



Oil & Gas Stakeholder Meeting General Approval Order

Utah Division of Air Quality

January 30th, 2014

Meeting Purpose



General Permit Purpose

- Same as Regular Process, plus
- Alleviate Administrative Burdens



NOI Requirements

- General Information
- Site/Process Description
- Equipment Details
- Emission Estimates
- BACT Analysis
- Emissions Impact Analysis



Best Available Control Technology

Energy

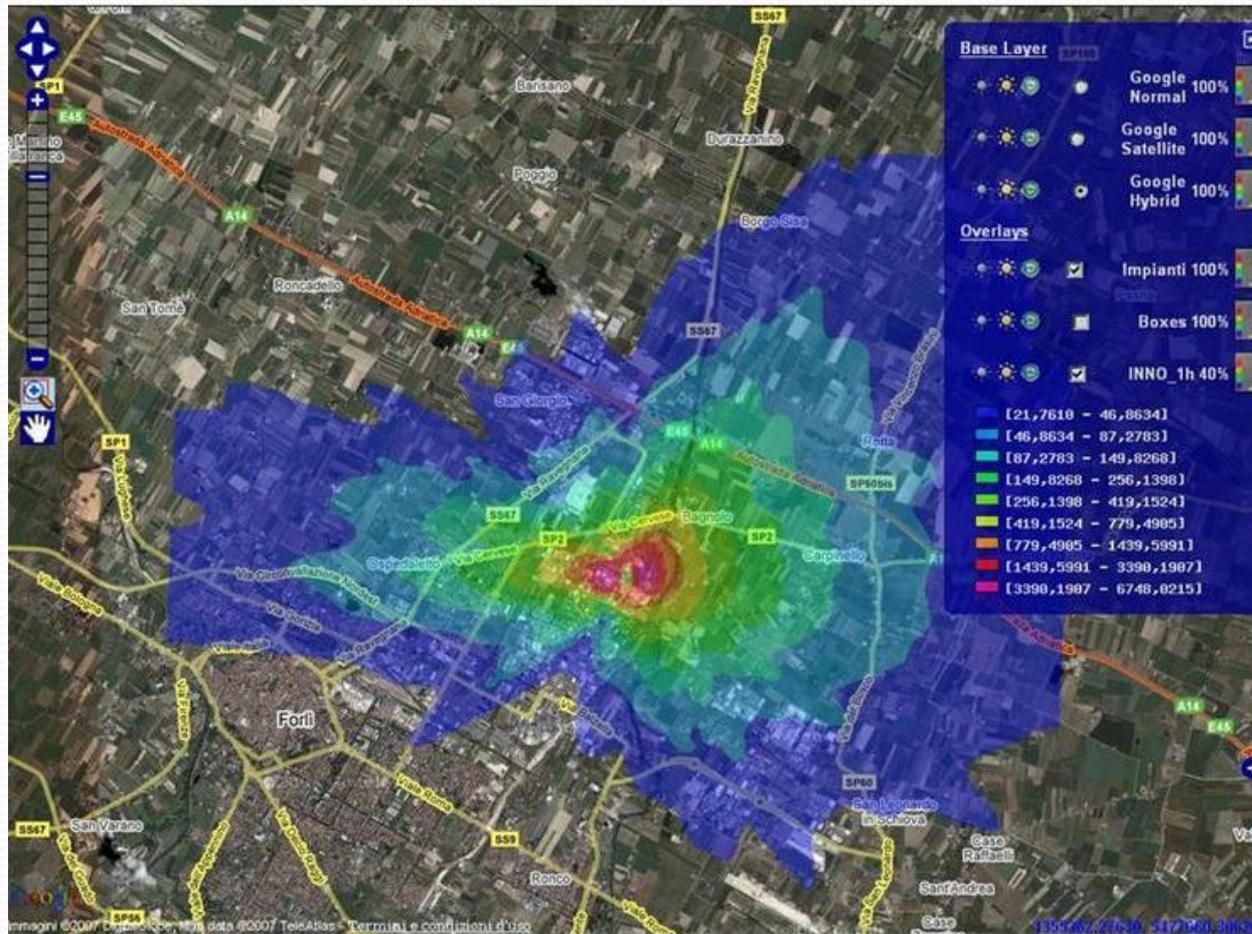


Economic



Environmental

Air Quality Demonstration



Ozone Demonstration

- State-Wide
 - Monitoring Data
- Uintah & Duchesne Counties
 - DAQ Analysis



Future Energy Landscape

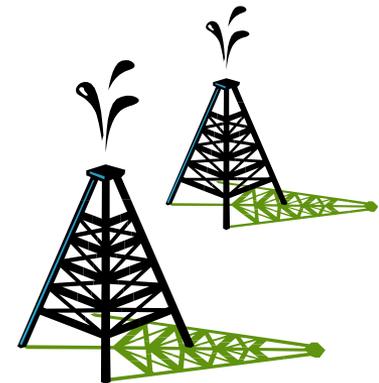
- Growth within the Uintah Basin
 - U.S. Energy Information Administration (EIA) Data
 - How much will production increase over the 6 years?
 - How many new wells will be coming online in the next 6 years?
- How will the production from existing wells change?
 - Decline Curve Analysis
 - How much will the production from existing wells decline over the next 6 years?



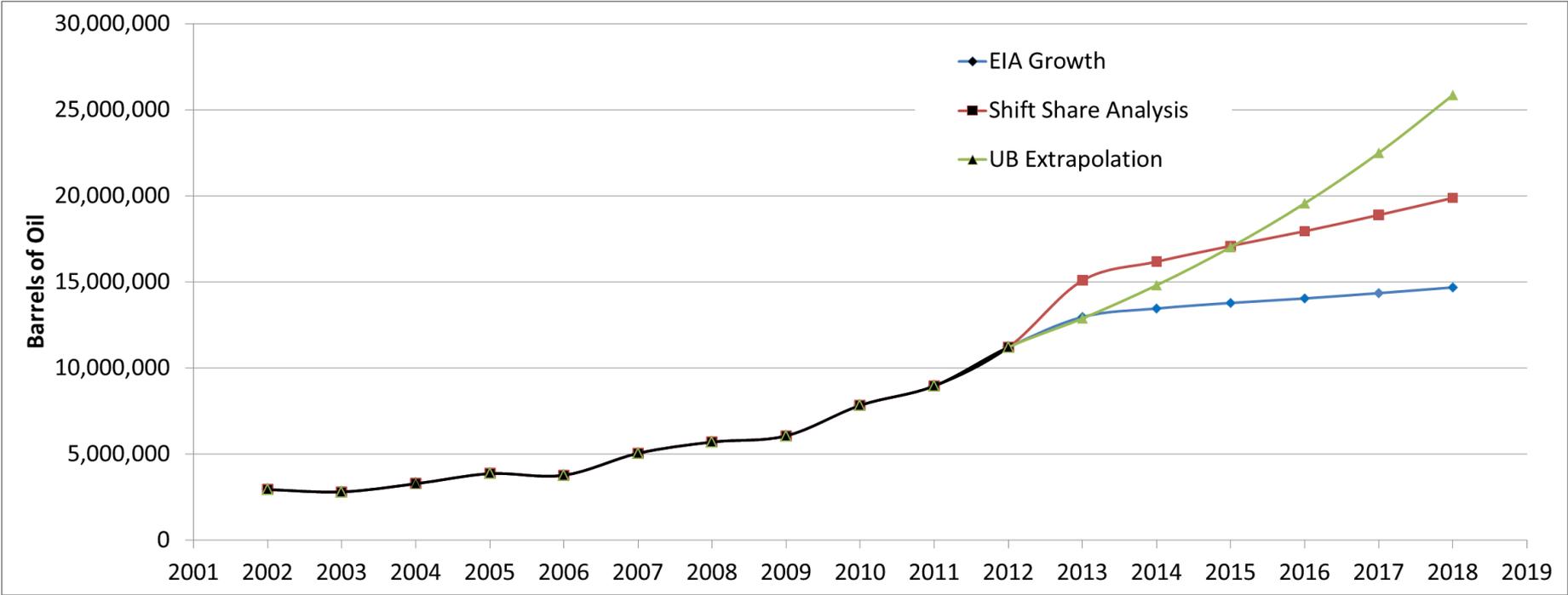
Contribution of New Wells

Application of Growth Rate

- Estimate future production: apply growth projection to current Uintah Basin production – extent to which production will increase.
- Determine # new wells likely to come online each year



