

Greenhouse Gas Permitting

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What are Greenhouse Gases

- Chemical Compounds that when emitted have the potential to cause climate change.
- 73 chemicals identified in 40 CFR 98 Table A-1 to Subpart A.
- Regulated Pollutants: CO_2 , CH_4 , N_2O , and Fluorinated GHGs (SF_6 , PFCs, HFCs).



GHG Monitoring and Reporting Rule

- First phase of GHG regulation.
- 40 CFR 98
- Most sources began monitoring in 2010 with reporting requirements in beginning in November 2011.
- Should account for 85%-90% of all GHG emissions.
- No control requirements.
- Establishes the concept of equivalency (CO₂e) for GHGs.

CO₂ Equivalence

- Not all GHGs will remain in the atmosphere for the same amount of time or have the same effect in the atmosphere.
- In order to account for the variation between these compounds a system was developed using CO₂ as a baseline.
- This allows us to track GHGs of varying types in a way that will expedite the permitting process.



Example Equivalency Numbers

Pollutant	Atmospheric Lifetime	Global Warming Potential (GWP)
	Years	Unitless
CO ₂	50-200	1
CH ₄	12±3	21
N ₂ O	120	310
HFC-23	264	11,700
HFC-32	5.6	650
CF ₄	50,000	6,500
C ₂ F ₆	10,000	9,200
SF ₆	3,200	23,900

