



Winds of Change - The Air Emission Landscape

Environmental 101

**20th Annual GCA Expo
April 20, 2015**

Disclaimer

The content of this presentation reflects a brief summary of highly complicated emissions-related rules, regulations, legislation and the like, as well as the individual opinions of its drafters.

It is not intended or offered as legal or operational opinions or advice.

No representations or warranties are made as to accuracy or completeness.

Readers should independently consult their legal counsel, their HSE/emissions specialists, and all relevant rules, regulations, and legislation.

Agenda

Introduction to Emissions

Awareness

- What rules are currently in effect?
- What rules and changes are on the horizon?

Regulatory Updates

- NESHAP ZZZZ
- NSPS JJJJ
- NSPS OOOO
- NSPS for CH₄
- GHG
- NAAQS and Wise county
- State air permitting in Texas and MSS



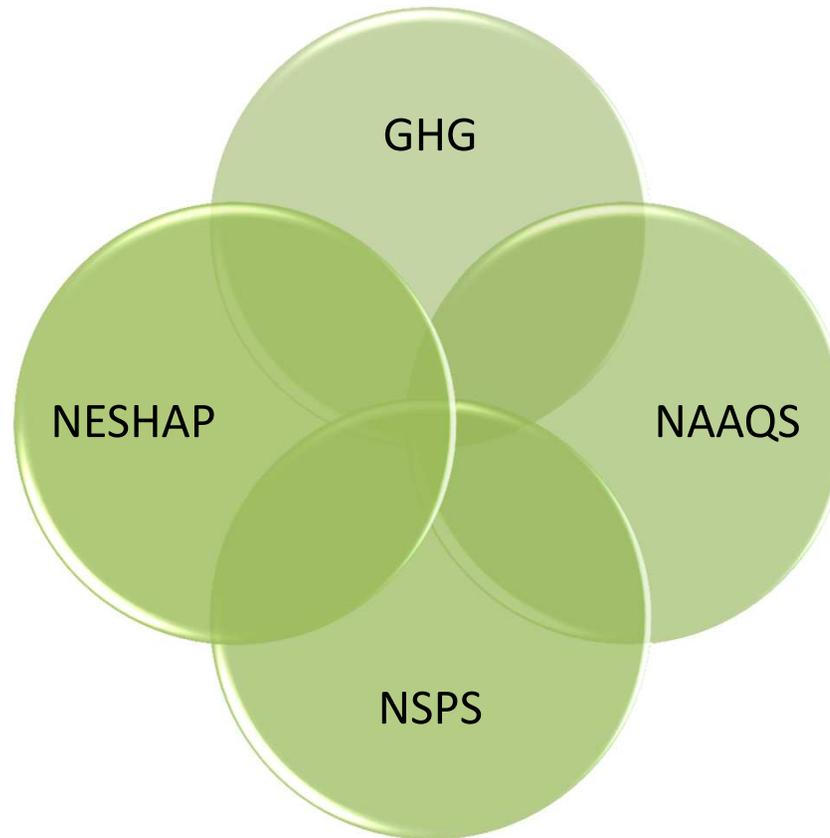
Emissions Landscape

GHG

- Cap and Trade
- Reporting
- Efficiency
- CO2 Control
- Permitting

NESHAP

- Formaldehyde
- CO
- Emission Controls
- Testing
- Reporting
- Recordkeeping
- Monitoring
- Management Practices



NAAQS

- NOx
- CO
- Emissions Controls
- Testing
- Permitting
- Recordkeeping

NSPS

- NOx
- CO
- VOC
- Testing
- Permitting
- Recordkeeping
- Maintenance Practices

Emission Introduction

What exactly do we have to worry about?

- Combustion sources
- Storage tanks
- Fugitive emissions (leaks)
- MSS

Pollutants

- NO_x, CO, VOC, SO_x, PM

Hazardous Air Pollutants

- Formaldehyde, BTEX, and n-hexane

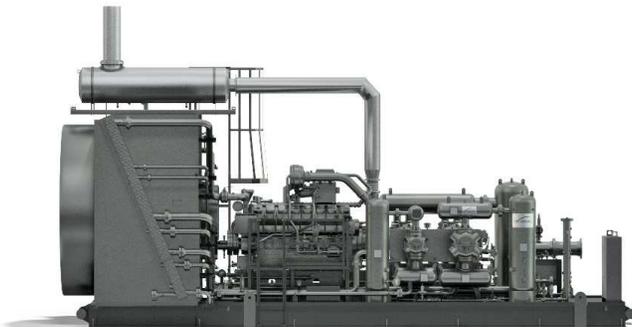


REGULATION OF ENGINES – BACKGROUND

Every engine is now covered by one or both of these regulations:

- NESHAP Subpart ZZZZ
 - Regulates major source facilities of HAP emissions and **existing** area sources
 - Formaldehyde (HCHO) is the HAP of concern with ZZZZ

- NSPS Subpart JJJJ
 - Engines mfg. post **June 12, 2006**
 - Covers *new, modified or reconstructed*
 - Regulates NO_x, CO, VOC





RICE MACT NESHAP ZZZZ

“Regulations grow at the same rate as weeds.”
- Norman Ralph Augustine

NESHAP ZZZZ

National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

- §63.6580

NESHAP is a federal rule

- Applies to all states
- Is NOT regional

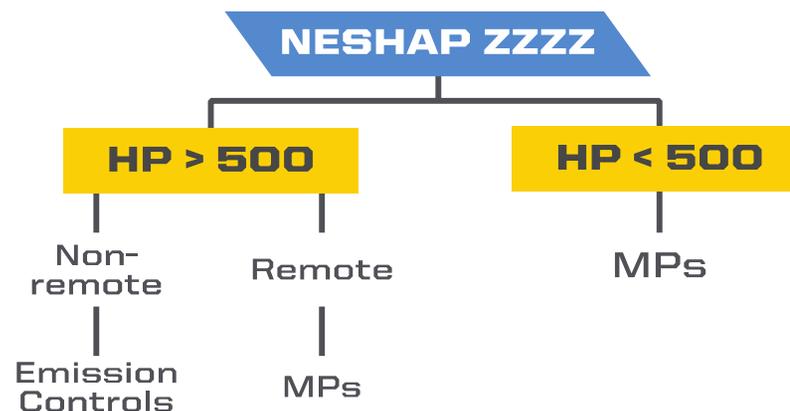
Effective dates

- Major sources in 2007
- Area sources in 2013

NESHAP ZZZZ APPLICABILITY

Where does my engine fall under the ZZZZ requirements?

- Horsepower (HP)
 - \leq 500 HP (300 HP for compression ignited/diesel engines)
 - $>$ 500 HP
- Engine stroke
 - 4 stroke RB and 4 stroke LB
 - 2 stroke
- Location
 - Remote vs. non-remote



NESHAP ZZZZ APPLICABILITY

> 500 hp

1) Determine if it is remote or non-remote

Remote - Management Practices

Generally Achievable Control Technologies

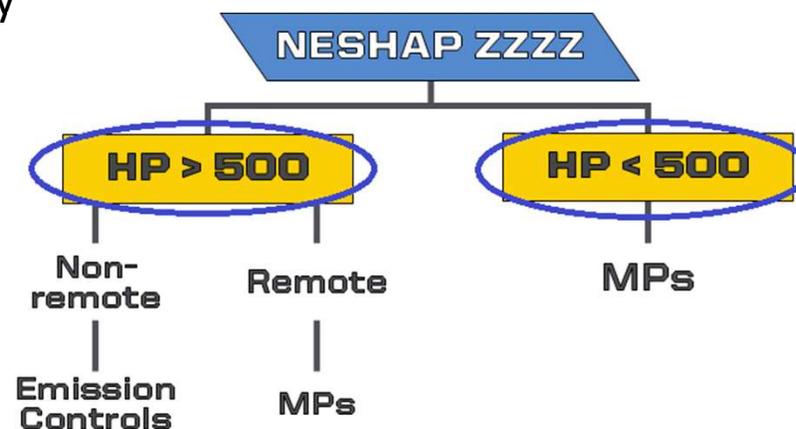
Non-remote - Emission limitations annually
CO, HCHO, or THC limits

≤ 500 hp

All ≤500 hp must follow:

Management Practices

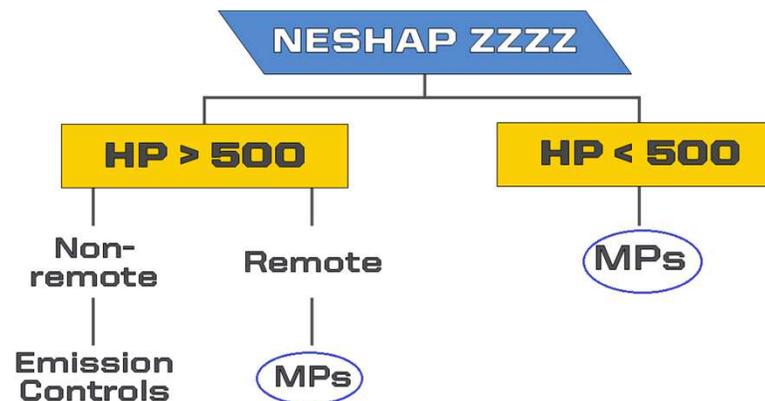
Generally Achievable Control Technologies



MANAGEMENT PRACTICES

MPs Required for:

- Area sources
- 2 stroke engines
- 4 stroke < 500 HP (<300 HP for CI)
- 4 stroke remote > 500 HP

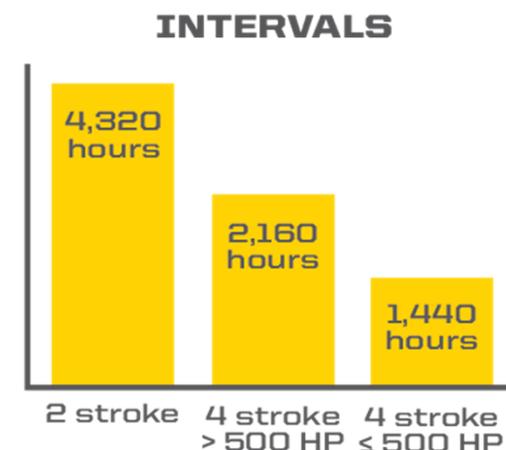


What are the MP Requirements?

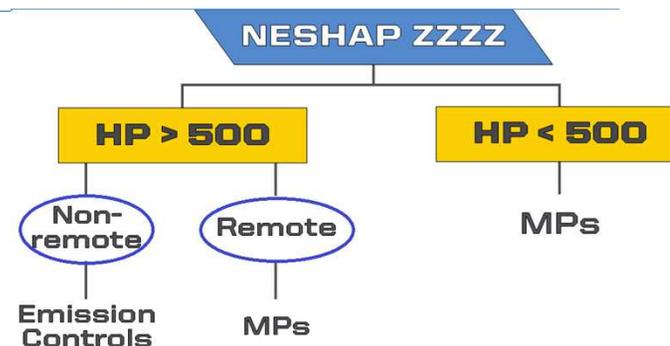
- Oil change
 - Or option for oil analysis (Total Acid Number, viscosity, H₂O content)
- Spark Plugs
- Belts and hoses

What are the MP Intervals?

- 1,440 hrs of operation for 4 stroke ≤ 500 HP (60 days)
- 2,160 hrs of operation for 4 stroke > 500 HP (90 days)
- 4,320 hours of operation for 2 stroke (180 days)
- CI – 1,000 for oil and spark plugs
- CI – 500 hours for belts/hoses



REMOTE vs. NON-REMOTE CLASSIFICATION



Remote definition summary

- All facilities on a pipeline through which gas moves in gathering, transmission, distribution or storage
- If the engine is on a pipeline segment:
 - 10 or fewer occupied buildings within 220 yds. of any 1-mile length of pipe
 - Not within 100 yds. of any occupied building
 - Class 1 DOT
- If engine is not on a pipeline segment:
 - 5 or fewer occupied buildings w/in 0.25-mile radius of the engine

Concerns

- October 19th definition - determination of remote/non-remote was made on 10/19/2013
- Annual evaluations required to maintain remote status

EMISSION LIMITS and TESTING

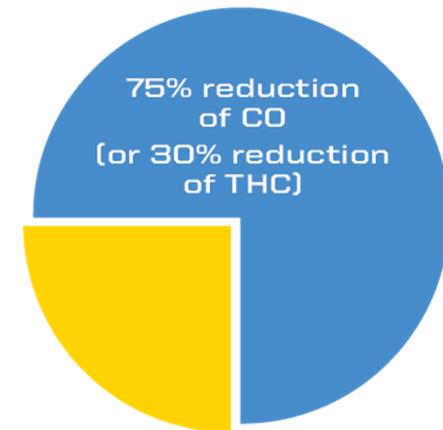
What are the requirements?

- Rich burn – 75% reduction CO, 30% reduction THC, or 270 ppmvd CO
- Lean burn – 93% reduction CO or 47 ppmvd CO
- Essentially requires all affected engines to install emission control systems
- Portable ASTM or Reference Method testing allowed

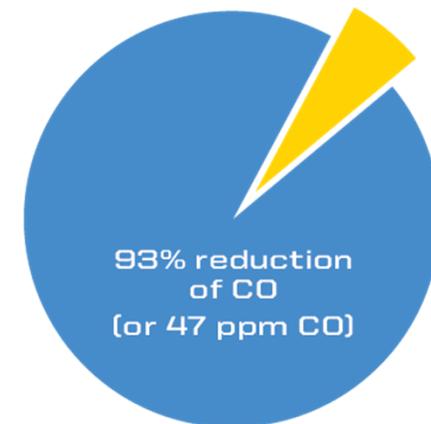
Compression Ignited/Diesel engines

- $300 < \text{HP} \leq 500$ – 70% CO reduction or 49 ppmvd CO
- $> 500 \text{ HP}$ – 70% reduction CO or 23 ppmvd CO

RICH BURN



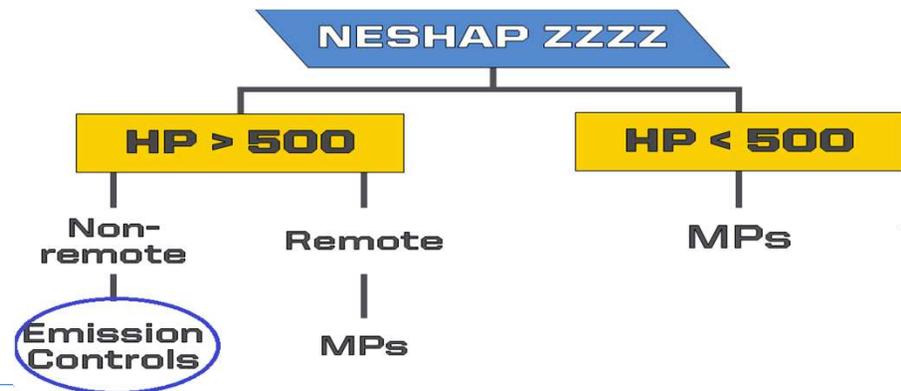
LEAN BURN



EMISSION LIMITS - Continued

Continuous Parametric Monitoring Systems or High Temperature Shutdown

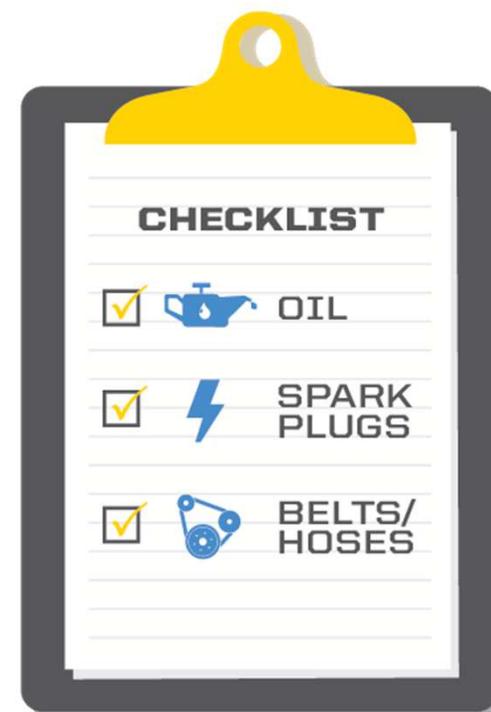
- CPMS or alternative is required if the engine is subject to emission controls
 - CPMS as originally written in rule requires monitoring exhaust temperatures pre-catalyst every 15 minutes
 - Alternative to CPMS later published in rule is to install a high temperature shutdown device (1250F for 4SRB and 1350F for 4SLB)



NESHAP ZZZZ Implementation

Key Issues

- Management Practices
 - Recordkeeping of MP at proper intervals
- Emission Limits
 - Install control systems
 - Install CPMS or High T shutdown device
 - Annual emissions testing
- Engine Identification
 - Re-evaluate remote status annually





NSPS JJJJ

“Gentlemen, Internal Combustion Engines. Accept no substitutes.”

