2013 Rulemaking Stakeholder Meeting

April 25, 2013

Colorado Department of Public Health and Environment
Air Pollution Control Division





2013 Rulemaking Effort Goals

- Identify and implement strategies that improve the effectiveness and efficiency of Colorado's air quality program
- Find ways to **reduce permitting burdens** for both the Division and the regulated community without impacting environmental benefits from the permitting program
- Address the growth in oil and gas development through the adoption of reasonable emission reduction strategies
- Lay the groundwork for ongoing efforts to reduce oil and gas emissions while minimizing burdens that don't provide environmental value



Stakeholder Process Goals

- Role out concepts, draft language, and associated rulemaking documents, in phases, for stakeholder review and input
 - All concepts, language and documents are expected to evolve through the stakeholder process
 - Wrap up Regulation Numbers 3 and 6 by May 2013
 - Wrap up Regulation Number 7 and Common Provisions by June 2013

NOTE: Stakeholders will have multiple opportunities to comment during the stakeholder process and later, during the rulemaking process.



Timeline and Schedule

- Stakeholder Meetings
 - Wednesday, May 22, 2013 1:30 pm-4:30 pm Note: All meetings in Sabin/Cleere Rooms, CDPHE Campus
- Rulemaking Process Goal
 - August 2013 Request for Hearing
 - November 2013 Hearing



Areas of Discussion

Proposed Revisions: Part 1

- Regulation Number 6, Part A, NSPS OOOO
 - EPA reconsideration
- Regulation Number 3 reporting and permitting
 - Regulation Number 3 references
 - APEN and permit analyses



Areas of Discussion

Proposed Revisions: Part 2

- Possible Presumptive BACT options
- Oil and gas controls cost/benefit analyses
- Regulation Number 7 oil and gas emission reduction strategies
 - Discussion of comments received
 - Review of language changes

Proposed Revisions: Part 1

NSPS OOOO

(Regulation Number 6, Part A)

Permitting and APEN Requirements (Regulation Number 3)





Reg. 6 – NSPS 0000

- Partial adoption October, 2012
- Adopt well completion and other provisions in full
- Remove manifolded tanks variation
- EPA reconsideration
 - EPA estimated number of tanks and available controls
 - Enforceable limits to avoid storage vessel requirements

Continue moving forward with potential full adoption



Reg. 3 – Revisions

- Remove requirements for sources subject to a NSPS, NESHAP, or MACT adopted by the AQCC to file an APEN and/or obtain a construction permit, regardless of emissions
- Revise Air Pollution Emission Notice (APEN) reporting thresholds (2 tpy)
- Revise Appendix A de minimis levels for non-criteria reportable pollutant (1000 lbs/yr)
- Revise construction permit thresholds (25 tpy)
- Remove the crude oil storage tank permit exemptions



Reg. 3 – References

- Avoid inadvertent changes to SIP requirements
 - Regulation Number 1
 - Section III.D.
 - Regulation Number 7
 - Section XII.
 - Section XVII.



Reg. 3 – Preliminary Analyses

- Construction Permits
 - Historical data analysis
 - Real-time data analysis (ongoing)
- APENs
 - Historical data analysis



Reg. 3 – Permit Analysis

- Division Proposal
 - Raise construction permit threshold to 25 tpy for all criteria pollutants except lead
- Goals
 - Streamline and reduce permitting requirements
 - Consistent thresholds statewide
 - No loss in emission controls



Reg. 3 – Permit Analysis

- Analysis
 - CDPHE permit database queried February, 2013 all AIRS points with estimated uncontrolled actual emissions of criteria pollutants < 25 tpy
 - Removed AIRS points at: major source facilities, facilities > 25 tpy, and synthetic minor sources
 - Removed permit-exempt, APEN-exempt, and cancelled AIRS points
- 7,600 9,500 AIRS points at facilities < 25 tpy