Estimated Number of GHGRP Facilities by Subpart - Region Seven

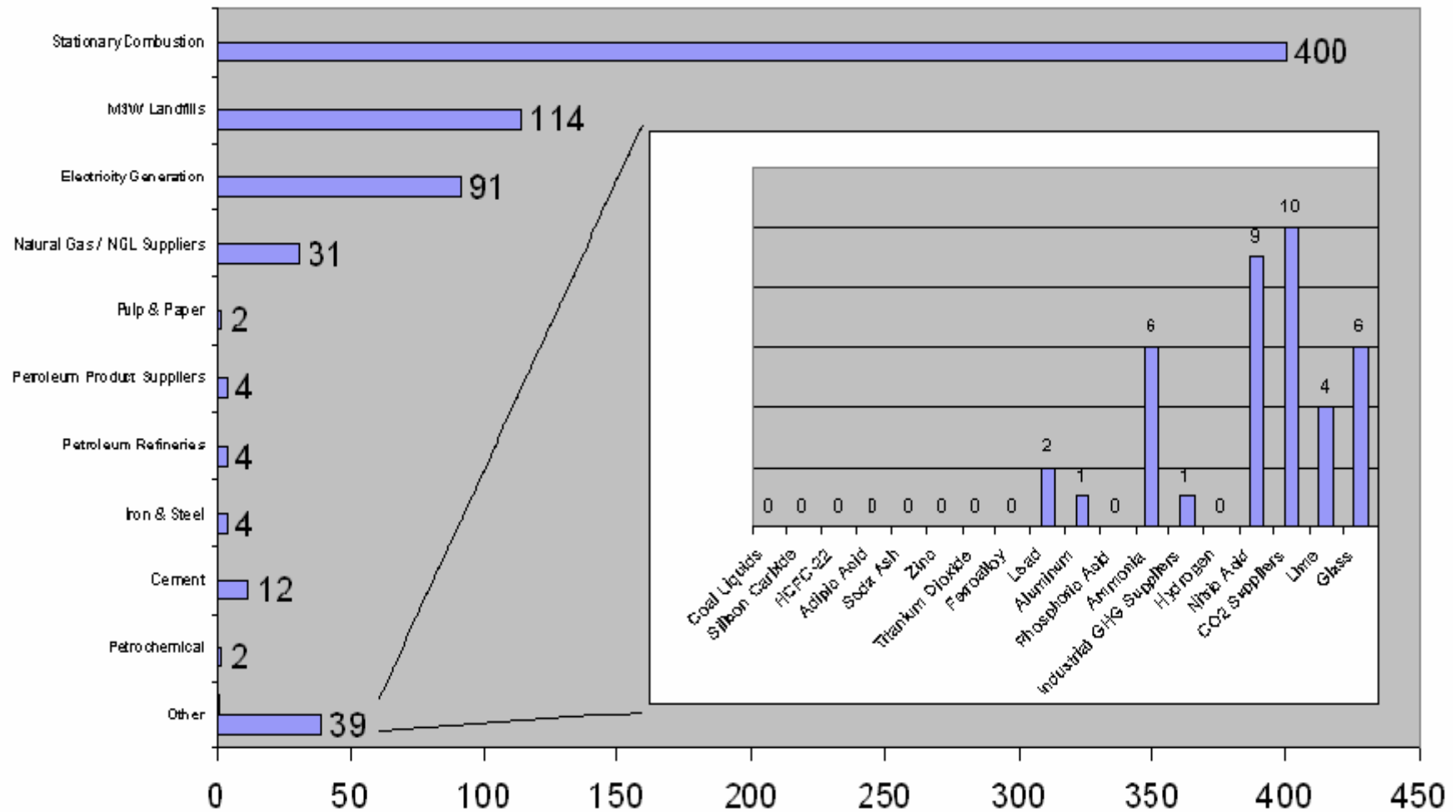


Table from presentation given at the 06/2011 EPA R7 Air Directors meeting by M. Smith and W. Burns.



GHG Tailoring Rule

- Federal Rule to address GHG permitting.
- Absurd Results/Administrative Burden.
- Implements major source (PSD) permitting thresholds above the 100/250 TPY permitting thresholds that would otherwise be applicable.
- Planned to be implemented in phases.
 - For New Sources: 100,000 TPY CO₂e (as of July 1, 2011)
 - For Existing Sources:
 - PTE of 100,000 TPY CO₂e
 - Modification of 75,000 TPY CO₂e
 - 100/250 TPY GHGs by mass for both
- The tailoring rule contains provisions for altering (reducing) the GHG emission limits depending on the results current and future GHG studies.



GHG Tailoring Rule (CTD)

- A New Source is proposed with the following PTE:
 - 120,000 tpy CO₂
 - 90 tpy NO_x
 - 15 tpy SO₂
- Does PSD apply to this source, if so for what pollutants?

Example from: www.epa.gov/nsr/ghgqa.html



GHG Tailoring Rule (CTD)

- Yes PSD does apply to this source.
- PSD applies to GHGs because the CO₂e emissions are above 100,000 tpy and in excess of 100 tpy by mass.
- PSD also applies to NO_x emissions because potential emissions exceed the 40 tpy significance threshold.



GHG Tailoring Rule (CTD)

- The same facility (now considered an existing source) proposes to construct a modification.
 - CO₂e will increase by 50,000 tpy
 - SO₂ emissions will increase by 50 tpy
- Will this facility be subject to PSD for the proposed modification?



GHG Tailoring Rule (CTD)

- No, this facility will not be subject to PSD.
- Potential GHG emissions will not exceed 75,000 tpy (as CO₂e) therefore GHGs are not a regulated pollutant as part of this modification.
- SO₂ emissions will be below the 100 tpy major source threshold (15 tpy + 50 tpy = 65 tpy) therefore this source will not trigger PSD because of SO₂ increases

Applicability in Nebraska

- Incorporated the GHG Tailoring rule into our state regulations (Title 129). Has been approved by the EPA (SIP Approval).
- EPA has not implemented a minor source program for GHGs. Nebraska has not chosen to implement a minor source program either.
- Emissions Inventory program will Change. At this time no fees will be collected but all sources will be required to report GHG emissions.