- Woody Blake (Tim Robbins)



NSPS Subpart JJJJ

New Source Performance Standards for Stationary Spark Ignited Internal Combustion Engines

- §60.4230

NSPS is a federal rule

- Applies to all states
- Is NOT regional

Effective date

- January 18, 2008

What Equipment is Impacted?

Spark ignited internal combustion engines

June 12, 2006 is the magic date

- Anything before this is exempt

Rule affects all new, reconstructed or modified engines

- If the engine is *not* new, reconstructed or modified – the rule does not apply



Image from Exterran, Caterpillar G3516B

How is “New” Defined under NSPS JJJJ?

What is a new engine?

Any engine ordered after June 12, 2006 AND manufactured after the following dates:

Engine type and fuel	Maximum engine power	After Manufacture date
Non-Emergency Natural Gas	$100 \leq \text{HP} < 500$	7/1/2008
Non-Emergency Lean Burn Natural Gas	$500 \leq \text{HP} < 1,350$	1/1/2008
Non-Emergency Natural Gas (except lean burn $500 \leq \text{HP} < 1,350$)	$\text{HP} \geq 500$	7/1/2007
Emergency	$\text{HP} \geq 130$	1/1/2009

What Exactly is Reconstruction?

NSPS affects all new, reconstructed, and modified engines

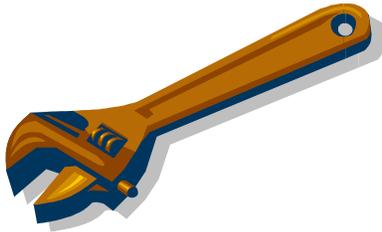
Reconstruction – 40 CFR 60.15 (NSPS Subpart A)

NSPS states that reconstruction means the replacement of components at an existing facility to such an extent that:

- The fixed capital cost of the components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new like kind facility

So what does this mean?

- If you spend too much on an overhaul, that engine is now subject to the rule
- We must track ALL engine overhaul information
- We must know engine “pedigrees”
- Once we lose our exemption, we NEVER get it back



What Exactly is Modification?

NSPS affects all new, reconstructed, and modified engines

40 CFR 60.14 (Subpart A) defines a modification as...

- Any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies

Horsepower increases

Engine conversions

Only applies to modifications AFTER June 12, 2006

Once we lose our exemption, we never get it back

How to Comply with JJJJ?

If you've determined your engine is new, reconstructed, or modified post June 12, 2006

What are the NSPS JJJJ requirements?

- Meet emissions standards over the life of the engine
 - Via annual emissions testing
 - Install emissions controls
- Keep a maintenance plan and maintenance records



What Emission Limits Must I Meet? (New)

Engine type and fuel	Maximum engine power	After Manufacture date	Emission standards					
			g/HP-hr			ppmvd at 15% O ₂		
			NO _x	CO	VOC ^d	NO _x	CO	VOC ^d
Emergency	25>HP<130	1/1/2009	^c 10	387	N/A	N/A	N/A	N/A
Non-Emergency Natural Gas	100≤HP<500	7/1/2008	2	4	1	160	540	86
Non-Emergency Lean Burn Natural Gas	500≤HP<1,350	1/1/2008						
Non-Emergency Natural Gas and (except lean burn 500=≥HP<1,350)	HP≥500	7/1/2007						
Emergency	HP≥130	1/1/2009	1	2	0.7	82	270	60
Non-Emergency Natural Gas	100≤HP<500	1/1/2011						
Non-Emergency Lean Burn Natural Gas	500≤HP<1,350	7/1/2010						
Non-Emergency Natural Gas (except lean burn 500=≥HP<1,350)	HP≥500	7/1/2010						

Emission Limits – Reconstructed/Modified

Engine type and fuel	Maximum engine power	Prior to Manufacture date	Emission standards					
			g/HP-hr			ppmvd at 15% O ₂		
			NO _x	CO	VOC	NO _x	CO	VOC
Reconstructed/ Modified Natural Gas	HP<500	7/1/2008	3	4	1	250	540	86
	HP≥500	7/1/2007						
Reconstructed/ Modified Emergency	HP>130	1/1/2009						
Otherwise			Refer to New Engine Standards					

Management Strategies for JJJJ

Maintaining the “exempt” status

- It is essential to maintain/know the engine’s pedigree
- An NSPS exemption must be able to be documented
- Engine overhauls since June 12, 2006
- Costs/modifications?
- Engine overhauls are not aggregated



Can an Engine be Subject to Both ZZZZ and JJJJ?

Yes and No

YES

For modified engines

Example: Mfg. date in 2000, but modified from RB to LB in 2010.

NO

For new and reconstructed:

Per 40 CFR Part 60 Subpart ZZZZ, §63.6590(c):

*Stationary RICE subject to Regulations under 40 CFR Part 60. An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section **must meet the requirements of this part by meeting the requirements of ... 40 CFR Part 60 subpart JJJJ for spark ignition engines.** No further requirements apply for such engines under this part.*



NSPS 0000

***“Friendship and money: oil and water.”
- Mario Puzo***

NSPS Subpart OOOO

New Source Performance Standards for Crude Oil and Natural Gas Production, Transmission and Distribution

- §60.5360

NSPS is a federal rule

- Applies to all states
- Is NOT regional

Effective date

- October 15, 2012

Affected Equipment for NSPS 0000

The rule affects natural gas facilities that have commenced construction or been modified or reconstructed, with various compliance dates:

- Compressors
- Pneumatic controllers
- Dehydrators, sulfur recovery units, LDAR (Leak Detection and Repair)
- Natural gas wells that are hydraulically fractured, well completions
- Storage vessels
- Groups of equipment (pump, pressure relief device, open-ended line) at onshore gas plant
- Sweetening units at onshore gas plants

NSPS 0000 - Highlights

- EPA's goal is to control VOCs and SO₂
- Affects gas wells
- Is a work practices standard
 - Recordkeeping is crucial!
- No published emissions limits except VOC for LDAR
- EPA did not consider cost effectiveness arguments
- Still ongoing updates to rule, most recent comment request published March 23, 2015



NSPS 0000

Evaluate possible ways a compressor and pneumatic controllers could be subject to NSPS 0000

NSPS affects equipment which was new, reconstructed, or modified after August 23, 2011

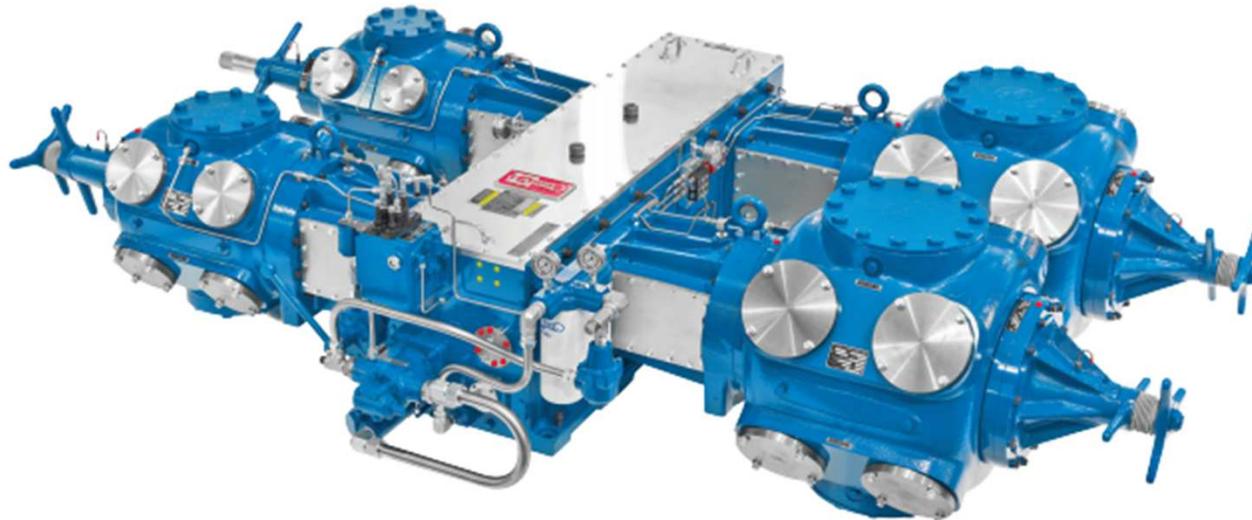


Image from Ariel Corporation

What Exactly is Reconstruction?