Our Production Estimate

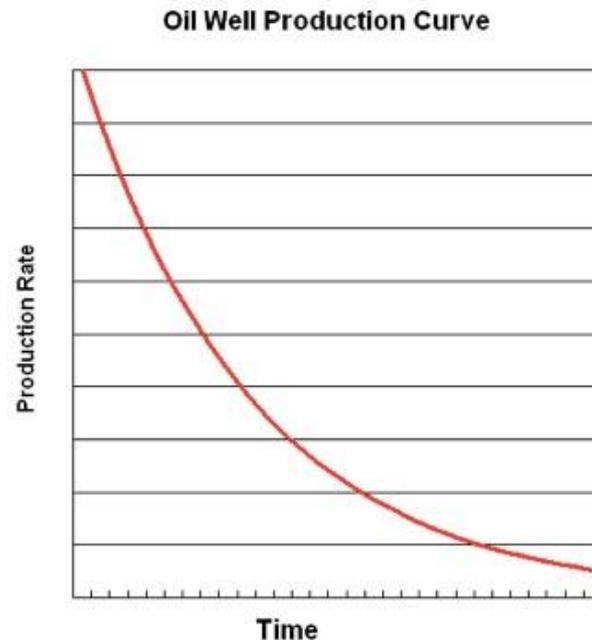


Our Production Estimate

Year	Uintah + Duchesne Oil Production (barrels)	Uintah + Duchesne Spuds	Uintah + Duchesne Oil Wells
2002	2,940,738	13	553
2003	2,805,745	30	558
2004	3,276,753	48	598
2005	3,862,726	85	676
2006	3,768,506	112	759
2007	5,043,578	149	849
2008	5,699,654	117	935
2009	6,057,583	129	1033
2010	7,830,758	320	1259
2011	8,955,798	301	1475
2012	11,204,120	240	1680
2013	12,879,213	276	1956
2014	14,804,743	317	2273
2015	17,018,154	365	2638
2016	19,562,485	419	3057
2017	22,487,210	482	3538
2018	25,849,202	554	4092

Contribution of Existing Wells

- Oil and gas production rates decline as a function of time.
- Decline curve analysis is a traditional means of predicting future well performance and life based on real production data.

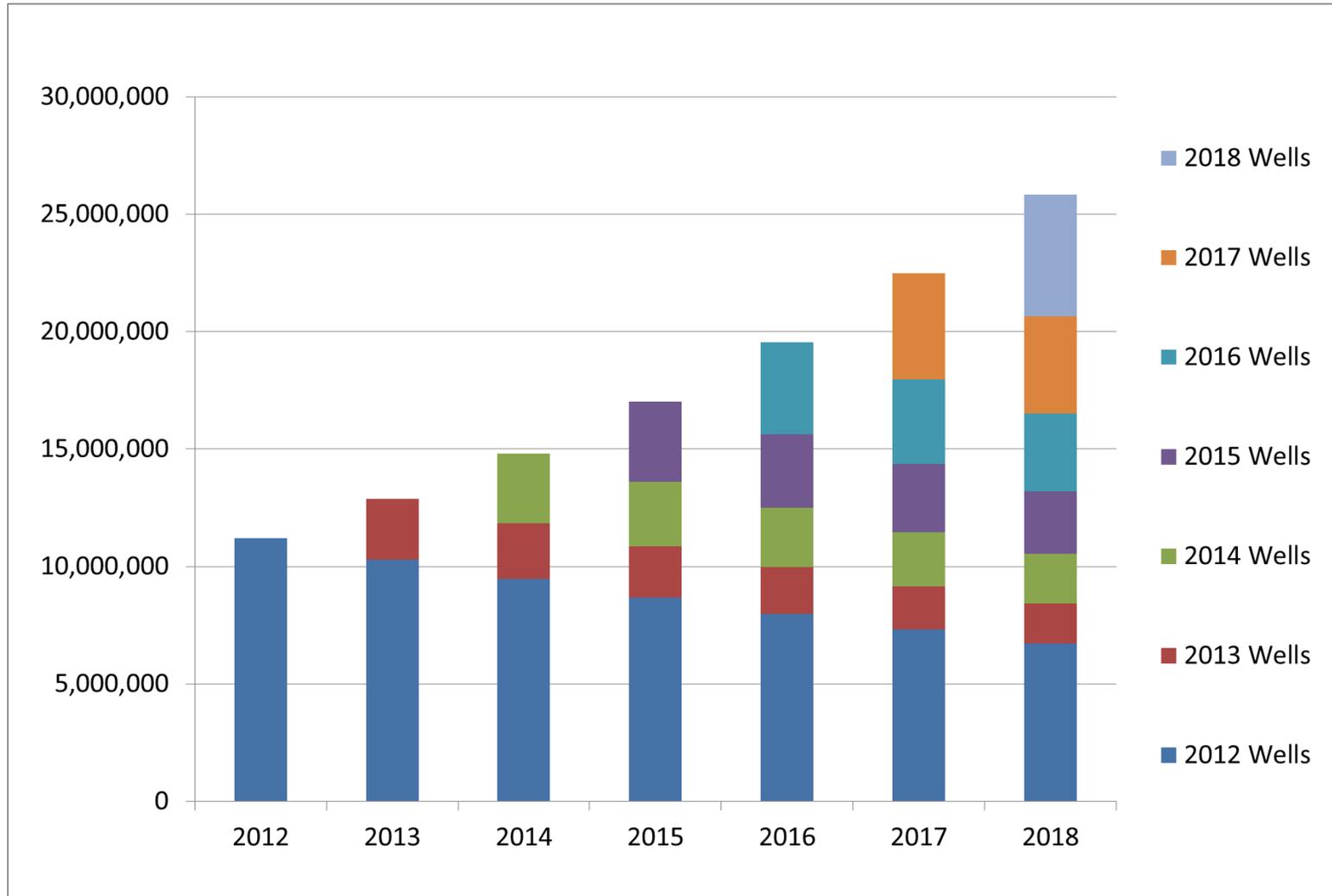


Contribution of Existing Wells

- 2012 = base year
- Historical production data from DOGM
 - 2003-2012, OW, Uintah and Duchesne Counties, state jurisdiction
- Standard analysis method to determine decline rate
 - Exponential determined to be best fit.
- Model output can be used to estimate production decline.



