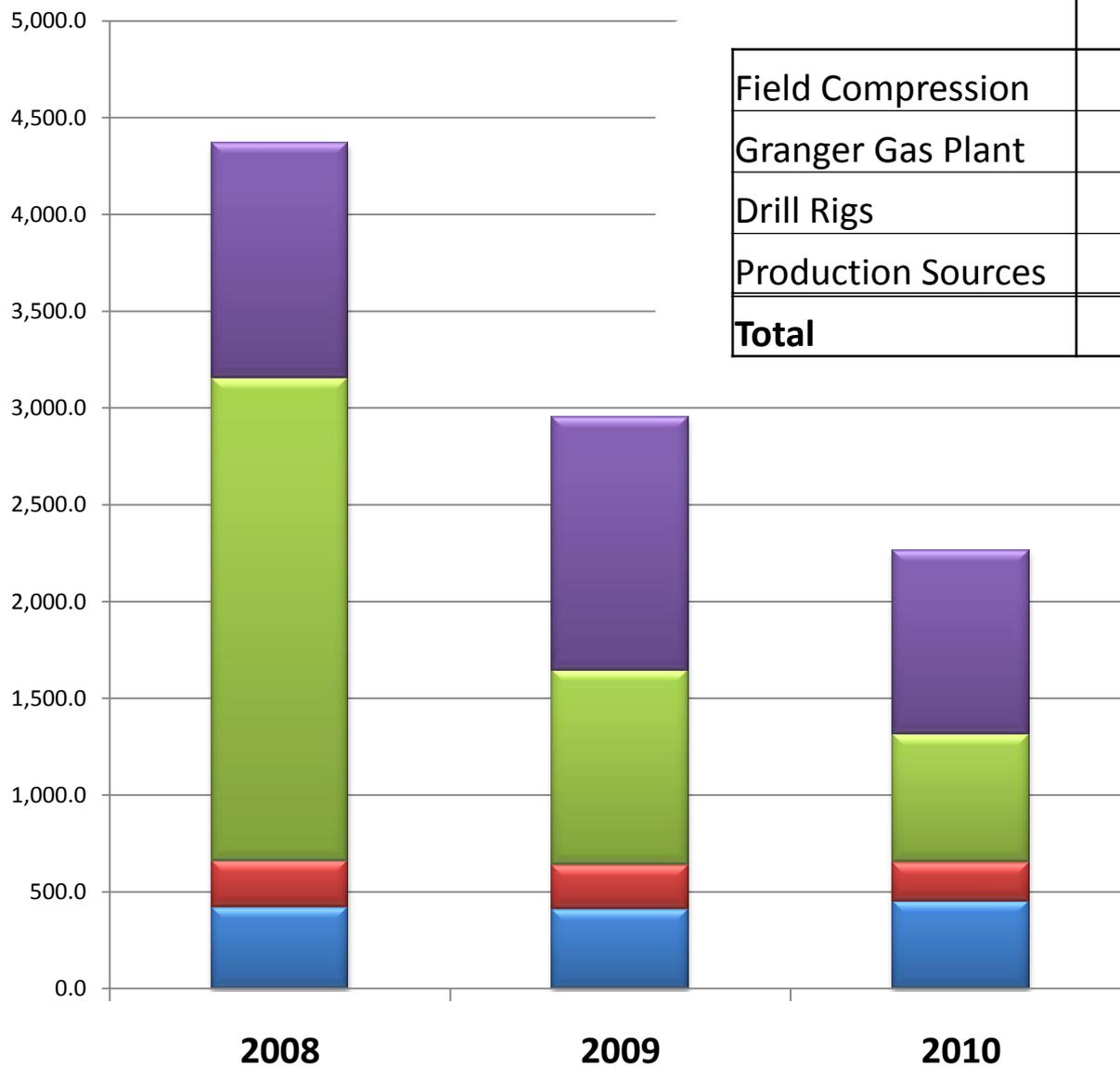
NO_x from Production and Drilling



NO_x from Field Compression and Granger Gas Plant



