



# Current EPA Air Regulatory Issues for the Gas Compressor Industry

Gas/Electric Partnership Conference

February 10, 2010



# Current Regulatory Environment

- NGOs Pressing for Legislation for Removal of “O&G Loopholes”
- NGOs Petition EPA on Many Issues
  - Title V, PSD and State Minor Source NSP Permits
  - More Stringent Rulemakings
  - Keep CAA Schedules for Rulemakings
- EPA Responding to Court Cases Upholding Stringent CAA Mandates
- EPA Administrator Sympathetic to NGO’s Requests

# Expected High Impact EPA Air Quality Rulemakings in 2010



## **(Does not include Climate Change Rules)**

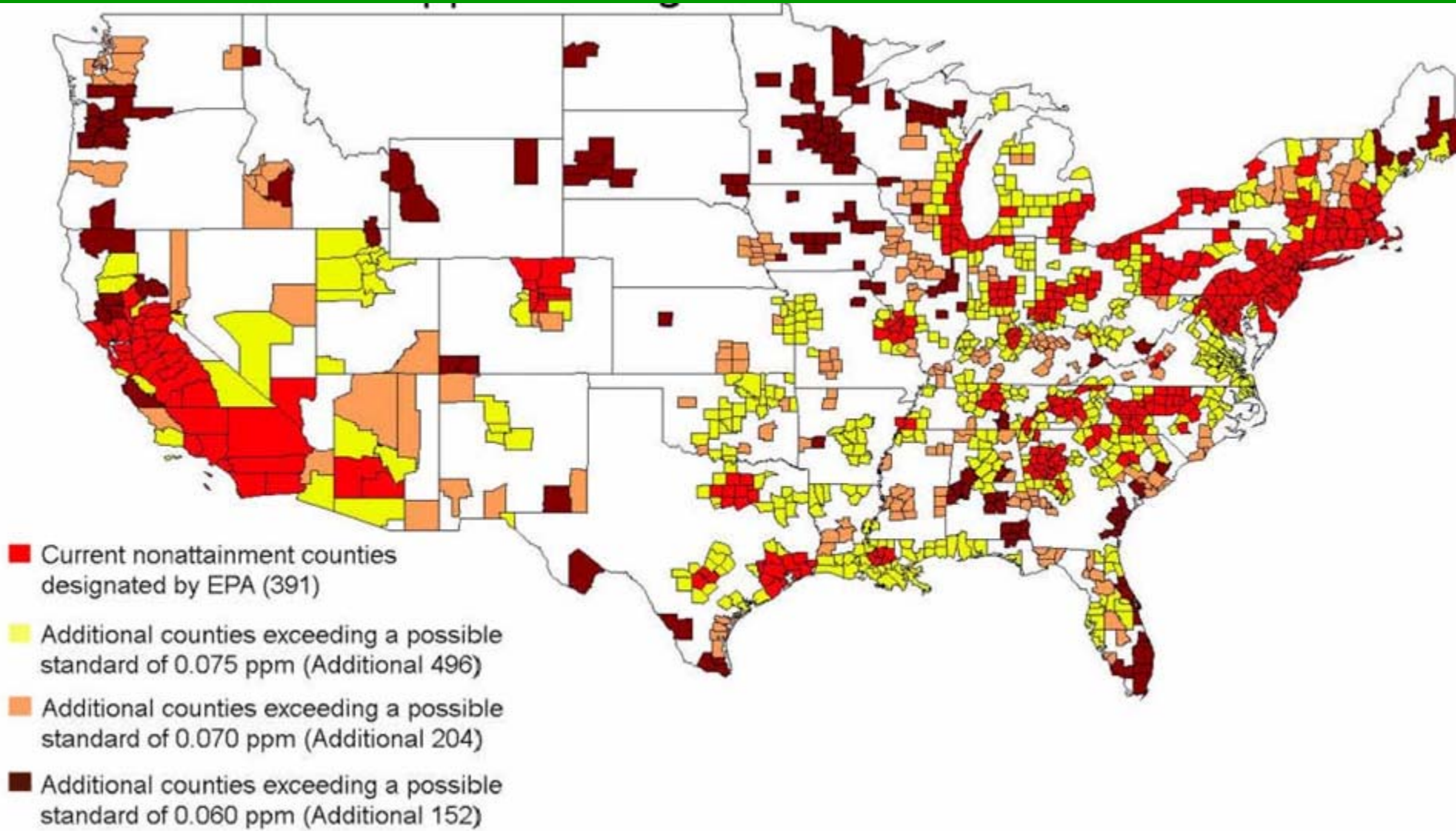
- Ozone NAAQS Reconsideration
- Source Aggregation
- Existing Engine NESHAP
- Review of O&G NSPS (KKK & LLL) and NESHAP (HH & HHH)
- NA & Minor Source NSR for Tribal Lands
- Revised NO<sub>2</sub> NAAQS – PSD Modeling Concerns
- Revised Boiler/Heater NESHAP