Oil Production – Application of Decline Factor



Production to VOC Emissions

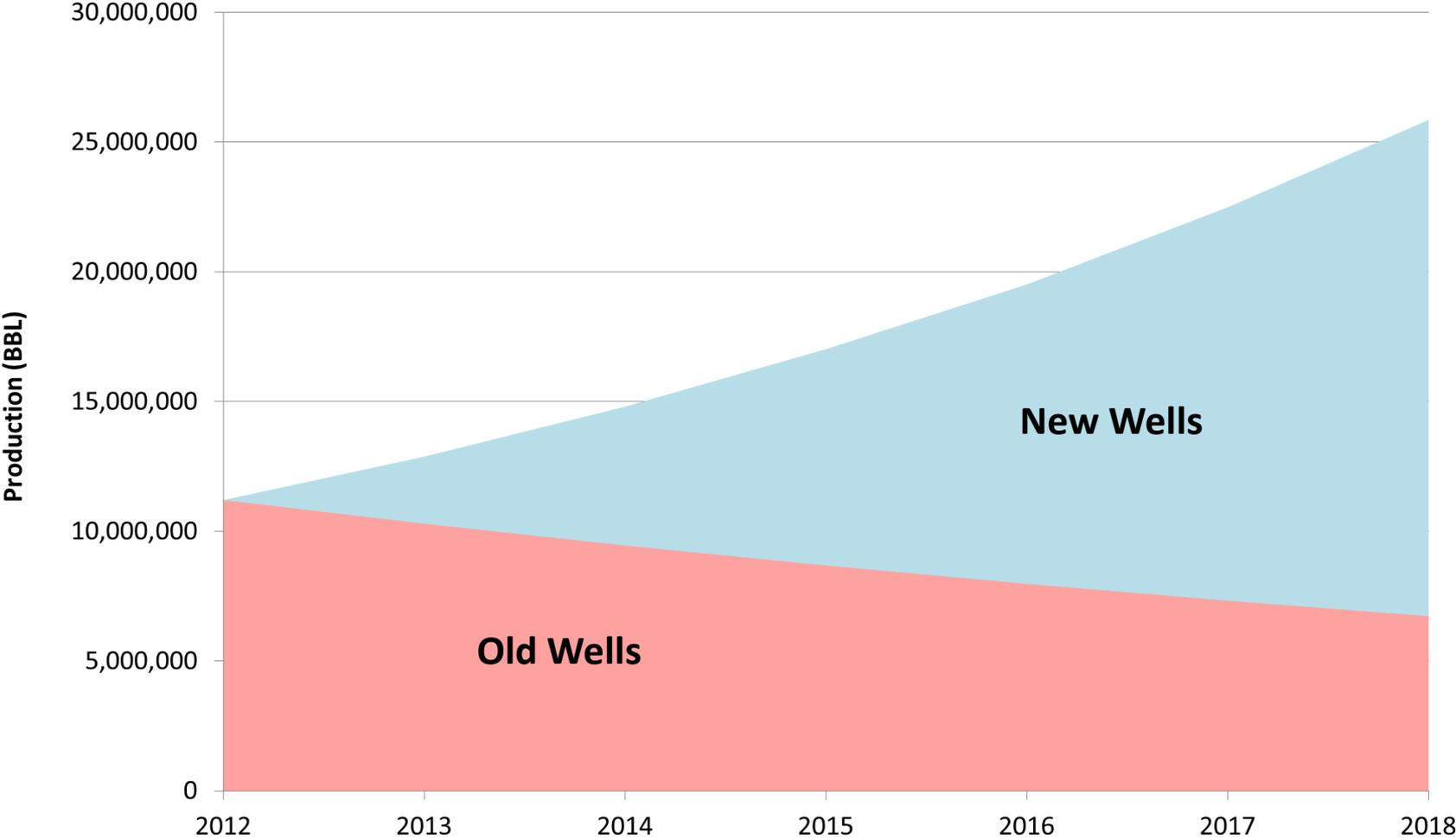
- Emissions factor determination
 - WRAP Phase III Emissions Inventory
 - 2012 Projection: Cumulative TPY VOC/Cumulative production
 - Determine amount of VOC emissions for each unit of production
 - 1 BBL oil = X TPY VOC
 - 1 MCF nat. gas = Y TPY VOC
 - Factor will vary depending on source category



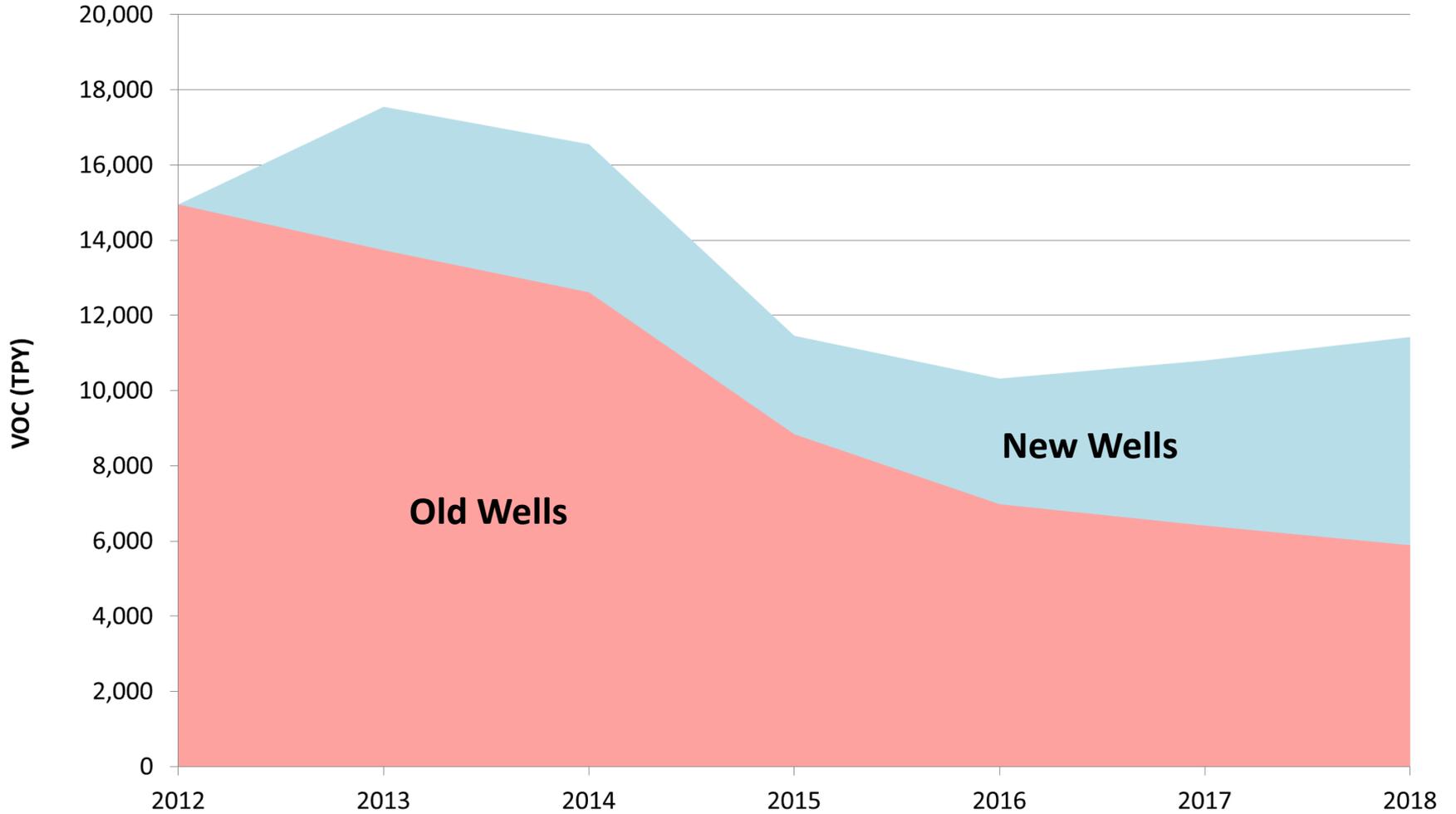
Controls – New vs. Old

- Many new controls are beginning to be implemented.
 - NSPS, NESHAP, AO (GAO)
- Impact new sources but not old sources.
- Proportion of production associated with existing wells vs. new wells is shifting.
- Result: larger proportion of production will be impacted by new stronger controls.