Estimating GHG Emissions

- Example:
 - Natural gas fired boiler with a heat input capacity of 255 MMBtu/hr (0.25 MMscf/hr) with no NO_x controls.
 - From AP-42 Chapter 1.4 we can obtain the following emission factors:
 - CO₂: 120,000 lb/MMscf
 - N₂O: 2.2 lb/MMscf
 - CH₄: 2.3 lb/MMscf
 - CO₂: $120,000 \times 0.25 = 30,000$ lb/hr (131,400 tpy)
 - N₂O: $2.2 \times 0.25 = 0.55$ lb/hr (2.41 tpy)
 - CH₄: $2.3 \times 0.25 = 0.58$ lb/hr (2.52 tpy)

Estimating GHG Emissions (CTD)

- Calculating CO₂e
- Use Global Warming Potential value to convert mass emissions
 - CO₂: 30,000 lb/hr x 1 = 30,000 lb/hr (131,400 tpy)
 - N₂O: 0.55 lb/hr x 310 = 170.5 lb/hr (747 tpy)
 - CH₄: 0.58 lb/hr x 21 = 12.18 lb/hr (56 tpy)
- 12.8+170.5+30,000 =30,183 lb/hr (132,203 tpy)
- We must also calculate GHGs on a mass basis
 - 30,000 + 0.55 + 0.58 = 30,001 lb/hr (131,404 tpy)
- These calculations must be in the application.



Biogenic Deferral

- On July 20, 2011 the EPA finalized the Biogenic emissions deferral.
- Lasts 3 years.
- Applies to both PSD and Title V programs.
- Applies to CO₂ emissions from biogenic sources and CO₂ emissions generated from combustion of biogenic gases (e.g. Flaring gas from a WWTP or Landfill).



Biogenic Deferral (CTD)

- Any non-biogenic emissions will still need to be accounted for when determining applicability.
- Biogenic emissions will still need to be reported to the NDEQ.



Permit Requirements

- Have not yet implemented any major source GHG permits in Nebraska.
- National trends point to efficiency requirements instead of control devices at this time.
 - Minimizing parasitic load
 - Switching a portion of the fuel combusted to biomass.



Permit Requirements (CTD)

- Keeping an eye on what other states are doing in their permits.
- <http://www.epa.gov/nsr/ghgcomment.html>
 - Nucor Iron – Louisiana
 - Hyperion Energy Center – South Dakota
 - Abengoa - Kansas



Federal Rules

- On December 23, 2010, EPA announced a proposed settlement agreement to issue rules that will address GHG emissions from fossil fuel-fired EGUs and Refineries.
- Under the agreement, EPA commits to proposing NSPS for EGUs by July 26, 2011 and final regulations by May 26, 2012;
- Under the agreement, EPA commits to proposing NSPS for refineries by December 10, 2011 and final regulations by November 10, 2012.