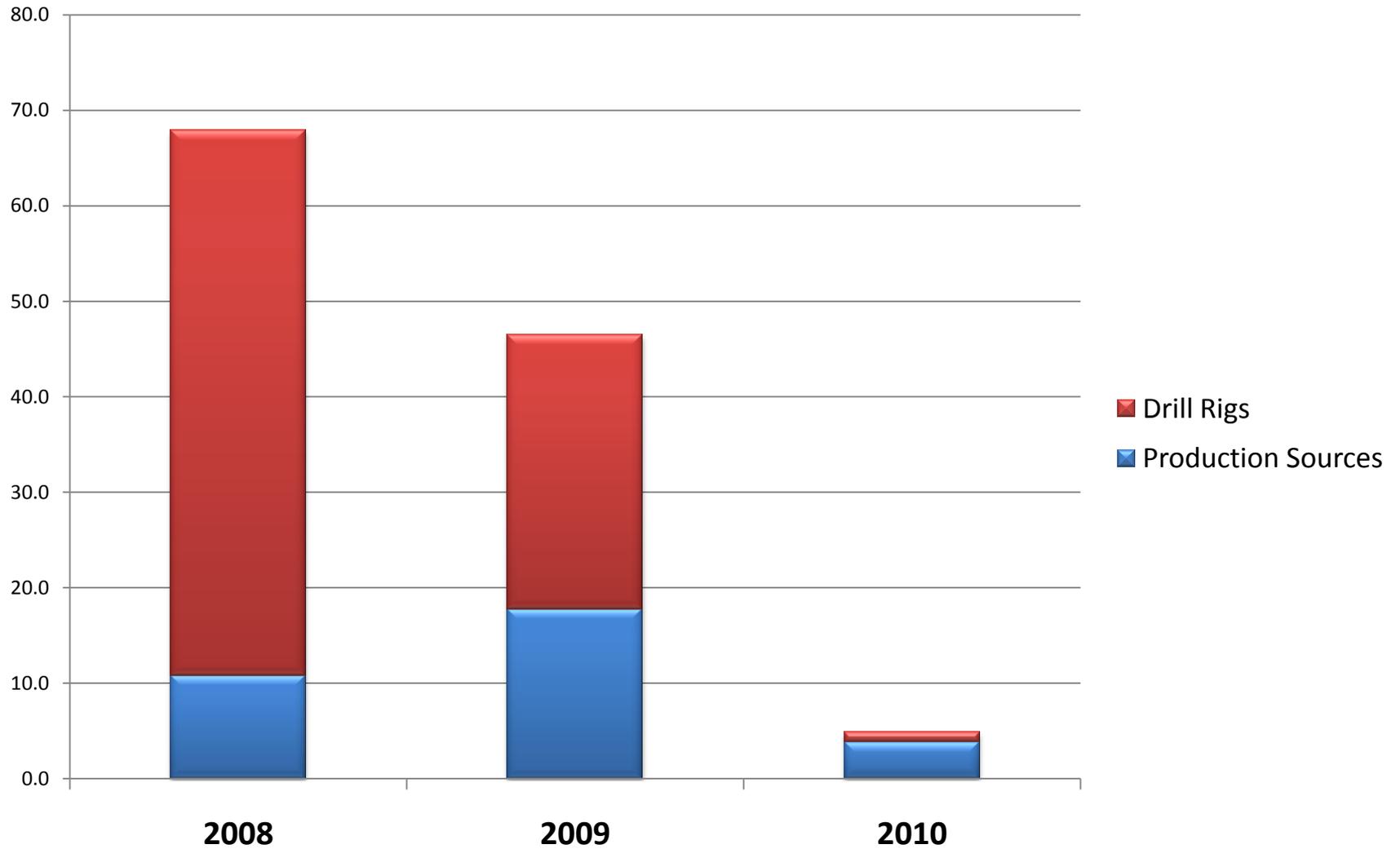
Field Wide NO_x Emissions



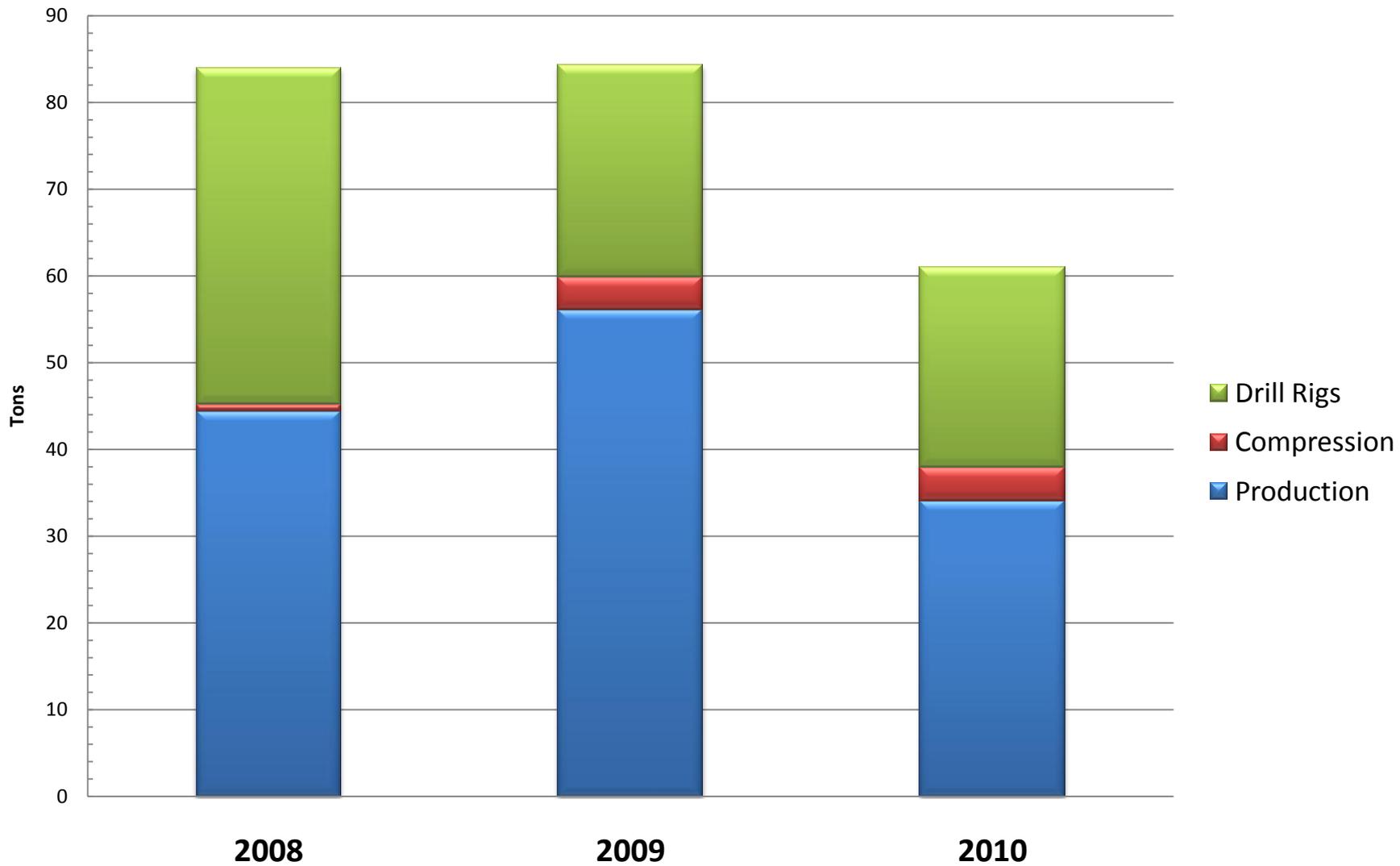
	2008	2009	2010
Field Compression	422.6	409.2	453.6
Granger Gas Plant	238.5	228.6	197.5
Drill Rigs	2,492.5	1,006.3	663.8
Production Sources	1,216.3	1,309.0	950.8
Total	4,369.8	2,953.1	2,265.8