Oil Production Growth



Oil Production Related VOC Emissions



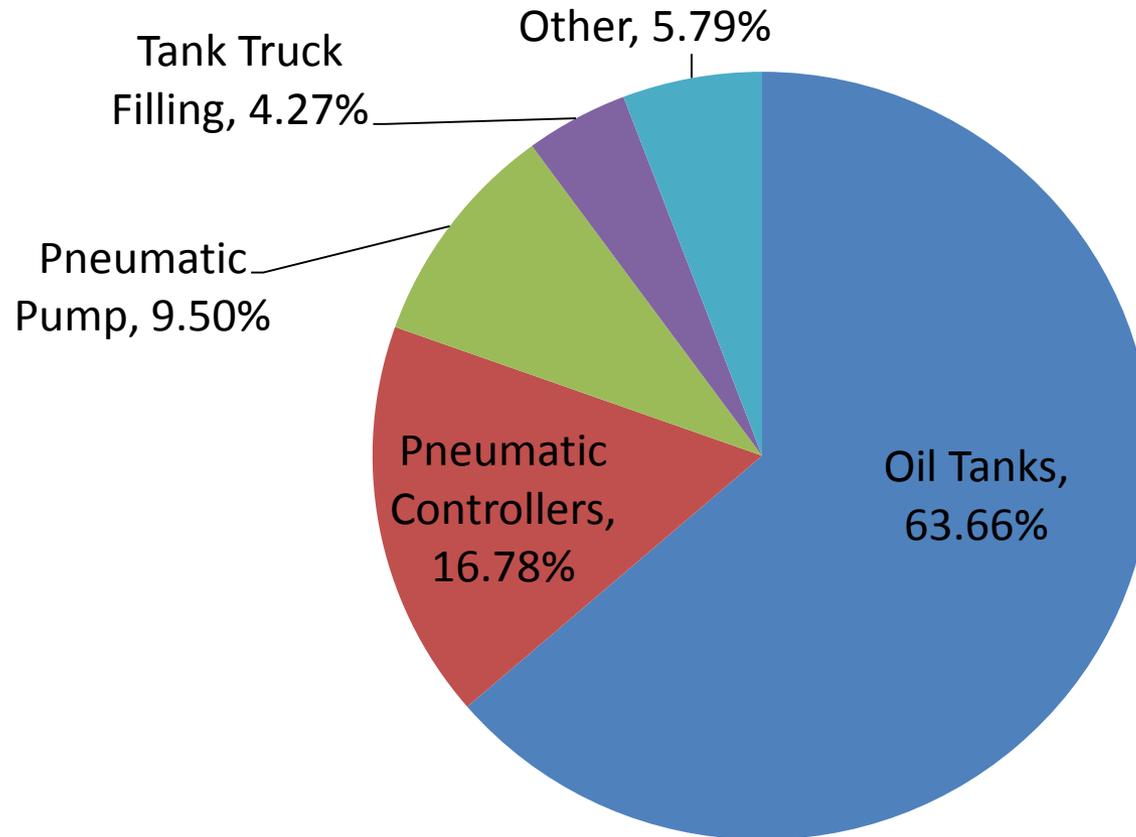
Tanks

Uintah and Duchesne Counties Future Oil Emissions Estimates (b2)																					
	2012	2012	2012	2013	2013	2013	2014	2014	2014	2015	2015	2015	2016	2016	2016	2017	2017	2017	2018	2018	2018
	Oil Prod	VOC	VOC																		
	(BBL)	(TPY)	(TPY)																		
		w/o cntrl	w/ cntrl																		
Wells as of 2012	11,204,120	16,521	14,951	10,291,020	15,175	13,733	9,452,335	13,938	12,614	8,681,999	12,802	8,839	7,974,444	11,759	6,979	7,324,552	10,800	6,410	6,727,625	9,920	5,888
2013 New Wells				2,588,193	3,816	3,816	2,377,264	3,505	2,053	2,183,524	3,220	838	1,956,721	2,885	567	1,842,126	2,716	533	1,691,999	2,495	490
2014 New Wells							2,975,145	4,387	1,887	2,732,680	4,029	791	2,509,975	3,701	727	2,305,420	3,399	668	2,117,536	3,122	613
2015 New Wells										3,419,950	5,043	990	3,141,235	4,632	910	2,885,235	4,254	836	2,650,097	3,908	767
2016 New Wells													3,931,256	5,797	1,138	3,610,871	5,324	1,046	3,316,597	4,890	960
2017 New Wells																4,519,005	6,663	1,309	4,150,721	6,120	1,202
2018 New Wells																			5,194,628	7,660	1,504
TOTALS	11,204,120	16,521	14,951	12,879,213	18,991	17,549	14,804,743	21,830	16,554	17,018,154	25,094	11,458	19,513,632	28,774	10,321	22,487,210	33,158	10,801	25,849,202	38,116	11,425

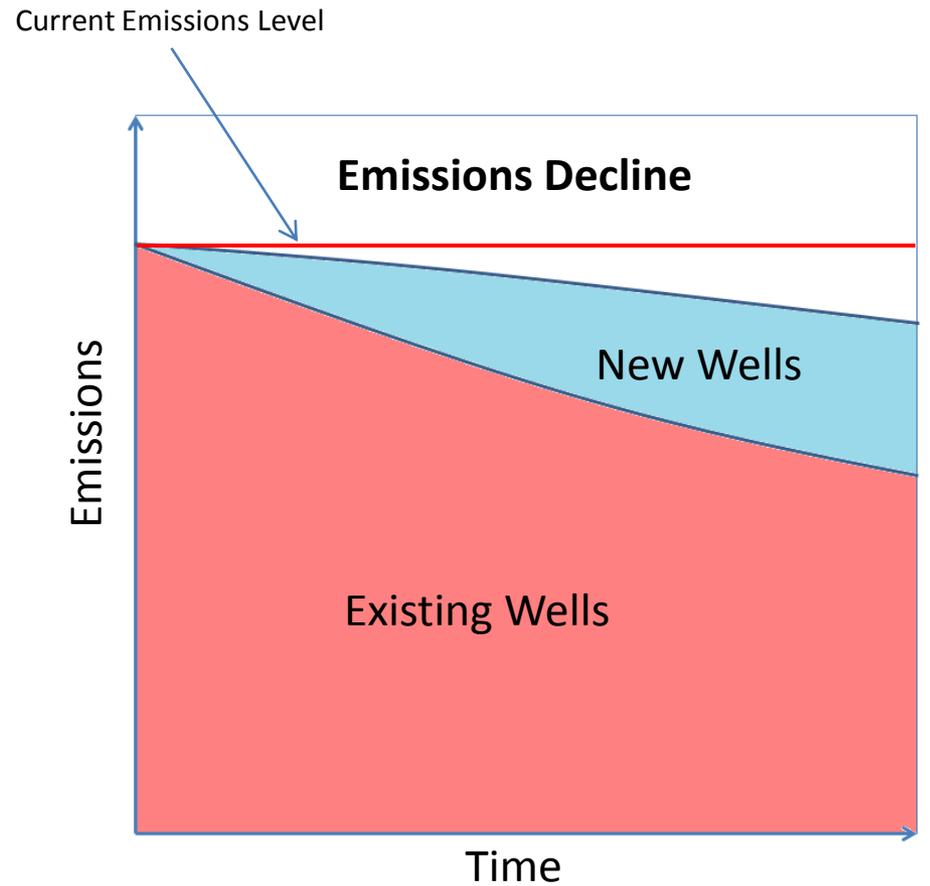
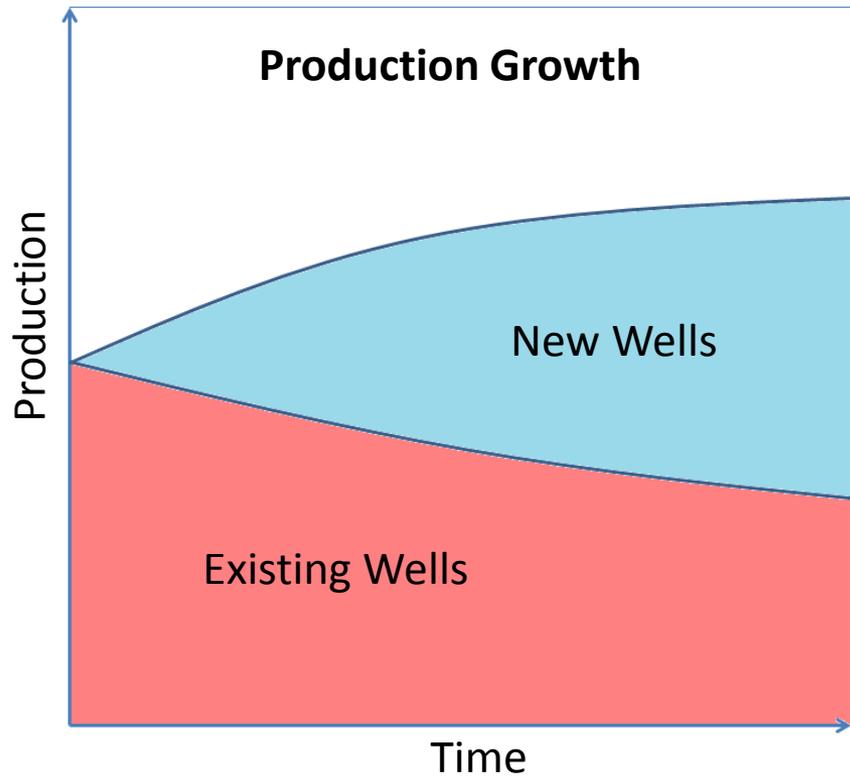
- Accounting for current level of control (10%)
- Analyzing impact of the NSPS Subpart OOOO on oil tank emissions
- 2012 to 2018: Projected 130.71% increase in oil production, with an estimated 23.58% reduction in related VOC emissions.