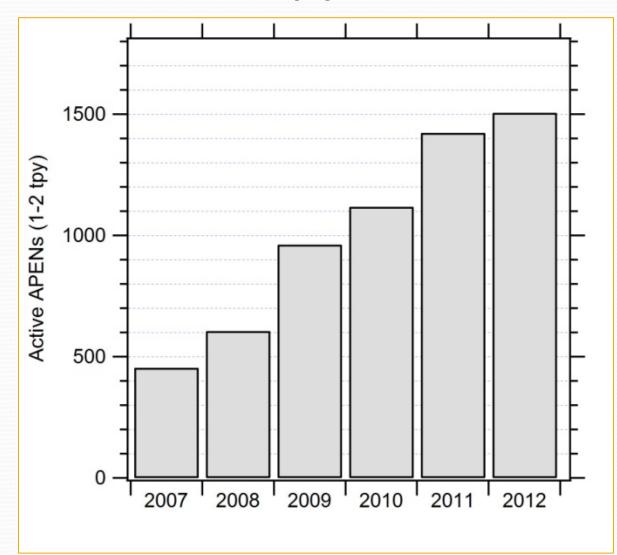


Reg. 3 – APEN Analysis Ozone NAA

- Division Proposal:
 Raise APEN reporting threshold in NAA from 1 to 2 tpy
- Goals
 - Streamline and reduce reporting requirements
 - Make APEN thresholds consistent statewide
 - Minimal loss in emissions data
- Analysis
 - CDPHE APEN database queried March, 2013
 - Looked at uncontrolled, unit-level emissions
 - Most recent, maximum data used (2012)
 - Includes active APENs between 1-2 tpy in NAA

Reg. 3 – NAA APENs 1-2 tpy 2007-2012

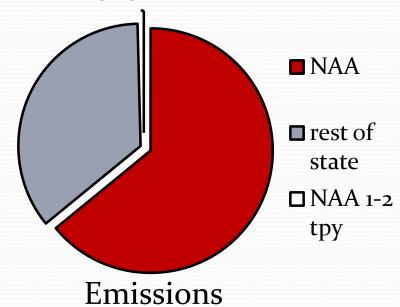
- APENs in this category have been rising steadily from 2007 to 2012
- Affected sources are very small relative to statewide point source emissions
- Most larger sources already have enacted controls





Reg. 3 – VOC Sources 1-2 tpy Emissions

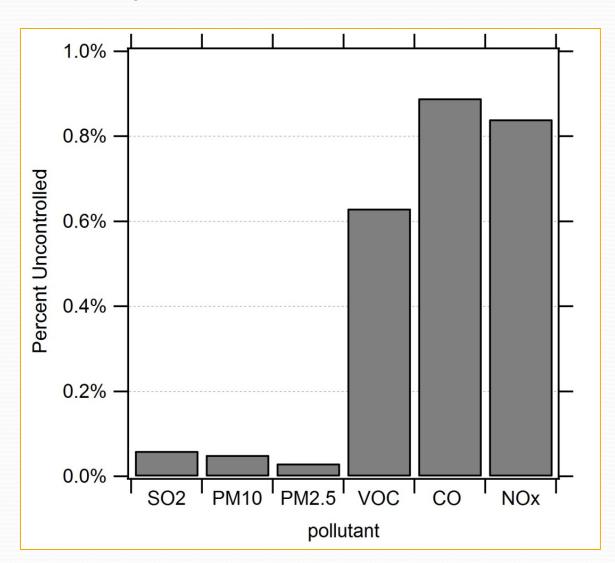
- VOC detailed example
 - 64% of state uncontrolled emissions of VOCs are in NAA
 - NAA uncontrolled VOC are less than 1% of NAA VOC



- •Most APENs are for point source activities related to loadout/tanker trucks and small condensate tanks
- •99% of condensate tank emissions are from tanks/batteries with uncontrolled emissions > 5 tpy

Reg. 3 – Other pollutants in NAA

2012 NAA Uncontrolled **Emissions** for sources between 1-2 tpy as a percent of all NAA Uncontrolled **Emissions**



Proposed Revisions: Part 2

Oil and Gas Potential Control Strategies (Regulation Number 7)





Presumptive BACT Options

- Division considering improved capture requirement
 - Storage tanks with required control devices have "no detectable emissions" from thief hatches, pressure relief valves, and other access points except during periods of malfunction
 - Operators must keep thief hatches, pressure relief valves and other access points closed except for maintenance and liquid loadout



Presumptive BACT Options

- Alternatively, compliance with "no detectable emissions" requirement is presumed when the tank is equipped with and operating presumptive Best Available Control Technology (BACT)
 - New and modified storage tank batteries
 - Existing storage tank batteries