# Ozone NAAQS Reconsideration



- 8 Hr Standard Lowered to 75 PPB March 2008
- Obama Administration Criticized Bush for Going Outside of Range Suggested by CASAC
- Proposed Primary from 60 to 70 PPB
- Proposed Secondary Standard – W126 Accumulative Growing Season
- Many More Monitors Are Being Installed
  - Urban Areas > 50,000
  - Rural Areas (avg 2/state)

# 2003 – 5 Ozone Monitoring Data Non-Attainment Counties



Source: Based upon U.S. EPA data interpreted by A.S.L. & Associates, Helena, MT

7/2007



# Non-Attainment Impacts

- States must develop SIPs
- RACT (Reasonably Available Control Technology) for existing equipment
- Restrictive permitting for new equipment
  - Offsets for emission increase
  - LAER (Lowest Achievable Emission Reductions) Controls



# Concerns With Proposed Levels

- Levels So Close to “Background” that they May Be Unattainable in Many Areas
- Few Offsets Available in Areas We Operate
- High Altitude Disadvantage
  - Form of Standard and Higher Background
- Winter Time Ozone – Unknown Mechanism
- Insufficient Atmospheric Models Available.

# O & G Source Aggregation



- Combining Multiple Surface Sites for Major Source Determination
- Major Sources Require PSD Permitting
  - 1 – 2 Year Permitting Delay (at best)
  - Complex Process with Inadequate Guidance
  - Federal Regulation/Oversight
  - Public Participation Requirements
- Also Requires Title V Operating Permit

# O & G Source Aggregation



- “Wehrum Memo” – Jan. 12, 2007
  - Rejected a functionality test in lieu of proximity
  - Heavily supported by 1980 PSD Rule defining “Source”
- McCarthy Memo – Sept. 22, 2009
  - Retracts the Wehrum Memo
  - Points out Regional Office guidance (Functionality Test)
  - Hard to challenge
- Lisa Jackson Grants Petition – Oct. 2009
  - Sends Permit Back (again) to CDPHE to Reconsider Source Det.
  - Consider Functionality and Contractual Agreements

# O & G Source Aggregation Concerns



- Delays/Burdens w/ Little Air Quality Impact
  - Adds Uncertainty & Covers Only ~10% of Emis.
- Major Field Operators Disadvantaged
- May Cause Ownership Changes to Avoid
- Better Regulatory Tools for the Job
  - Minor Source NST
  - NSPS - Applies to All New Equipment
  - NESHAP – Applies Evenly to New and/or Existing

# Overview of Engine Rules



## Draft - Proposed Existing Engine NESHAP<sup>a</sup> Overview<sup>b</sup> - Draft

HP	Engine Rule Applicability											
	Major Sources						Area Sources					
	Existing			New/Reconstructed			Existing			New/Reconstructed		
	CI	RB	LB	CI	RB	LB	CI	RB	LB	CI	RB	LB
>1350	Oxy Cat	NSCR		Oxy Cat	NSCR	Oxy Cat	Oxy Cat	NSCR	Oxy Cat	MC	NSCR	CBT
500-1350	Oxy Cat	NSCR		Oxy Cat	NSCR	Oxy Cat	Oxy Cat	NSCR	Oxy Cat	MC	NSCR	CBT
300-500	Oxy Cat	NSCR	Oxy Cat	MC	NSCR	CBT/Oxy Cat	Oxy Cat	NSCR	Oxy Cat	MC	NSCR	CBT
250-300	EL	NSCR	Oxy Cat	MC	NSCR	CBT/Oxy Cat	Maint <sup>1</sup>	NSCR	Oxy Cat	MC	NSCR	CBT
100-250	EL	NSCR	EL	MC	NSCR	CBT	Maint <sup>1</sup>	NSCR	Maint <sup>1</sup>	MC	NSCR	CBT
50-100	EL	NSCR	EL	MC	NSCR	CBT	Maint <sup>1</sup>	NSCR	Maint <sup>1</sup>	MC	NSCR	CBT
25-50	EL	EL	EL	MC	NSCR	CBT	Maint <sup>1</sup>	Maint <sup>1</sup>	Maint <sup>1</sup>	MC	NSCR	CBT
<25	EL	EL	EL	MC	MC	MC	Maint <sup>1</sup>	Maint <sup>1</sup>	Maint <sup>1</sup>	MC	MC	MC