Tribal Minor NSR Rule

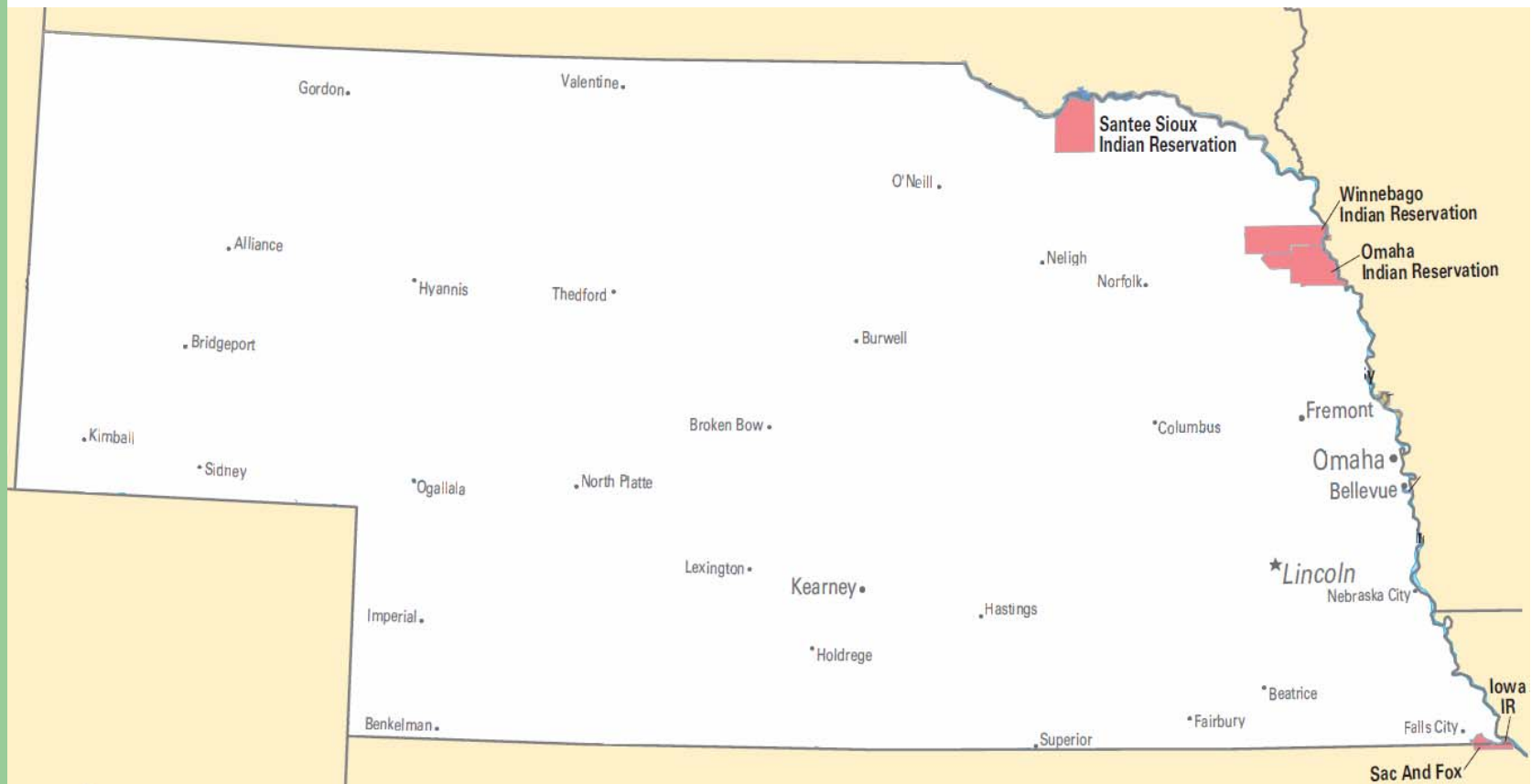
- EPA Promulgated a minor source rule for regulated air pollutants on Tribal lands (FIP)
- Some Tribal areas have expressed an interest in taking over the minor source program (TIP).
- First attempt by the EPA to regulate air emission sources not subject to major source regulation.

Tribal Minor NSR Rule (7/1/2011)

Pollutant	NE	Tribal
PM	N/A	10
PM ₁₀	15	5
PM _{2.5}	(10)	3
NO _x	40	10
SO _x	40	10
CO	50	10
VOC	40	5



Tribal Minor NSR Rule





Boiler MACT

- Two boiler MACT rules
 - Subpart DDDDD – Boilers located at major sources of HAPs (>10 tons each or >25 tons total)
 - EPA issued a stay of effectiveness until further notice has been given (May 18, 2011).
 - Subpart JJJJJ – Boilers located at area sources of HAPs
 - EPA is reconsidering this rule (March 21, 2011)
 - Still in effect (sources must still comply with applicable requirements)



JJJJJJ Requirements

- Existing Sources constructed before 6/4/10
- New Sources constructed or reconstructed after 6/4/10
- Affects boilers that burn coal, oil, biomass, or other solid and liquid non-waste materials.
- Gas fired boilers, hot water heaters (limited), boilers used as C.D. for other NESHAPs, and R&D boilers are not affected.



JJJJJJ Requirements

- Too much to cover here.
- Information available at www.deq.state.ne.us/AirToxic.nsf/pages/JJJJJJ
- Guidance pamphlet available on CD.



Nebraska
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Questions

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