NOTE: Still subject to 95% control requirements and General Provisions (good air pollution control practices)



Options for New/Modified Storage Tanks

- Centralized liquids gathering system
 - Liquids processed at centralized facility
 - Liquids stabilized before dispensing into atmospheric storage vessel
 - Gaseous emissions captured and sent to sales line
- Closed-Loop Emission Capture System
 - Technology that captures emissions from PRV and thief hatch
 - Could include expandable tank bladder systems
 - Gaseous emissions captured and sent to sales line
- HLP Separator
 - At least two stages of separation must occur
 - Gaseous emissions captured and sent to sales line
 - The HLP control cost of a hypothetical 20 tons/year uncontrolled tank is about \$1,174 per ton of VOC reduced
 - VOC reduction about 19 tpy



Options for Existing Storage Tanks

- Anything that qualifies as PBACT for new and modified tanks; or
- Second Stage Separation Buffer Bottle
 - At least two stages of separation must occur
 - Gaseous emissions can be flared
 - The Buffer Bottle retrofit control cost of a hypothetical tank with 20 tons/year (uncontrolled) is about \$637 per ton of VOC reduced
 - VOC reduction about 4.75 tons/year (assumes 25% improvement in capture of emissions)

HLP and Buffer Bottle Cost Estimates

High-Low Pressure (HLP) Control Device – Annualized Analysis					
Item	Capital Costs	Non-Recurring	O&M Costs	Annualized Total	
	(one time)	Costs (one time)	(recurring)		
HLP w/VRU	\$90,000				
Freight/Engineering		\$1,655	734.6		
Fuel Recovery**		1	-\$455		
HLP Installation		\$11,200			
Maintenance		12714	\$9,434		
Subtotal Costs:	\$90,000	\$12,854	\$8,979		
Annualized Cost*:	\$12,474	\$857	\$8,979	\$22,310	

^{*} Annualized over 15 years at 5% ROR

^{**} Fuel recovered is available for sale- Wellhead price for Oct 2012 at \$3.03 Mcf

Buffer Bottle Control Device – Annualized Analysis					
Item	Capital Costs (one time)	Non-Recurring Costs (one time)	O&M Costs (recurring)	Annualized Total	
Buffer Bottle	\$6,000				
Freight/Engineering	5	\$600			
Buffer Bottle Installation		\$2,280			
Maintenance		12.14.07.11.11	\$2,000		
Subtotal Costs:	\$6,000	\$2,880	\$2,000		
Annualized Cost*:	\$832	\$192	\$2,000	\$3,024	

^{*} Annualized over 15 years at 5% ROR



Cost/Benefit Analysis

- Lowering statewide VOC control threshold for storage tanks
- Adding auto-igniters to existing flare controls statewide
- Expanding emission controls to crude oil tanks statewide
- Expand no/low bleed pneumatics statewide
- Connecting produced water tanks to existing flare controls statewide



Control for Storage Tanks

- Division proposal to lower tank control threshold
 - 20 tons/year down to 6 tons/year
- About 521 condensate tank batteries would need controls
 - About 159 tanks are in the 9-county Ozone NAA
 - VOC reduction ≈ 3,908 tons/year
 - Total annual cost for flares is about \$3.2 million
 - Total annual cost for VRUs is about \$11.3 million
- Flare Cost effectiveness ≈ \$824/ton of VOC reduced
- VRU Cost effectiveness ≈ \$2,895/ton of VOC reduced

Flare & VRU Cost Estimates

Table 5: Flare Control Device Cost – Annualized Analysis*				
Item	Capital Costs	Non-Recurring	O&M	Annualized
	(one time)	Costs (one time)	(recurring)	Total Costs
Flare	\$18,244	×		
Freight/Engineering		\$1,655		
Flare Installation		\$7,008		
Auto Igniter	\$1,655			
Pilot Fuel**			\$636	
Maintenance			\$2,206	
Subtotal Costs	\$19,898	\$8,663	\$2,842	
Annualized Costs***	\$2,757.8	\$577.5	\$2,842	\$6,177