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>1350	Oxy Cat, NSCR	MC, NSCR, CBT
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**RICE MACT Final Rule NESHAP, Subpart ZZZZ**

- Proposed December 19, 2002
- Finalized February 26, 2004
- Existing if pre 12/19/02
- Applies to engines > 500 hp at major sources of HAPs
- Controls HAPs – formaldehyde
- Complex administrative burdens for notifications, testing, monitoring and SSM Plans (start-up, shutdown, and malfunctions).
- Few engines are controlled by this rule,
- Many companies choose to over control emission to become area source to avoid administrative burden.
- Engines <500 hp delayed due to lack of sufficient data.

**Compression Ignition NSPS Final Rule NSPS, Subpart IIII**

- Proposed July 11, 2005
- Finalized July 11, 2006
- Applies to all new/reconstructed (after July 11, 2005) compression ignition (CI, diesel fueled engines)
- Controls criteria pollutants (NOx, CO, PM and HC)
- Uses manufacture emission certification for most engines
- Some non-certified engines have emission limits
- Operator responsible for maintenance and operation to manufacturer recommendations, as well as maintaining emission limits for life of engine.
- Restricts definition of emergency and adds requirements for these engines.

**Existing Engine NESHAP Proposed Rule**

**General Rule Information**

- Proposal published March 4, 2009
- Consent decree final rule Deadline - February 10, 2010
- Existing if pre 6/12/2006
- Two new engine groups covered
  - All existing engines at area sources
  - Existing engines <500 hp at major sites
- Revised rules for
  - Diesel engines >500 hp at major sites
  - Adds emission standard for startup and malfunction periods for all engines.
- 60 day comment period ending May 4, 2009.
- Compliance Timeline – 3 years after final rule. Approximately February 2013.
- Includes very small engines (<50 hp).

**Basic Issues**

- Cost in economic justification for rule (capital cost of \$528 million and 2013 operating cost of \$345million may be off by a factor of 10.
- Limited test data for units at startup and when engines are unloaded.
- Limited data for small RICE, used same database as the 2002 Proposed RICE when consideration of <500 hp engines was deferred due to lack of data.
- No exemption for engines located in rural areas

**Rule Requirements**

- Requirements apply at all times; including startup, shutdown and malfunction (SSM) events
- Rich burn engines >50 hp require NSCR
  - Formaldehyde controlled limit 200 ppbvd
  - Formaldehyde uncontrolled limit 2 ppmvd
- Lean burn engines >250 hp require Oxy Cat
  - CO used as surrogate for HAPs
  - Controlled limit is 10% of uncontrolled
  - 4SLB uncontrolled limit is 95 ppmvd
  - 2SLB uncontrolled limit is 85 ppmvd
- Diesel engines >300 hp require Oxy Cat
  - Diesel uncontrolled limit is 40 ppmvd CO
- SSM Plans are still required as well as:
  - Numerical limits at uncontrolled levels at major sources and area sources with catalyst
  - Uncontrolled engines have maintenance as a "work practice" (change oil, replace spark plugs and inspect belts & hoses based on run hours)
- Performance test requirements for catalyst
  - 100 – 500 hp initial performance test
  - >500 hp initial & every 8760 run hours

**Compliance Issues**

- Many engines may not be able to achieve controlled/uncontrolled emission limits.
- The Alternative Test Method 323 (for determining formaldehyde) has been withdrawn. FTIR is now the only approved method available.
- Few test companies have FTIR equipment and initial performance test will all be required at the same time.
- Catalyst may not be available.
- Logistical nightmare for notifications, maintenance practices and recordkeeping
- More complicated compliance certifications

**Contradictory Provisions**

- Existing LB engines >500 hp at major sources require no controls, while all other LB engines >250 hp require controls
- New and Existing RB engines >500 hp at major sources have 350 ppbvd formaldehyde limit, while RB have 200 ppbvd limit the proposed rule.
- Diesel controls are based on PM, which is not a HAP.