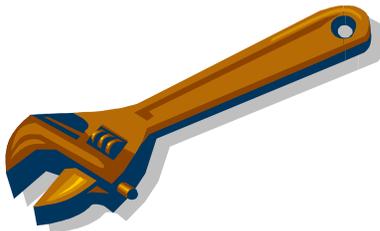
For Compressors Reconstruction – 40 C.F.R. 60.15 (NSPS Subpart A)

NSPS states that reconstruction means the replacement of components at an existing facility to such an extent that:

- The fixed capital cost of the components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new like kind facility

So what does this mean?

- If you spend too much on an overhaul, that compressor is now subject to the rule
- Is it likely reconstruction will ever be triggered for a compressor?
 - No



What Exactly is Modification?

For Compressors

NSPS affects all new, reconstructed, and modified facilities

40 C.F.R. 60.14 (Subpart A) defines a modification as...

- Any physical or operational change to an existing facility which results in *an increase in the emission rate* to the atmosphere of any pollutant to which a standard applies

Under normal circumstances, does a compressor have an emission rate to the atmosphere?

- No

Will modification to a compressor ever be triggered?

- No

NSPS 0000 for Compressors - Summary

Compressors

- Only *newly constructed* compressors are affected facilities (not reconstructed or modified or screw)
- Rule covers reciprocating and centrifugal compressors with wet seals

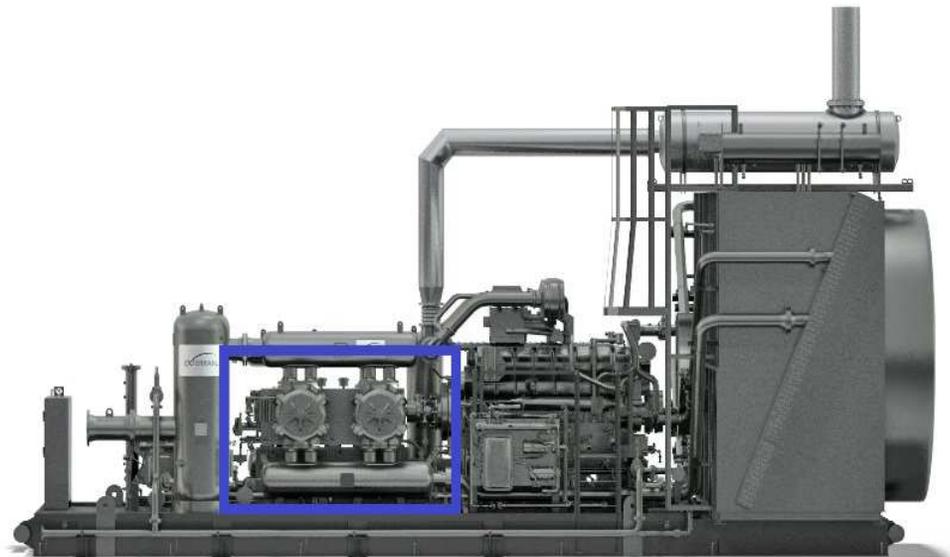
What are the requirements?

- For reciprocating compressors, replacement of compressor rod packing every 26,000 or 36 months
- For centrifugal compressors with wet seals, reduce VOC

Wellhead compressors are not affected facilities

Image from Exterran

© 2012 Exterran Holdings, Inc. The Exterran logo is



NSPS 0000

Pneumatic Controllers

Is it new, modified, or reconstructed after 8/23/2011?

- Definition of affected facilities for 0000 only covers continuous bleed devices (not low bleed or snap)
 - Between wellhead and NG processing plant rate < 6 scfh
 - At NG processing plant, controllers must have bleed rate of zero
- Exemption for controllers with larger bleed rate if the operator can justify the need
- How to comply with NSPS 0000?
Controllers must be tagged with manufacturer info and installation date



Image from Enovation Controls

NSPS 0000

What additional facilities does NSPS 0000 cover?

Glycol dehydrators

- It updated NESHAP major source definition changes for HH and HHH
 - At major sources: Small dehydrators now subject to standards
 - At area sources: Annual applicability determination/documentation
 - LDAR program more stringent



Image from Exterran

NSPS 0000

Storage Tanks

Applicable to new, reconstructed, and modified tanks w/ > 6 tpy VOC emissions

- Per tank, not tank battery, but parallel tanks are considered a single storage vessel
- Reduce VOC by 95% via control device or floating roof
- Initial performance test

Exemptions for process vessels and temporary tanks

- Vessels onsite < 180 days

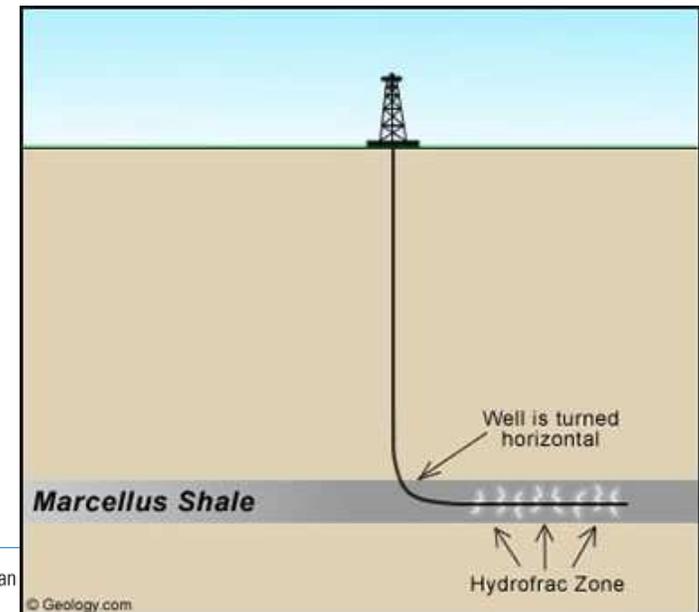
Requirements depend on manufacture date

- Group 1 tanks mfg. date 8/23/2011 – 4/12/2013
- Group 2 tanks mfg. date 4/12/2013 and after
- Group 2 tanks must meet 95% VOC reduction by April 2014

NSPS 0000

Well Completions/Workovers

- Capture and Control Requirement until 1/1/2015, then
 - Storage/Reinjection and Capture after 1/1/2015 unless not practicable
 - Wildcat, delineation, and low P gas wells excluded from reinjection requirements
-
- Each gas well is a separate affected facility
 - Why did you install a well?
 - How is the well registered with RRC?
 - Oil wells are NOT regulated by 0000



NSPS 0000

Hydraulic Fracturing

Monitoring, Recordkeeping, and Reporting

- Maintain a daily log for each well completion.
- Maintain digital photographs w/ date and the latitude/longitude of the well showing the equipment
- Notifications 2 days prior to the commencement of each well completion
- Annual reporting of records
- Records of completions and deviations including
 - the location of the well;
 - the API well number;
 - the duration of flowback;
 - duration of recovery to the flow line;
 - duration of combustion;
 - duration of venting; and
 - specific reasons for venting in lieu of capture or combustion. The duration must be specified in hours of time.
 - digital photograph
 - for each gas well facility claiming an exemption
 - the specific exception claimed;
 - the starting date and ending date for the period the well operated under the exception; and
 - an explanation of why the well meets the claimed exception.