Table 6: VRU Control Device Cost – Annualized Analysis*				
Item	Capital Costs	Non-Recurring	O&M	Annualized
	(one time)	Costs (one time)	(recurring)	Total
VRU	\$86,034	10 m	37 91036	
Freight/Engineering		\$1,655		
VRU Installation		\$11,200		
Maintenance			\$9,434	
Fuel Recovery**			-\$503	
Subtotal Costs	\$86,034	\$12,854	\$8,979	
Annualized Costs***	\$11,924	\$857	\$8,931	\$21,712



Auto-Igniters – Existing Flares

- Auto-igniters required on flares in Ozone NAA
- APEN database analysis indicates:
 - About 484 condensate tanks have flares
 - About 198 glycol dehydrators have flares
 - Total annual cost for auto-igniters is about \$230k for tanks and \$94k for dehydrators
 - Condensate tank VOC reduction ≈ 201 tons/year
 - Dehydrator VOC reduction ≈ 174 tons/year
 - VOC reduction assumes 1% flare downtime (88 hours/year)
- Tank CE ≈ \$1,147 per ton of VOC reduced
- Dehydrator CE≈ \$540 per ton of VOC reduced

Auto-Igniter Cost Estimates

Table 11: Auto Igniter Control Device - Annualized Analysis*				
Item	Capital Costs	Non-Recurring	O&M	Annualized
	(one time)	Costs (one time)	(recurring)	Total Costs
Auto Igniter	\$1,655			
Freight/Engineering		\$200		
Flare Installation		\$500		
Maintenance			\$200	
Subtotal Costs	\$1,655	\$700	\$200	
Annualized Costs*	\$229.3	\$46.7	\$200	\$476

^{*} Annualized over 15 years at 5% ROR



Control for Crude Oil Tanks

- Division is proposing controls on all hydrocarbon liquid storage tanks over 6 tons/year statewide
 - Allows for consistency with NSPS OOOO
- Data Sources
 - APEN data on Crude Oil tanks is limited
 - APEN exemption removed in December 2008
 - OGCC tracks O&G production and API gravity for each well
 - Limitations between associating OGCC gas well API number with tank battery AIRS ID
- Division is still reconciling data
 - Further analysis needed before the number of tanks is known



Low/No Bleed Pneumatics

- Pneumatic valves are below the APEN reporting threshold
 - Don't have APEN data on pneumatic valves
 - Number of pneumatics estimated using emission inventory data based on producer surveys
 - About 41,500 devices in DJ Basin (2006 data)
- High bleed pneumatic valves are defined as emitting at least 6 scf per hour
- Replacing/retrofitting high bleed valves to no/low bleed reduces emissions by 88-98%
 - Payback period of recovered natural gas is about 1 to 2 years



Control for Existing Water Tanks

- Division proposes that produced water tanks with VOC emissions over 6 tpy should have emissions routed to the existing flare
- Number of tanks > 6 tpy uncontrolled = 26
- Division requests cost information on
 - Plumbing costs
 - Installation costs
 - Maintenance costs



Areas of Discussion

Proposed Revisions: Part 2

- Regulation Number 7 oil and gas emission reduction strategies
 - Discussion of comments received
 - Review of language changes



Potential Control Strategies

- Expand control requirements for storage tanks
- Enhance capture at controlled storage tanks
- Expand non-attainment area auto-igniter requirements statewide
- Expand leak detection and repair requirements
- Expand non-attainment area pneumatic control requirements statewide
- Reduce venting and flaring of gas stream at well sites



Overview of Comment Process

- Comments have been posted to website
 - Mix of comments from environmental groups, industry groups, public citizens
- Division will continue to receive and respond to comments throughout the stakeholder process



Comment Areas

- Timing
- Definitions
- General provisions
 - Good air pollution control practices
 - Auto-igniter requirement
- Storage tanks
 - Control requirements
 - Capture requirements
- Leak detection and repair requirements
- Well-site flaring and venting requirements
- Low bleed pneumatic devices



Timing

- Timing of Installation
 - Installation on existing equipment by January 1, 2015 could be challenging
 - Deadline for installation for existing equipment should be moved up



Definitions

- Concerns that many of the proposed definitions are unclear, create unintended consequences or are unnecessary
 - Division is still evaluating these definitions and will make appropriate revisions so that definitions serve the intended purpose
- Concern that the definition of leak is overly stringent
 - Leak definition intended to support substantive leak detection requirements, including use of IR camera to identify leaks