**Consolidated Engine Final Rule NSPS, Subpart JJJJ & Amendments to NESHAP, Subpart ZZZZ**

- Proposed: June 12, 2006; Final: January 18, 2008
- Three separate rules in one
  - New Source Performance Standard (NSPS, 40 CFR, Part 60) Subpart JJJJ
  - NESHAP, MACT Small Engine Standard at a Major Source
  - National Emission Standards for Hazardous Air Pollutants (NESHAP) Areas Source Standard
- Applies to new/reconstructed (after July 12, 2006) spark ignition (SI; natural gas, gasoline or LPG fueled) engines
- NSPS, Subpart JJJJ Rule Summary
- Controls criteria pollutants (NOx, CO, PM and HC)
- Some engines have Manufacture Certification requirement (see MC note in table)
- All engines have maintenance requirements
- Most engines require performance testing (initial test for engines <500 hp, initial and every 8760 hours for engines >500 hp).
- NESHAP, Subpart ZZZZ Rule Summary
- Most engine categories demonstrate NESHAP compliance by NSPS compliance
  - CO and VOCs are used as a surrogate for HAPs (predominately formaldehyde)
  - No NESHAP requirements, notifications or General Provisions apply
- Lean burn engines between 250 hp and 500 hp at major sources have requirements that are identical to the 2004 RICE MACT (except that new/ reconstructed/existing threshold date is June 12, 2006)
- Restricts definition of emergency and adds requirements for these engines.

<sup>a</sup> NESHAP – National Emission Standards for Hazardous Air Pollutants, found in 40 CFR, Part 63.

<sup>b</sup> This is a Draft Overview Only and is NOT intended to be used as a compliance tool because regulatory requirements have been left out for simplification and brevity. Its purpose is to promote a general understanding of the multiple new regulations that cover Internal Combustion Engines (ICE).

<sup>c</sup> NSPS – New Source Performance Standard, found in 40 CFR, Part 60.



# Existing Engine Rules

## 2004 RICE (Recip. Internal Combustion Engine) MACT

- Applies only to engines >500 hp at major sites
- Few engines are covered by this rule.

## 2006 CI, ICE (a.k.a. Diesel Engine) NSPS, Subpart IIII

- New threshold date – July 11, 2005
- Manufacture Certification Philosophy, Similar to Vehicle

## 2008 SI (Spark Ignited), ICE NSPS, Subpart JJJJ

- Applies to All New/Rec. Engines – June 12, 2006
- API Litigation to resolve remaining issues

## Amendments to NESHAP, Subpart ZZZZ

- Most engine comply via NSPS compliance
- Lean-burn engines >250 hp & <500 hp added to RICE MACT



# Existing Engine NESHAP

- Good News - Existing engines - 3 years to comply
- Diesel Rule to be Signed Today
- Spark Ignition Rule – August 10, 2010
- Applicability – About 95% of All Engines
  - Major source engines <500 hp
  - All area source engines
- Most engines require catalyst
- Engines w/o catalyst covered by maintenance requirements



# Key Concerns With Proposed Rule

- MACT Floor Emission Limits (Minimum per CAA)
  - MACT floor for engines is no control, but Courts require an emission limit for major facilities.
  - Existing source - average achieved by best performing 12%.
  - May include variability of the best performing 12%.
  - EPA based MACT floors on almost no data.
  - Must provide quality data to improve the MACT floors.
- Above the Floor Emission Reductions
  - Require Max. Achievable Emission Reduction Considering Economics and Environmental Co-benefits.
  - EPA capital cost about 1/10<sup>th</sup> Industry's Estimate.
  - EPA annual cost low by a 1/4<sup>th</sup>.
  - EPA catalyst reductions started from MACT Floor, not a more realistic value.

# Key Concerns With Proposed Rule (Cont.)



- Sub-categories with special considerations (Work Practices)
  - **Rural Area Source Engines**
  - Small rich burn engines,
  - engines in cyclical duty, standby, and intermittent use applications (e.g., air compressors, stationary cranes, pumps, and emergency generators),
  - 2SLB engines - low exhaust temperature and/or back pressure making catalytic reduction difficult (e.g., Ajax engines & large bore slow speed 2SLB class engines),

# Key Concerns With Proposed Rule (Cont.)



- Maintenance Work Practices (for engines without catalyst)
  - Engines >50 hp require oil change every 500 hours, replacing spark plugs and inspecting the hoses and belts every 1000 hours.
  - Engines <50 hp require oil change every 200 hours, replacing spark plugs and inspecting the hoses and belts every 500 hours.
  - EPA must have certain requirements that are enforceable.
  - Most likely outcome is increased intervals (i.e. every 60 days)
- Start-up, Shutdown, Malfunction Requirements (SSM)
  - Court vacated SSM exemption from emission limits
  - EPA proposed MACT floor as SSM emission limit.
  - API comments advocate using SSM Plans as “work practice”, in lieu of an emission limit
  - EPA is struggling on an agency direction for handling SSM in NESHAPs categories.

# Q & A Session