NSPS 0000

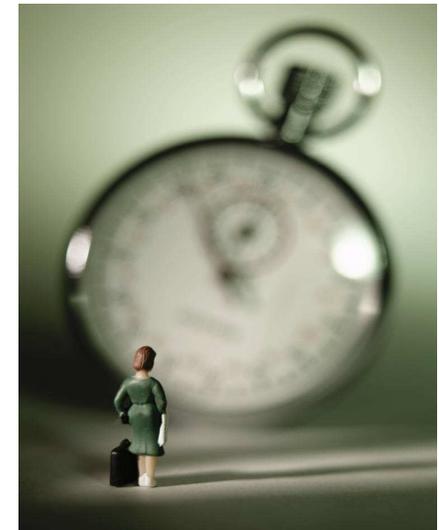
Other Requirements

- Recordkeeping
 - Gas well completion logs and photos
 - Compressor operating information
 - Applicability documentation
 - LDAR Monitoring
 - Control device data
 - Deviation
- Reporting
 - Initial Compliance, annually thereafter
 - Semiannual LDAR
 - Notifications
 - 30 days after commenced construction
 - 2 days prior to well completions



NSPS 0000 – What now?

- December 31, 2014 the EPA published the final rule revision in the federal register
- March 23, 2015 the EPA requested comments on low pressure gas wells and parallel tanks, comments due April 22, 2015





Methane Regulation

“Unless someone like you cares a whole awful lot, nothing is going to get better, it’s not.”
- The Lorax, Dr. Seuss

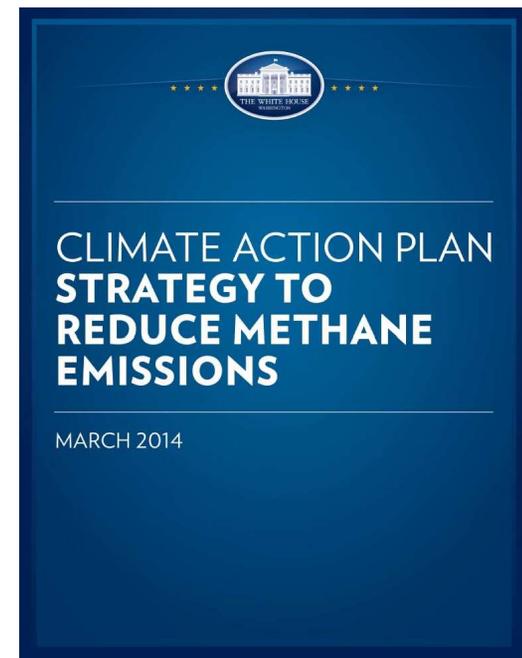
Methane Regulation on the Horizon

April 2014 the EPA published five technical white papers as part of the Strategy to Reduce Methane Emissions

The intent was to cover emissions and mitigation techniques for CH₄ and VOCs

- Compressors
- Completions and ongoing production of hydraulically fractured oil wells
- Leaks
- Liquids unloading
- Pneumatic devices

A new proposed federal regulation is expected summer of 2015!



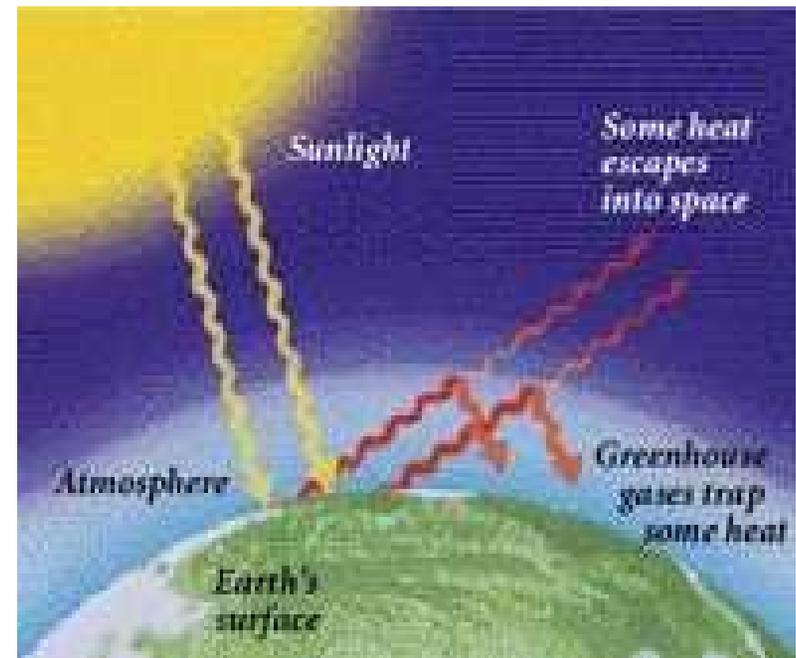
Greenhouse Gas (GHG) Legislation

“I think we're going to find, with climate change and everything else.. things like global warming and goodness knows what else and the cost of fuel for a start.. that things are going to become very complicated.”

- Prince Charles

What are the Oil and Gas Greenhouse Gases?

- CO_2
 - Product of Combustion
- CH_4
 - Methane - Natural Gas
- N_2O
 - Nitrous oxide - Product of Combustion
(not to be confused with NO_x , which is a mix NO and NO_2)



Oil and Gas GHG

Global warming potential (GWP) is a measure of how much heat a GHG traps in the atmosphere

CO₂

- Primary GHG, accounts for ~84% of all US GHG emissions
- GWP over 100 years is **1**

CH₄

- Lifespan in the atmosphere (12 years) is less than CO₂, but CH₄ is more efficient at trapping radiation than CO₂
- GWP over 100 years is **25**

N₂O

- Lifespan in the atmosphere is 114 years
- GWP over 100 years is **298**

Mandatory GHG Reporting – Subpart C

Subpart C – *General Stationary Combustion Sources*

> 25,000 TPY CO₂e or 50 MMbtu/hr, Approx. 5500 hp

- What equipment is included under Subpart C?
Boilers, heaters, engines, turbines
- What are the requirements for Subpart C?
Have a monitoring plan
Emissions reporting annually, due March 31 online via e-GGRT
- What's not included under Subpart C?
Portable or emergency equipment
Flares

Mandatory GHG Reporting – Subpart W

Subpart W – *Oil & Natural Gas Systems*

> 25,000 TPY CO₂e

What categories/equipment are subject to Subpart W?

- Offshore O&G production facility
- Onshore O&G production facility
- Onshore natural gas processing plant
- Onshore natural gas transmission compression
- Underground storage, LNG Storage, LNG import/export equipment
- Pipelines

Each of these regulated segments has a specific definition and each have unique considerations under Subpart W

Mandatory GHG Reporting – Subpart W

Subpart W – Oil & Natural Gas Systems

- What are the Requirements for Subpart W?
 - » Have a monitoring plan
 - » Emissions reporting annually, due March 31 online via e-GGRT
 - » Monitor for leaks

- Leak Monitoring Options for Onshore §98.234
 - » Optical or acoustical gas imaging equipment
 - » Flow meters
 - » Method 21
 - » Vent bagging
 - » High volume sampler
 - » Or BMM for unique or unusual circumstances

NAAQS

National Ambient Air Quality Standards

“It’s absolutely stupid that we live without an ozone layer. We have men, we’ve got rockets, we’ve got saran wrap – FIX IT!!!”
- Lewis Black

NAAQS



National Ambient Air Quality Standards are set by the EPA for 6 pollutants:

- O₃, NO₂, SO₂, CO, PM₁₀, and Pb
- **Ozone-causing pollutants** = VOC and NO_x
- Areas that do not meet the EPA limit are considered “*nonattainment*”
 - Nonattainment areas are further classified as *marginal, moderate, serious, severe, and extreme*

Currently considered nonattainment for O₃ in Texas:

- 10 counties in DFW*
- 8 counties in HGB
- Wise county has not been added to the Texas Administrative Code Chapter 117 yet, projected addition is by mid 2015

NAAQS in Oil and Gas --> NO_x emission limits set by the states

NAAQS – Barnett Area Update

Dallas-Fort Worth: Current Attainment Status

Compliance of Dallas-Fort Worth (DFW) area counties with the National Ambient Air Quality Standards (NAAQS).