Additional Sources

Oil Production Related VOC Sources



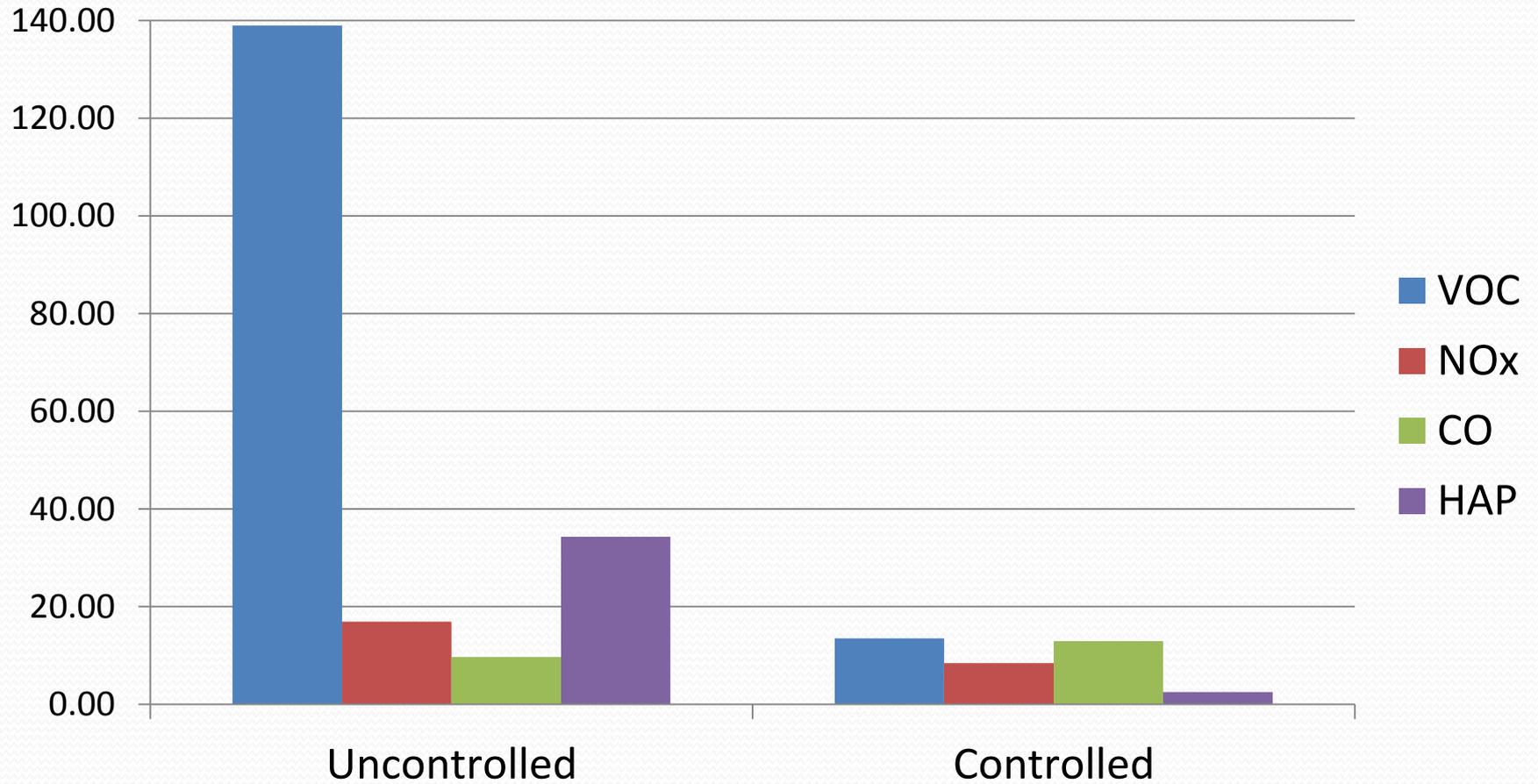
Four Categories combined: 94% of oil related VOC emissions