Definitions – Revisions

- Deleted
 - Atmospheric
 - Downtime
 - Modified/modification
 - Leak
- Revision
 - Storage Tank
 - Well site
- No revision
 - Date of First Production
 - Normal Operation



General Provisions

- Good air pollution control practices requirements are overly broad
 - Goal is to ensure that production and control equipment is operated properly in accordance with accepted standards
 - Much of the language mirrors existing Regulation No. 7, Section XII
- Good air pollution control language is subjective
 - Similar good air pollution control language is commonly used and by its nature is informed by particular factual circumstances



General Provisions

- Prevention of emissions requirements
 - Apply to <u>all O&G operations</u> listed in header, regardless of size
- Air pollution control equipment requirements
 - Apply where <u>control equipment used to comply</u> with Section XVII
- NSPS/MACT/BACT exemption for storage tanks
 - Brings in NSPS OOOO, NSPS Kb, and MACT HH subject storage tanks



General Provisions – Revisions

Good Air Pollution Control Practices

- Revision
 - Add in language "unless being used for maintenance or liquids loadout"
- No revision
 - No required frequency of inspections
 - Not tied to permit or O&M required sources
 - Information available to the Division does not create a recordkeeping requirement



General Provisions – Revisions

Autoigniters

- Revision
 - Deleted definition and reference to "modified"
- No revision
 - Maintained definition as used for Section XII



Storage Tank Requirements

- Proposed language is more stringent than NSPS OOOO
- IR camera monitoring
 - Costly and/or inherently unsafe
 - Retaining images would require a lot of storage space
 - Some cameras may not be able to capture or record, especially with "regular" video



Storage Tank Requirements

- No Detectable Emissions
 - Operating a controlled tank with no detectable emissions is not feasible
 - Controlled condensate tanks can meet a no detectable emission limit and therefore BACT should not be available as an alternative compliance method



Storage Tanks – Revisions

Modified

- Revision
 - Deleted modified from compliance schedule
 - Included a description that tanks that increase emissions to above the threshold must meet the 95% requirement immediately



Storage Tanks – Revisions

Visual monitoring

- Revision
 - Monitoring no required more often than every 7 days or less often than every 90 days
 - Recordkeeping checklist added in date of inspection
- No revision
 - Visual monitoring requirement triggered by truck loadout



Leak Detection Requirements

- Too stringent or not sufficiently stringent?
 - Historically leak detection programs have not been applied to these sites
 - Better leak detection and repair provides an opportunity to reduce emissions and capture valuable product

No revisions made at this time



Well Tie-In

- Requiring wells to be tied into a gas pipeline within 6 months could hinder development of unproven reserves
 - Sets an expectation that wells will be attached to a pipeline within 6 months
 - Allows for exceptions to be granted in appropriate cases
- Reporting requirement needed?



Well Tie-In – Revisions

Visual monitoring

- Revision
 - Monitoring no required more often than every 7 days or less often than every 90 days
 - Recordkeeping checklist added in date of inspection
- No revision
 - Visual monitoring requirement triggered by truck loadout



Well Tie-In – Revisions

Reporting

- Revision
 - Deleted this requirement



Pneumatic Devices

- Retrofitting existing devices is costly and rule should be limited to new devices
- Timing of compliance should be adjusted

No revisions made at this time



Request for Additional Comments

- Economic costs of proposed requirements
- Feasibility of proposed timelines
- Options for leak detection/directed inspection and maintenance
- Presumptive BACT
- Monitoring schedule and frequency



Submit comments by May 15, 2013

On potential revisions to **Regulation Numbers 6 and 3** to Leah Martland at <u>leah.martland@state.co.us</u> and Erin Overturf at <u>erin.overturf@state.co.us</u>

On potential revisions to **Regulation Number 7** to Stefanie Rucker at stefanie.rucker@state.co.us and Clay Clarke at clay.clarke@state.co.us

Presentations, language, and additional information can be found on http://www.colorado.gov/cdphe/apcd
Hot Topics » 2013 Rulemaking Effort

Next meeting: May 22, 2013, at 1:30pm