DFW Area: Attainment Status by Pollutant

Pollutant	Primary NAAQS	Averaging Period	Designation	Counties	Attainment Deadline
Ozone (O ₃)*	0.075 ppm (2008 standard)	8-hour	Moderate Nonattainment	Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, Wise	July 20, 2018

<http://www.tceq.texas.gov/airquality/sip/dfw/dfw-status>

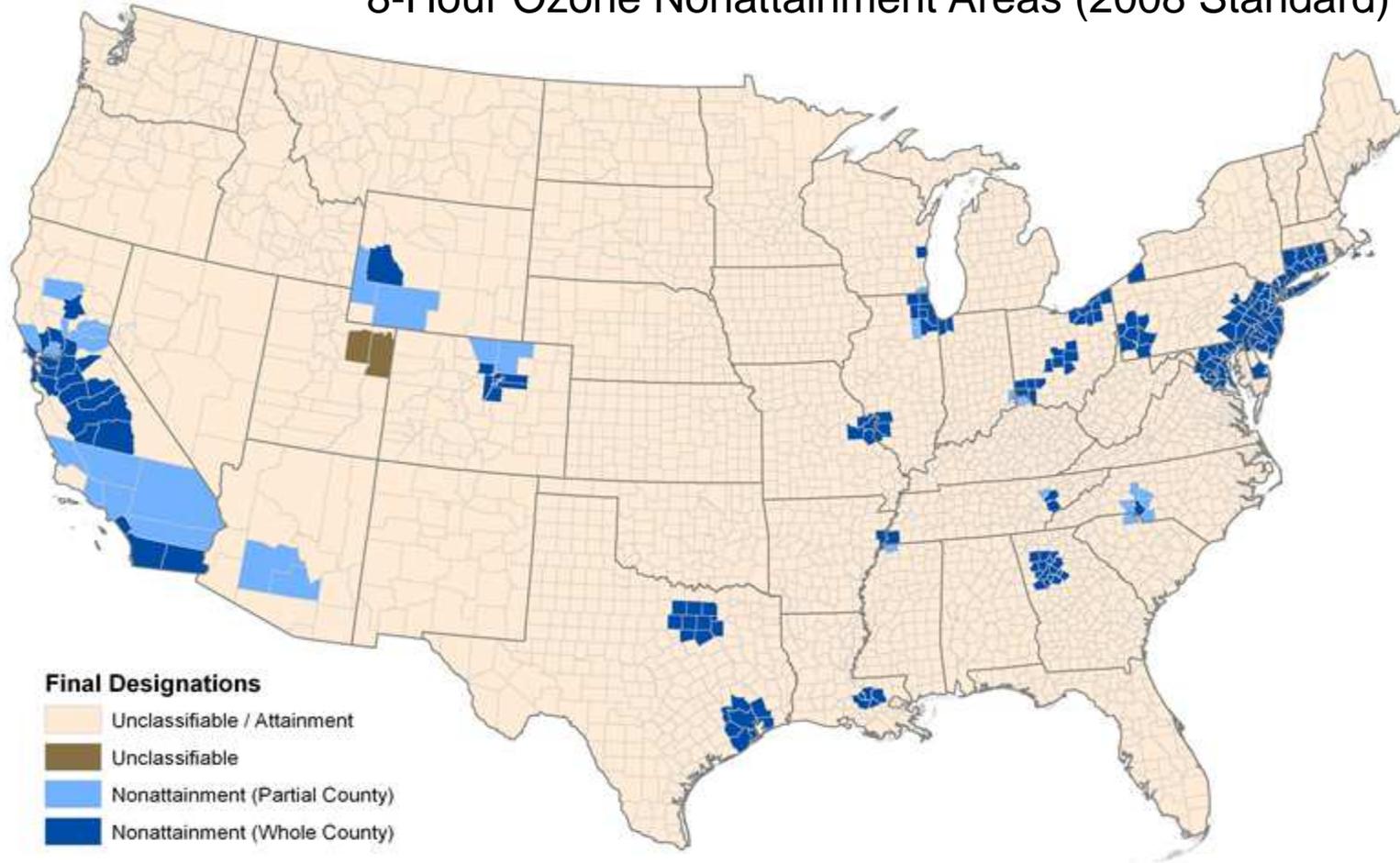
Proposed/Expected Changes

- 2008 standard of **0.075 ppm now active**
- EPA is reevaluating standard for 2015 - Will likely be set between 0.060 and 0.070 ppm (currently is 0.075 ppm)
- EPA was expected to publish the new standard in 2014, now expected in 2015
- New nonattainment designations signed May 2012 (Wise Co.)



Image from Smithsonian, Atmosphere: Change is in the Air,
http://forces.si.edu/atmosphere/02_04_02.html

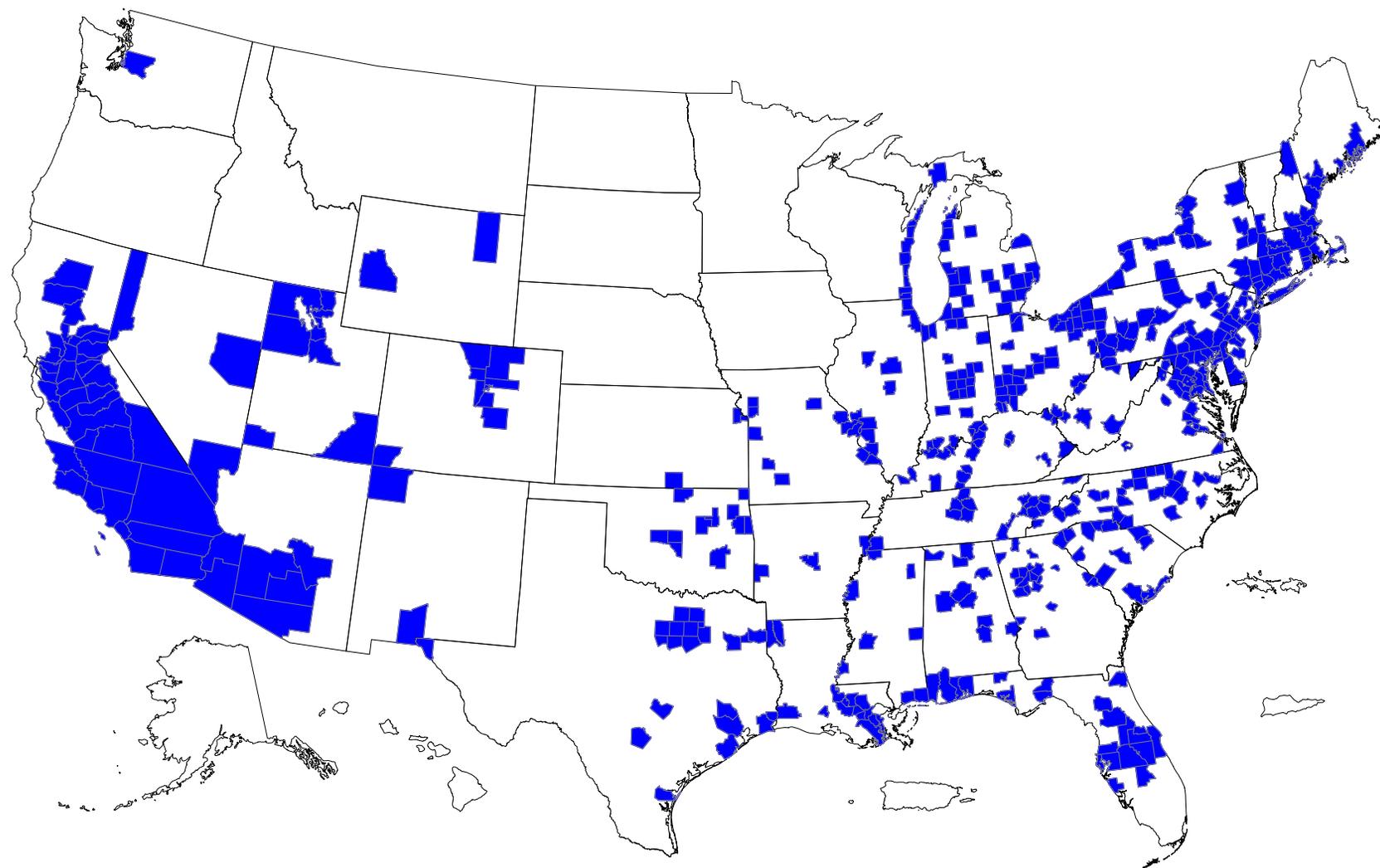
8-Hour Ozone Nonattainment Areas (2008 Standard)



Notes:

EPA has not designated as nonattainment any areas outside the Continental US.