- Production Sources
- Drill Rigs
- Granger Gas Plant
- Field Compression

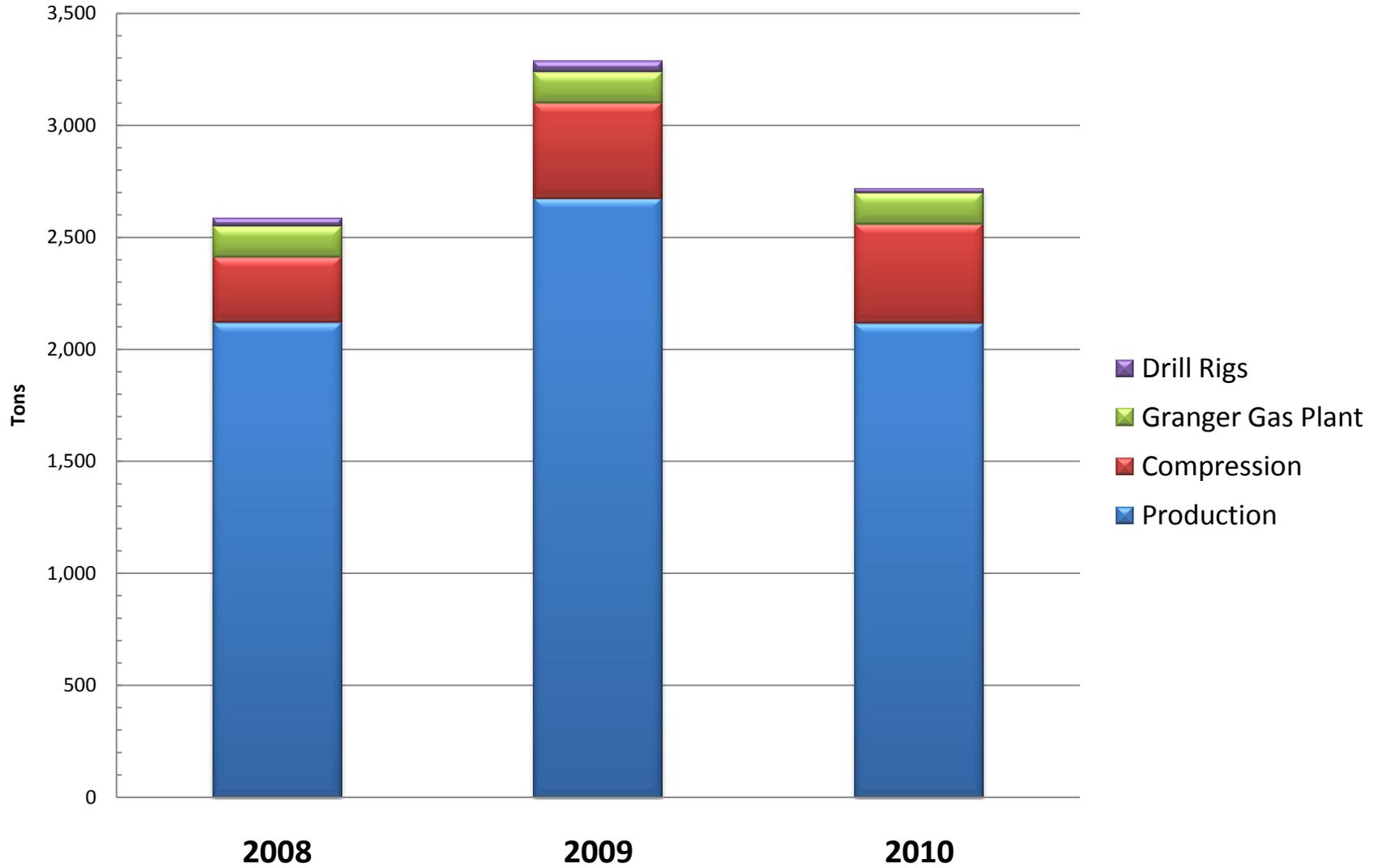
Field Wide SO₂ Emissions



Field Wide PM Emissions



Field Wide VOC Emissions



PAPO Funded AQD Staff

- Brandi O'Brien –
 - Principal Engineer for the Pinedale Anticline Project Office
 - Compliance Program
 - Stationed in Pinedale
 - Compliance inspector for PAPA field
 - Assist as operator for monitoring projects
 - Funded for up to 5 years; began work in Jan. 2011
- Ryan McCammon
 - Upper Green Data Analyst
 - Air Quality Resource Management Program – Monitoring Section
 - Stationed in Cheyenne
 - Data analysis and monitoring project manager for ambient and met. Stations in UGRB
 - Funded for up to 2 years; began work in Feb. 2010