General Permit: Oil & Gas Tank Battery



Site-Wide Emissions

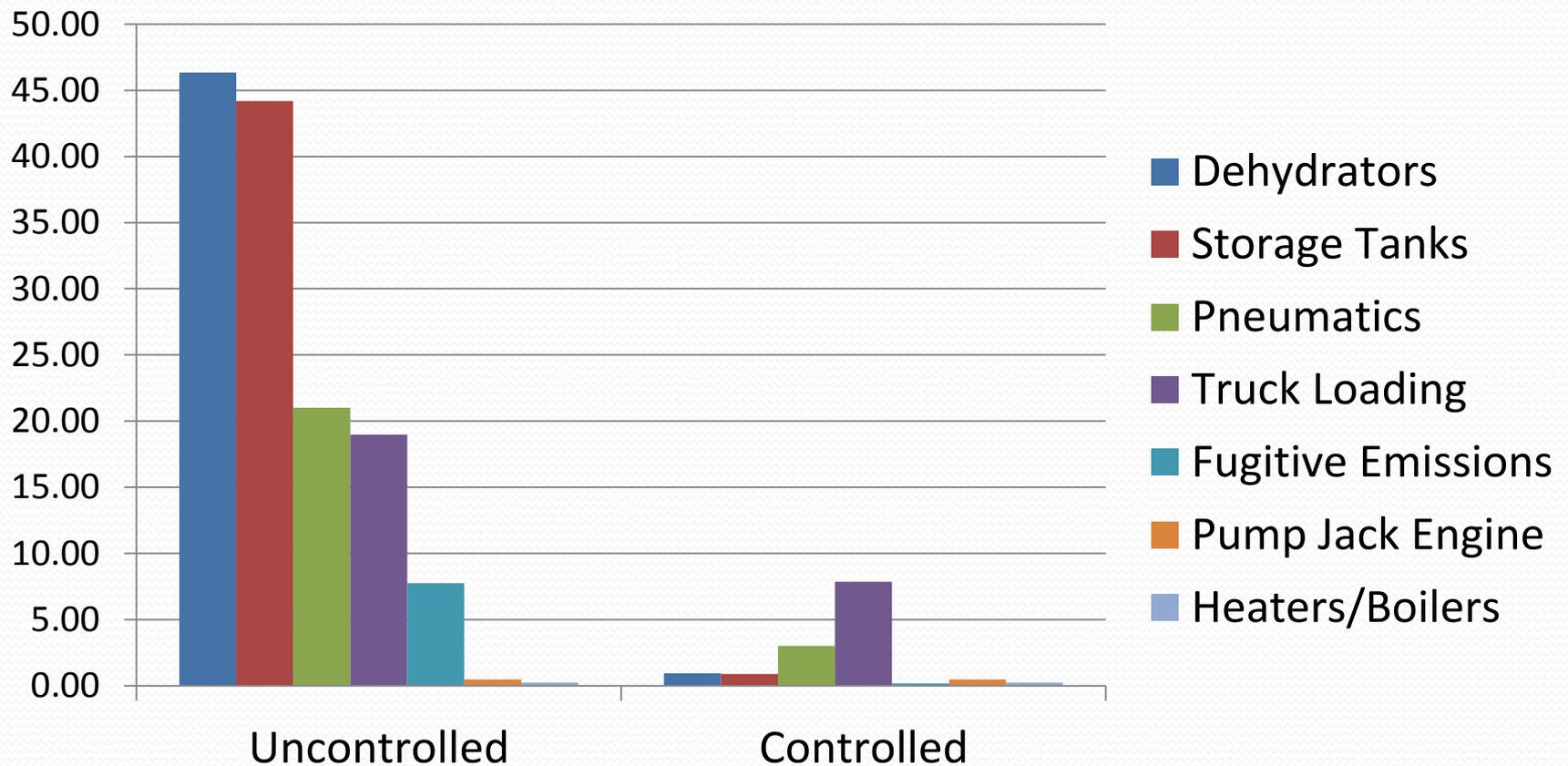


Other Pollutants

- PM_{10} & $PM_{2.5}$
- SO_2
- GHG



VOC Emissions



General Requirements

- Definitions
- Compliance
- Modifications
- Records (Retain for 2 years)
- Maintenance
- Breakdowns
- Inventory, Testing, Monitoring



Applicability

- $\leq 50,000$ Barrels of Crude Oil/Condensate
- Produced Gas is Captured



Equipment: Tanks

- Contents: Oil, Condensate, or Produced Water
- Individual Tank Capacity: 550 barrels
- Site-Wide Tank Capacity: 2,200 barrels



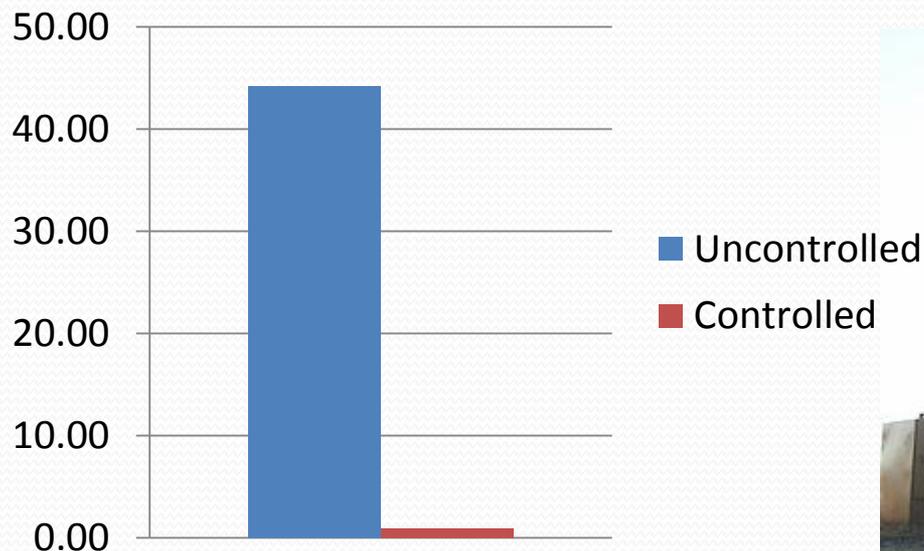
Tank Requirements

- Reduce VOC emissions
 - Recovered, Recycled, Used as Fuel, or
 - Controlled with a VOC Control Device
- Inspect the Thief Hatches Monthly
 - Recordkeeping



Tank Emissions

- Working & Breathing Losses – EPA TANKS 4.0.9d
- Flashing Emissions – Vasquez Beggs Equation



Equipment: Dehydrator

- Maximum Capacity:
- 2.0 Million Standard Cubic Feet per Day



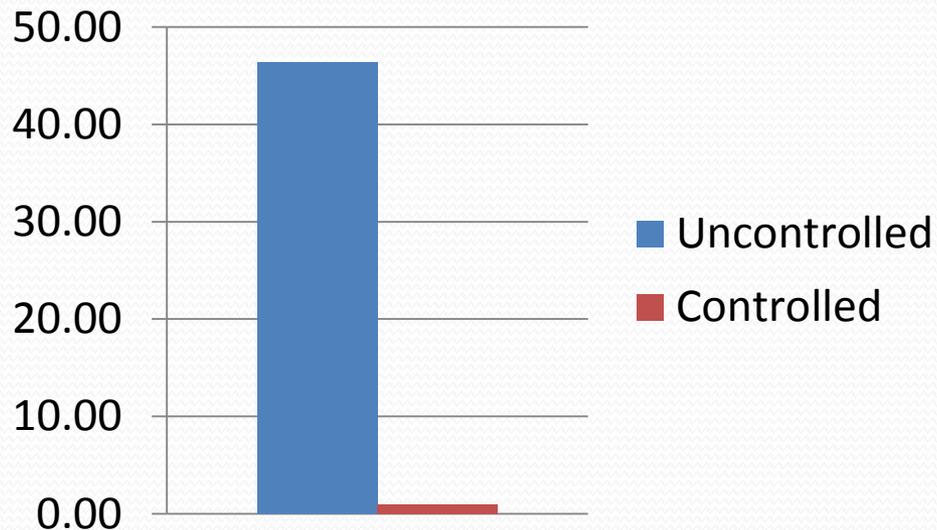
Dehydrator Requirements

- Reduce VOC emissions
 - Recovered, Recycled, Used as Fuel, or
 - Controlled with a VOC Control Device



Dehydrator Emissions

- Evaluated 10 Compressor Stations
- Emission Factor, Tons VOC per Million Cubic Foot/day



Equipment: VOC Control Device

- $\geq 98\%$ Control Efficiency



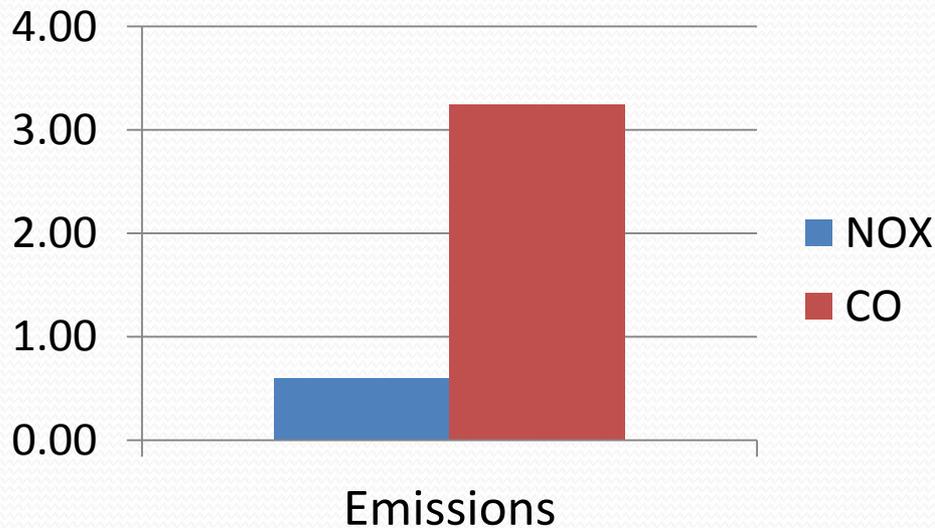
VOC Control Device Requirements

- Manufacturer Guaranteed Control Efficiency
 - Records
- Maintenance according to the Manufacturer
 - Records
- No Visible Emissions