0.075 ppm CURRENT

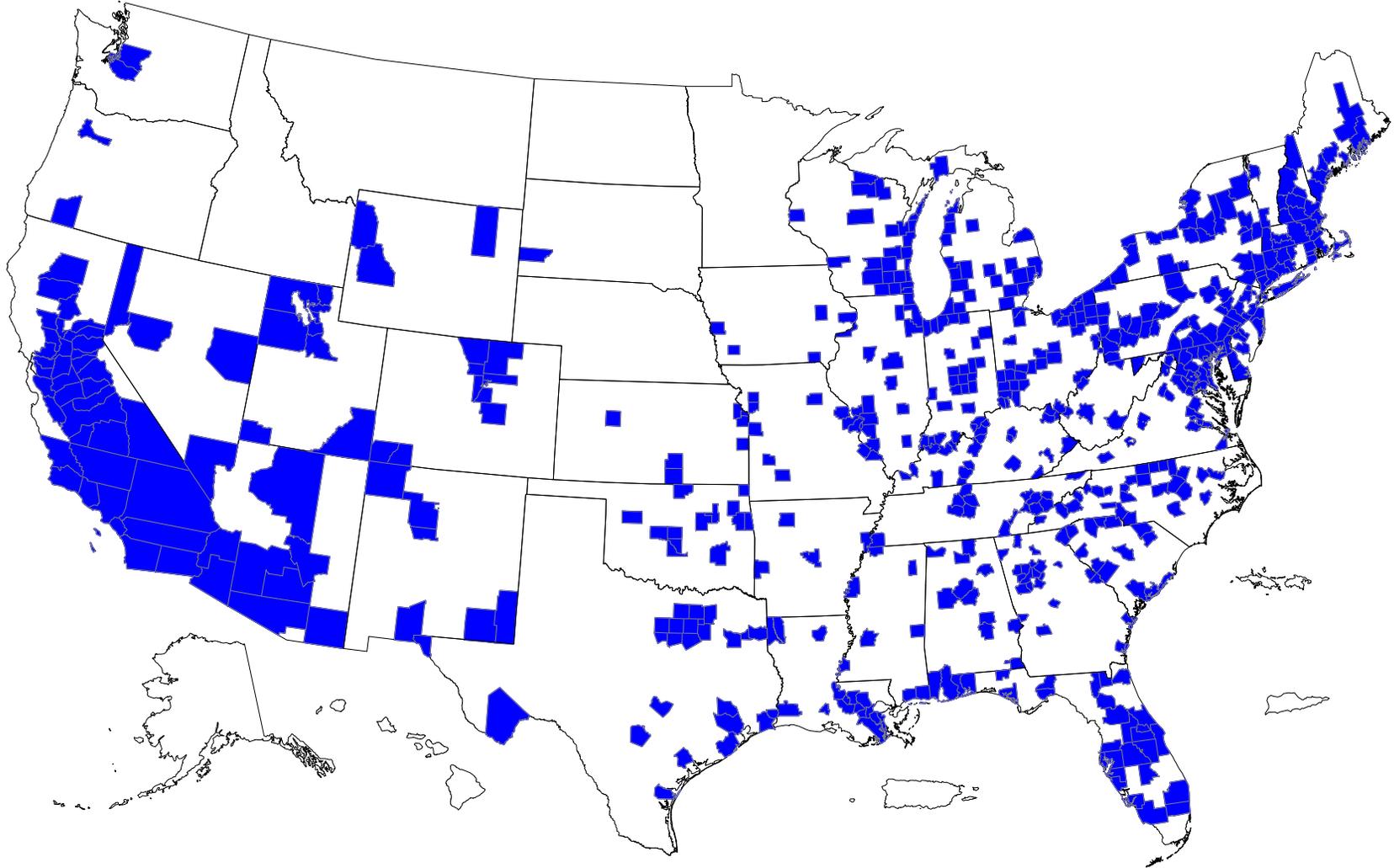


0.070 ppm

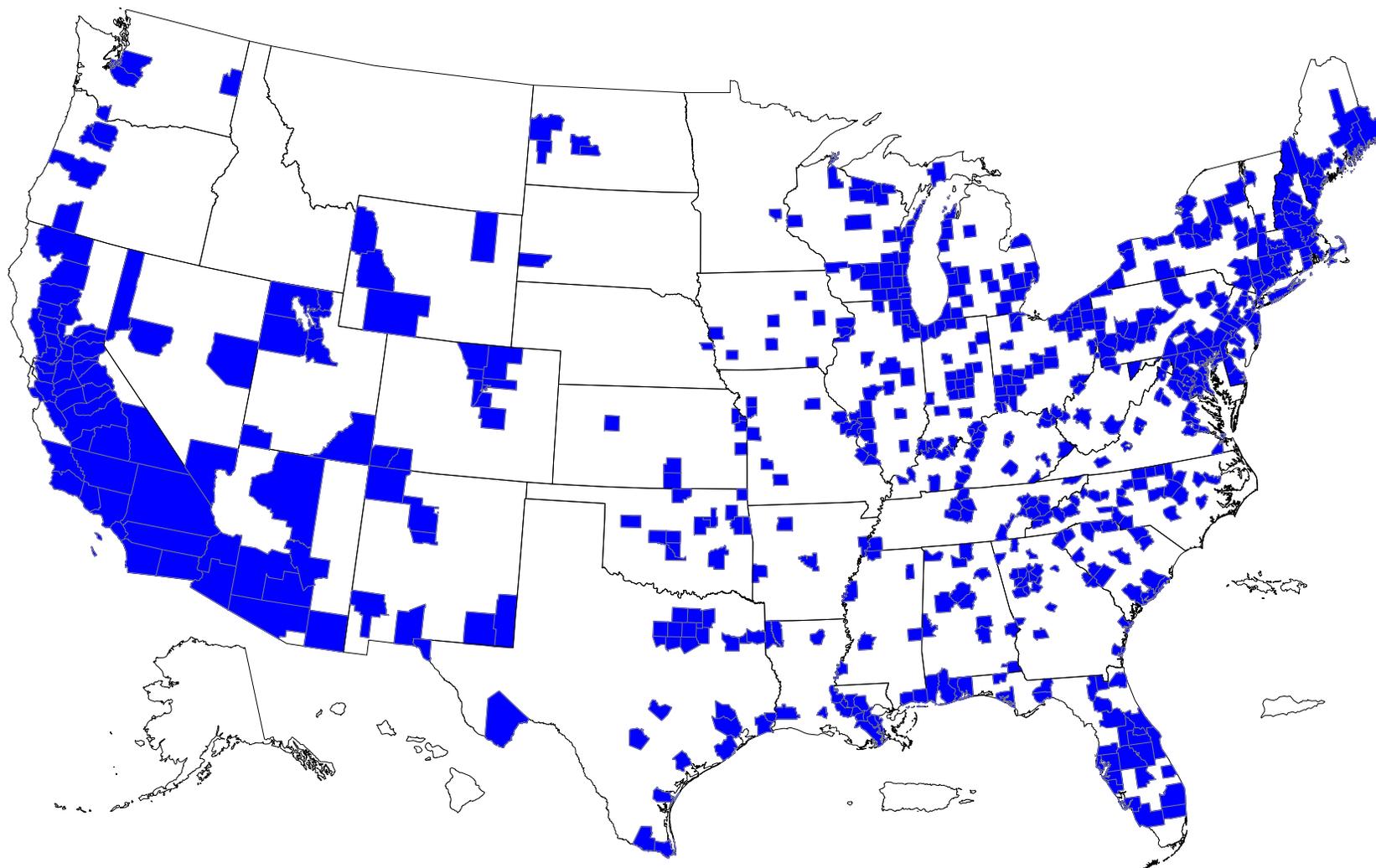


Counties with 2006-2008 8-hour Ozone Design Value Above 0.065 ppm

Production Equipment | Gas Processing | Gas Compression | Aftermarket Services | Water Treatment | Air Quality Management