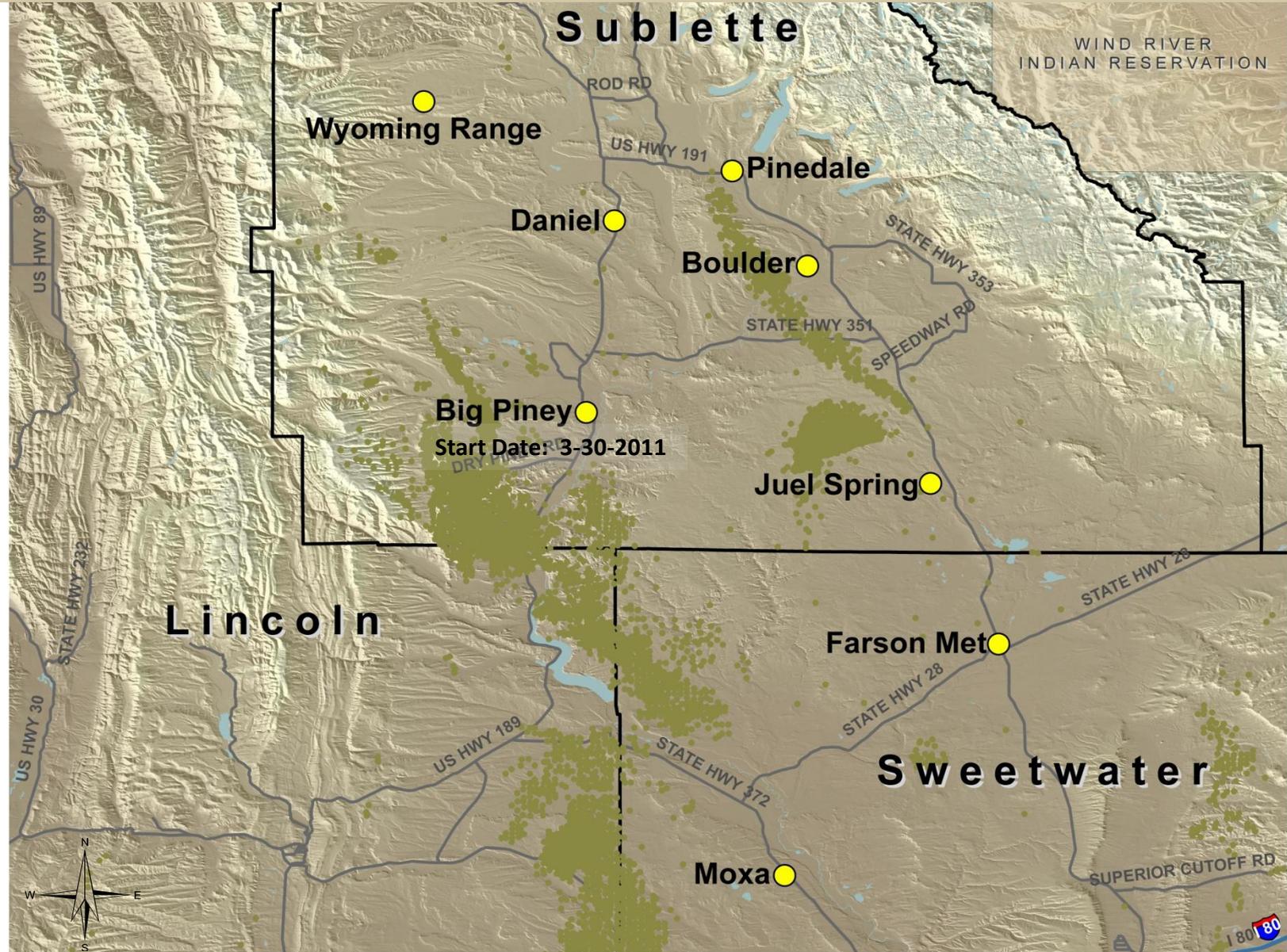
Air Quality Monitoring Activities



Long Term Monitoring

- Six (6) long term air quality stations
- All stations have ozone, oxides of nitrogen, meteorology, and a camera
- Stations may have other parameters (e.g. particulate, sulfur dioxide, etc.) depending on station objective
- One long-term meteorology-only station at Farson
- One mobile trailer will be parked south of Big Piney for 1 year ending March 31, 2012
- Real-time and validated data available on www.wyvisnet.com
- In attainment for all sites and parameters except for Boulder-ozone

Long Term Sites



● 2009 Oil, Gas & CBM Production Well Locations

● Active Monitoring Locations

0 5 10 20 Miles

2008-2010 Design Values

Station	Annual 4 th high Daily Maximum 8 hour value (ppm)			3 year avg. (design value)
	2008	2009	2010	
Boulder	0.101	0.067	0.067	0.078
Daniel	0.074	0.062	0.063	0.066

- Design value is the number that is compared to the NAAQS
- The form of the current design value for ozone is the 3-year average of the 4th highest daily maximum 8 hour ozone concentration in ppm

1st Quarter 2011 Validated Data

- 13 Elevated 8-Hour Ozone Days
 - February 14, 15, 21
 - March 1, 2, 3, 5, 6, 9, 10, 12, 14, 15
- 10 Advisory Days