VOC Control Device Emissions

- AP-42 Section 13.5
- 2.0 MMBtu/hour



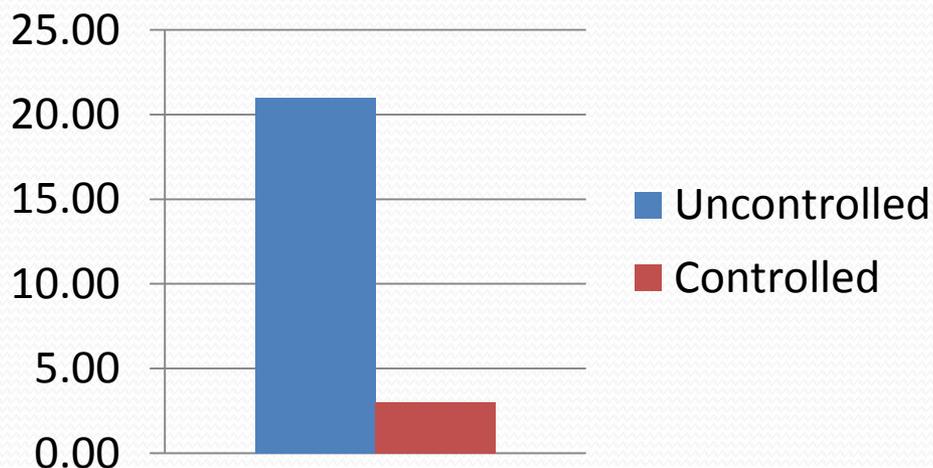
Pneumatic Requirements

- Natural Gas-Driven Controllers & Pumps
- Reduce VOC Emissions
 - Bleed rate is ≤ 6 standard cubic feet per hour, or
 - VOC Emissions are Controlled
 - Recovered, Recycled, Used as Fuel, or
 - Controlled with a VOC Control Device



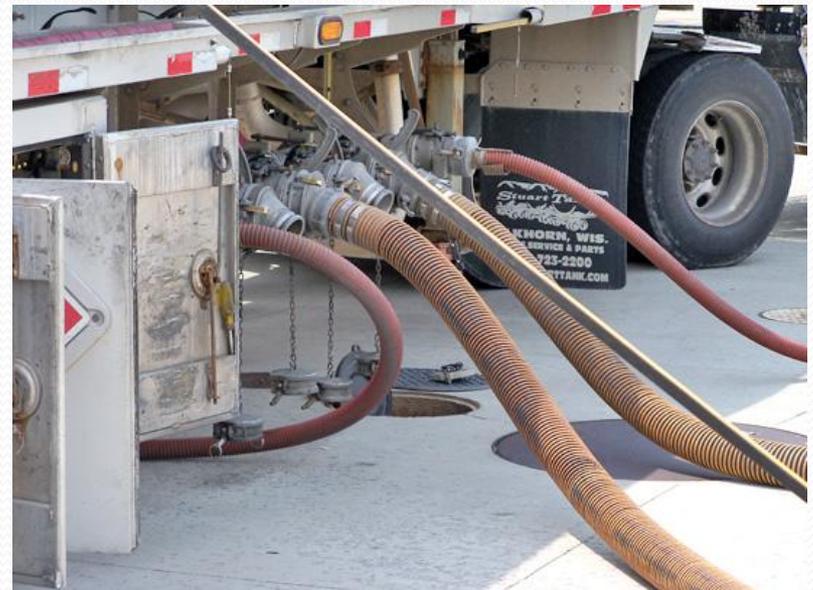
Pneumatic Emissions

- Options For Reducing Methane Emissions From Pneumatic Devices In The Natural Gas Industry
 - Lessons Learned from Natural Gas STAR Partners
- Draft Oil & Gas Ozone Reduction Strategy – Revision 1
 - April 10, 2008 RAQC Meeting



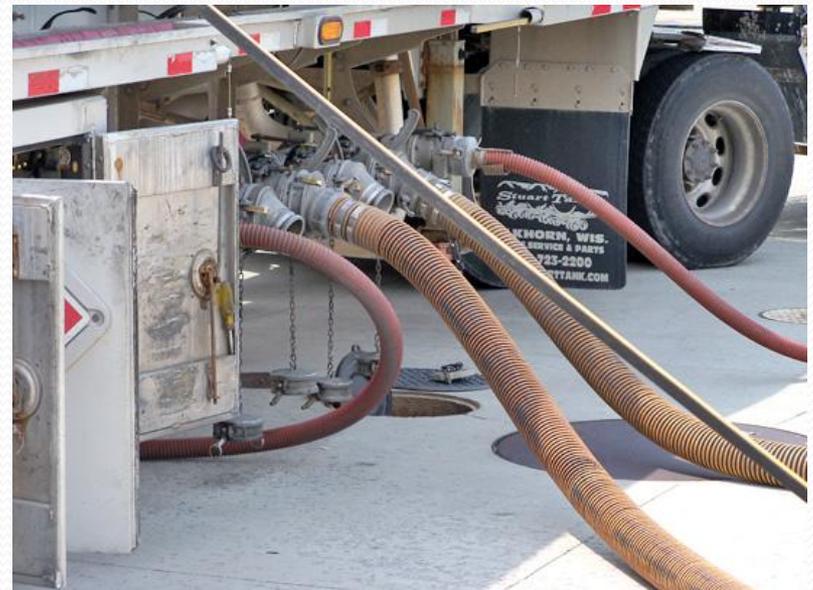
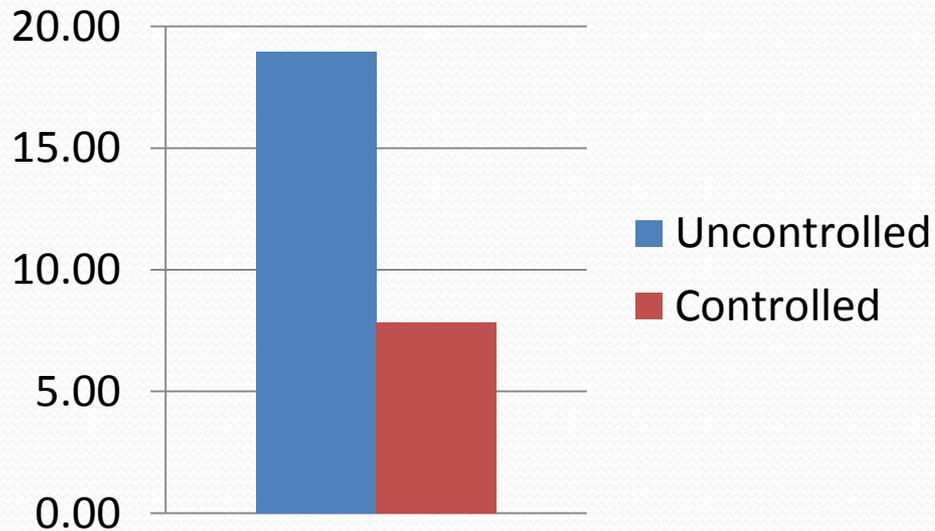
Truck Loading Requirements