0.065 ppm



0.060 ppm

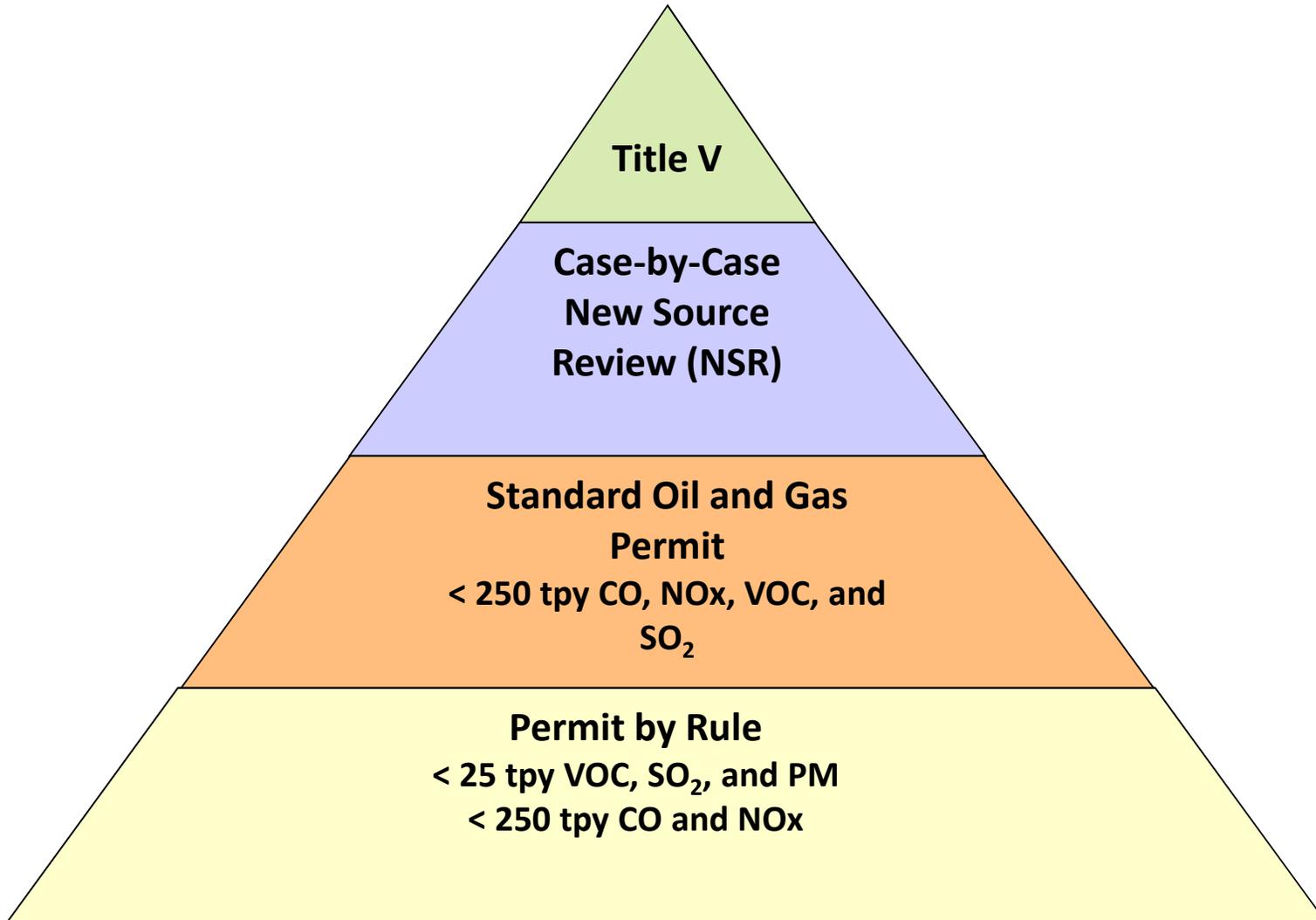


Air Permitting and MSS in Texas

***“Who would have thought a nuclear reactor
would have been so complicated?”***

- Homer Simpson

Air Permitting Categories in Texas



Texas MSS – Administrative Concerns

- 30 TAC 106.359 for Maintenance, Startup, and Shutdown
- Deadline for oil and gas facilities to comply was [January 5, 2014](#)
- Must also meet 106.4 and sitewide PBR emissions caps (25 tpy VOC, SO₂, PM and 250 tpy NO_x, CO)
- No registration, application, or fee is required for 106.359, only recordkeeping is required



To claim 106.359 you must:

- Develop and implement a maintenance program
- Keep records
- Use best management practices
- Print a copy of the PBR, sign and date it, keep it with records

Texas MSS

Definition

An activity with emissions or opacity that (1) is not expressly authorized by commission permit, rule, or order and involves the maintenance, start-up, or shutdown of a facility; (2) is part of normal or routine facility operations; (3) is predictable as to timing, and (4) involves the type of emissions normally authorized by permit.” Texas Health and Safety Code 382.051962

Activities Covered

- Engine, compressor, turbine, and combustion facility maintenance
- Repair, adjustment, calibration, lubrication, cleaning of process equipment
- Replacement of piping components, pneumatic controllers, boiler refractories, wet & dry seals, meters, instruments, analyzers, screens, and filters
- Turbine or engine component swaps
- Piping used to bypass a facility during maintenance
- Blowdowns
- Pigging, Purging
- Tank Cleaning, Degassing
- Abrasive blasting, surface prep, and surface coating of onsite facilities

Texas MSS – Engine Calculations

- Various ways to calculate compressor blowdowns and estimates vary widely
- Engineering for each engine/compressor is unique and it's time consuming and difficult to get exact measurements, volumes of piping, vessels
- TCEQ has MSS calculation on their website

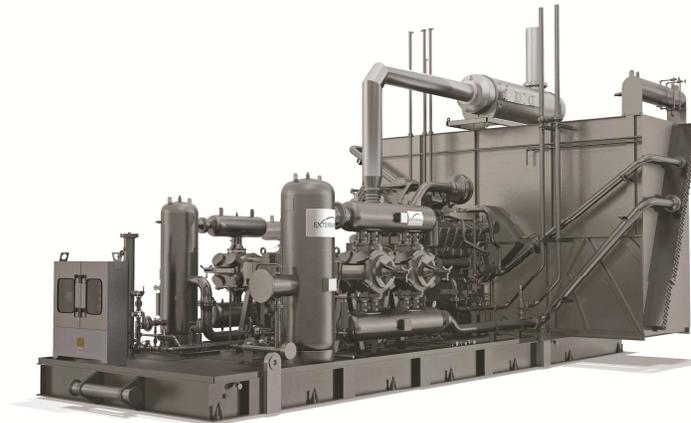


Image from Exterran

Texas MSS

TCEQ's intent is to encourage Best Management Practices

“Maintained in good condition and operated properly”

- Establish, implement, and update a maintenance program
 - Must address all facilities
 - Must be consistent with “good air pollution control practice”
 - Must include cleaning and routine inspection of all onsite equipment
 - Must address training of personnel who perform onsite maintenance/repair
 - Must detail recordkeeping measures for planned MSS activities

Expected Future from the EPA?

- Methane NSPS
- Ozone NAAQS decision
- NEI (National Enforcement Initiative) – EPA focuses on pollution problems affecting communities and the goal is civil and criminal enforcement of the Clean Air Act
 - EPA uses flyovers with IR cameras to spot leaks and potential violations



Image from EPA Region 6 Real-Time Enforcement

In Summary – Regulatory Impacts

NESHAP (Subpart ZZZZ)

- Rule affects all engines
- Management practices vs. emission standards based on location and hp

NSPS (Subpart JJJJ, OOOO)

- Impacts new, reconstructed, and modified units
- Documentation/Recordkeeping (it's a team effort)

New Methane NSPS

GHG

Ozone NAAQS decision

MSS permitting mechanism for O&G industry

We are here to help!

- Contact your Exterran account manager or the Exterran Air Quality Team at AQT@Exterran.com



Questions?