 - February 28
 - March 1, 2, 4, 5, 10, 13, 14, 15, 18

1 st Quarter 2011 Validated Data Monitored Ozone Top Four 8-Hour Daily Maximum (ppb)				
Wyoming Range	Pinedale	Daniel 2011 (2008)	Boulder 2011 (2008)	Juel Spring
83	89	84 (76)	123 (122)	94
80	83	79 (76)	121 (104)	85
80	80	77 (74)	121 (102)	85
72	76	75 (74)	103 (101)	76

NOTE: Three (3) year average of 4th high 8-Hour Daily Maximum is compared to NAAQS.

PAPO funded monitoring

- Boulder Station
 - Hydrocarbon analyzer with canisters for speciation
 - Year-long speciated particulate study on EPA schedule w/ episodic sampling
 - Enhanced NO_x monitoring
 - Larger Shelter replacement



Upper Green Winter Ozone Study 2011

- Jan. 15 to March 31, 2011
- Contractors:
 - MSI
 - T&B Systems
 - University of Houston
 - Environ
- Focus on vertical distribution of precursors

Upper Green Winter Ozone Study 2011

- Tall tower
 - 73 m – measured at 3, 25, 50, 73 m
 - Ozone, NO_x, CH₄, NMHC, Wind speed, direction, temp.
 - Continuous during winter
 - Downwind of Jonah Field
- Tethered balloon
 - 100 m – measured at 3, 33, 67, 100 m
 - Ozone, NO_x, CH₄, NMHC, speciated VOC's (grab samples)
 - Deployed daily during intensive periods
 - In Pinedale Anticline Field

Questions?

2/19/08



1/26/11