- Submerged/Bottom-Fill Loading



Truck Loading Emissions

- AP-42 Section 5.2



Equipment: Engines

- Rating \leq 130 Horsepower
- Fuel: Natural Gas or LPG



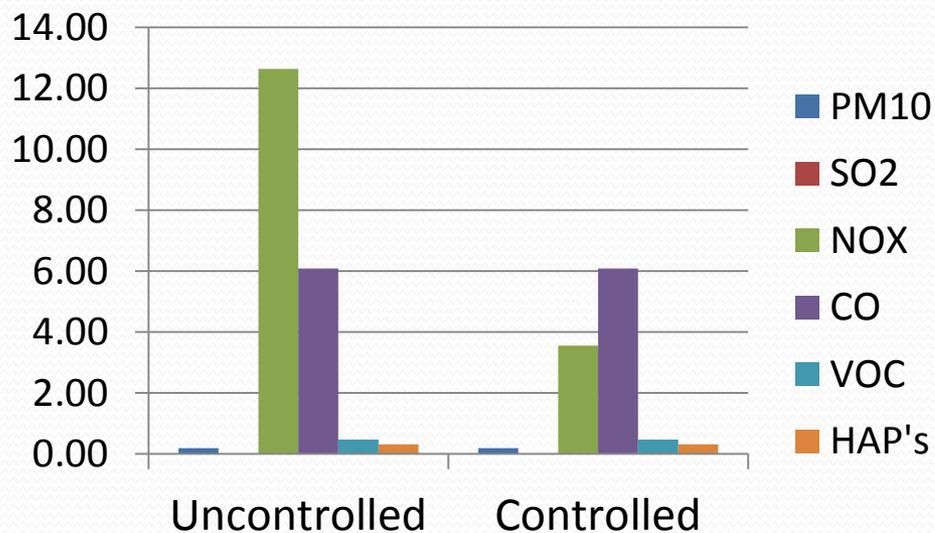
Engine Requirements

- Must Meet Current Engine Emission Standards
 - NSPS Subpart JJJ
 - Manufacturer Guarantee
 - Records
 - Proper Maintenance
 - Records
- At least 4-Foot Stack Height



Engine Emissions

- NO_x, CO, & VOC: NSPS Subpart JJJJ - 40 CFR 1048.101(c)
- Others: AP-42 Section 3.2



Equipment: Boiler/Heaters

- Rating ≤ 10.0 MMBtu/hr
- Fuel: Natural Gas or LPG



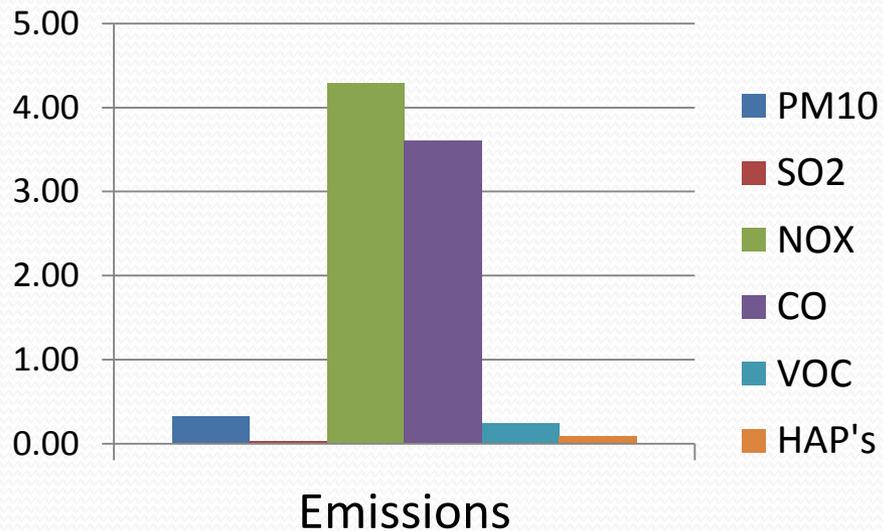
Boiler/Heaters Requirements

- Stack Height: 1 foot above Storage Tanks



Boiler/Heater Emissions

- AP-42 Section 1.4



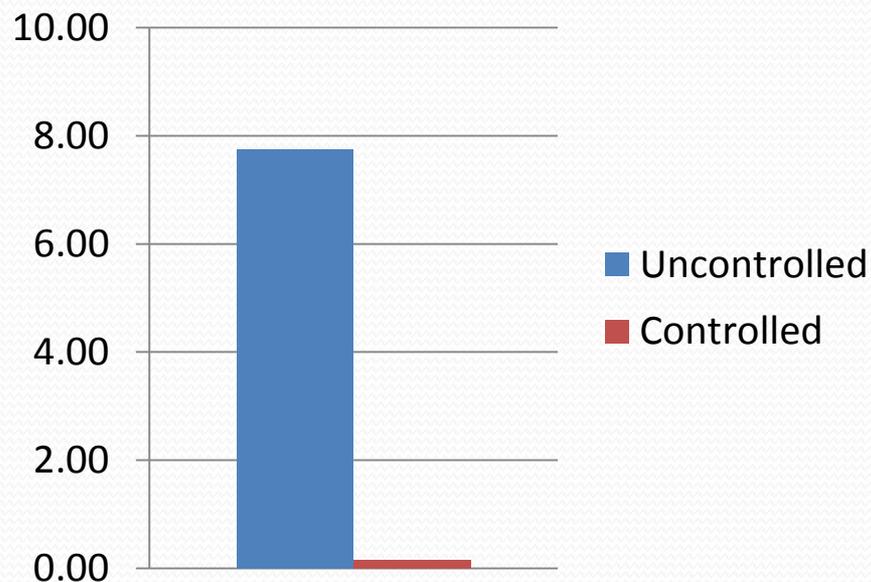
Leaks - Fugitive Emissions

- Leak Detection & Repair Program



Fugitive Emission Estimates

- 1995 EPA Protocol for Equipment Leak Emission Estimates
 - Table 2-4 for Uncontrolled
 - Table 2-8 for Controlled



Leak Detection

- Initial inspection for all sources
- Annual for medium sources
- Quarterly for larger sources
 - (options to reduce frequency)
- Quantitative Analyzer or Infrared Camera
- Records



Repair

- Initiate repair within 5 days
- Repair Completed within 15 days of detection
- Exemptions:
 - Unsafe, Unavailable Parts, Shutdown
- Records



Other Equipment

- Methanol & Glycol Storage Tanks
 - Site-Wide Capacity \leq 1,000 gallons
 - EPA TANKS 4.0.9d
- Emergency Overflow Tank
 - Capacity 550 barrels
- Compressors & Pumps
- Heater Treaters



Other Requirements

- Throughput Recordkeeping
- 10% Opacity Limit
- 18-month Construction Notification
- Start-up Notification
- Initial & Annual Inventory
 - Equipment
 - Emissions



Preliminary Schedule

- Public Comment Period Starts Early February
- Public Comment Period Ends in March
- Evaluate & Respond to Comments
- GAO is Issued Late March



Review Documents

- Engineering Review
 - Decisions & Justification
 - BACT Review
 - Summary of Impact Analysis
 - Equipment
 - Conditions



Other Documents

- Emission Calculations
- Detailed Impact Analysis
- Application Forms
- Draft Permit



Public Comment Period

- Comment should Include:
 - Permit or Process Specific Issues
 - Technical Basis
 - Legal Justification
- Does not Include:
 - Non-permit, Air Quality Issues
 - Votes
 - Zoning Requirements



Contacts

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Questions

