

Greenhouse Gas Regulations and Landfills

September 27, 2010

IowaDNR

The Iowa Department of Natural Resources

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our natural resources

Outline

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PSD and Title V Greenhouse Gas Tailoring Rule



Greenhouse Gas Tailoring Rule

- Greenhouse Gases (GHGs) will become pollutants subject to regulation on January 2, 2011.
- Federal Tailoring Rule finalized by EPA on May 13, 2010.
- This rule “tailors” existing Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs.
 - Currently ± 280 Iowa facilities have Title V permits.



What are PSD and Title V?

- Prevention of Significant Deterioration (PSD)
 - More in-depth permitting for major sources requiring:
 - Installation of the Best Available Control Technology (BACT)
 - An air quality analysis
 - An additional impacts analysis (soils, vegetation, visibility, etc)
- Title V Operating Permit
 - Federally enforceable permit for major sources
 - Includes all local, state, and federal air regulations

Current Permitting Thresholds in tons/year

Note: Differs from Landfill NSPS thresholds.

| Pollutant | Title V | PSD | PSD Significance Level |
|--------------------|-------------------------------------|--------------------------|------------------------|
| PM ₁₀ | 100 | 100 or 250 | 15 |
| PM | NA | 100 or 250 | 25 |
| SO ₂ | 100 | 100 or 250 | 40 |
| NO _x | 100 | 100 or 250 | 40 |
| CO | 100 | 100 or 250 | 100 |
| Ozone/VOC | 100 | 100 or 250 | 40 |
| Lead | 100 | 100 or 250 | 0.6 |
| HAP | 10 - individual 25 - combination | Not regulated under PSD. | |
| GHG (no Tailoring) | 100 | 100 or 250 | Any increase. |

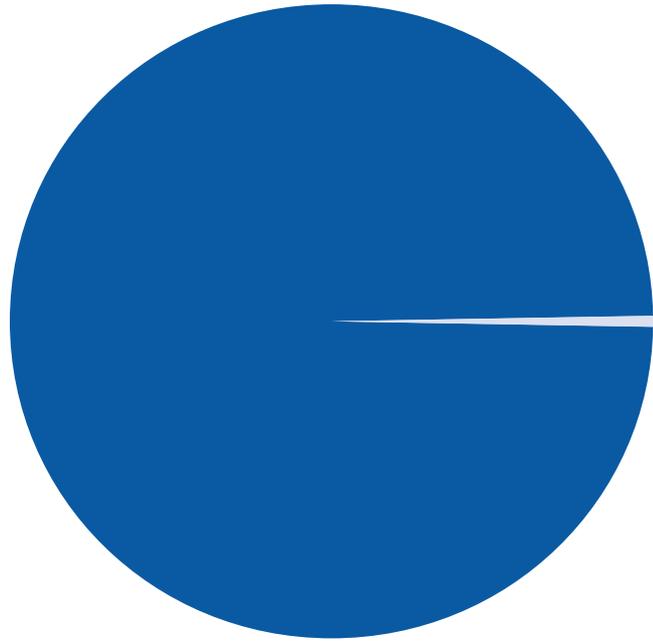
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| Lead | 100 | 100 or 250 | 0.6 |
| HAP | 10 - individual 25 - combination | Not regulated under PSD. | |
| GHG (no Tailoring) | 100 | 100 or 250 | Any increase. |
| GHG (with Tailoring) | 100,000 | 100,000 | 75,000 |

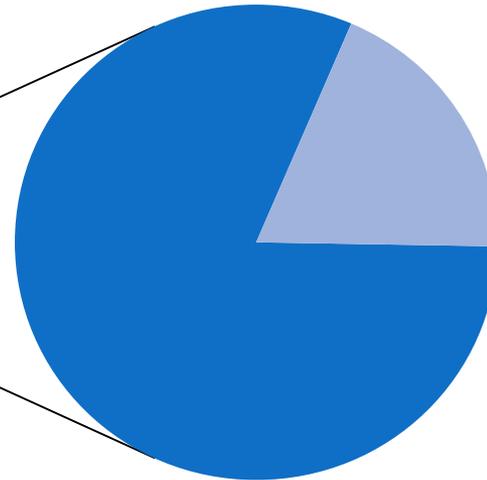
Without Tailoring

61,000 Iowa sources may have needed
Title V permits



With Tailoring

345 Iowa sources may need Title V permits



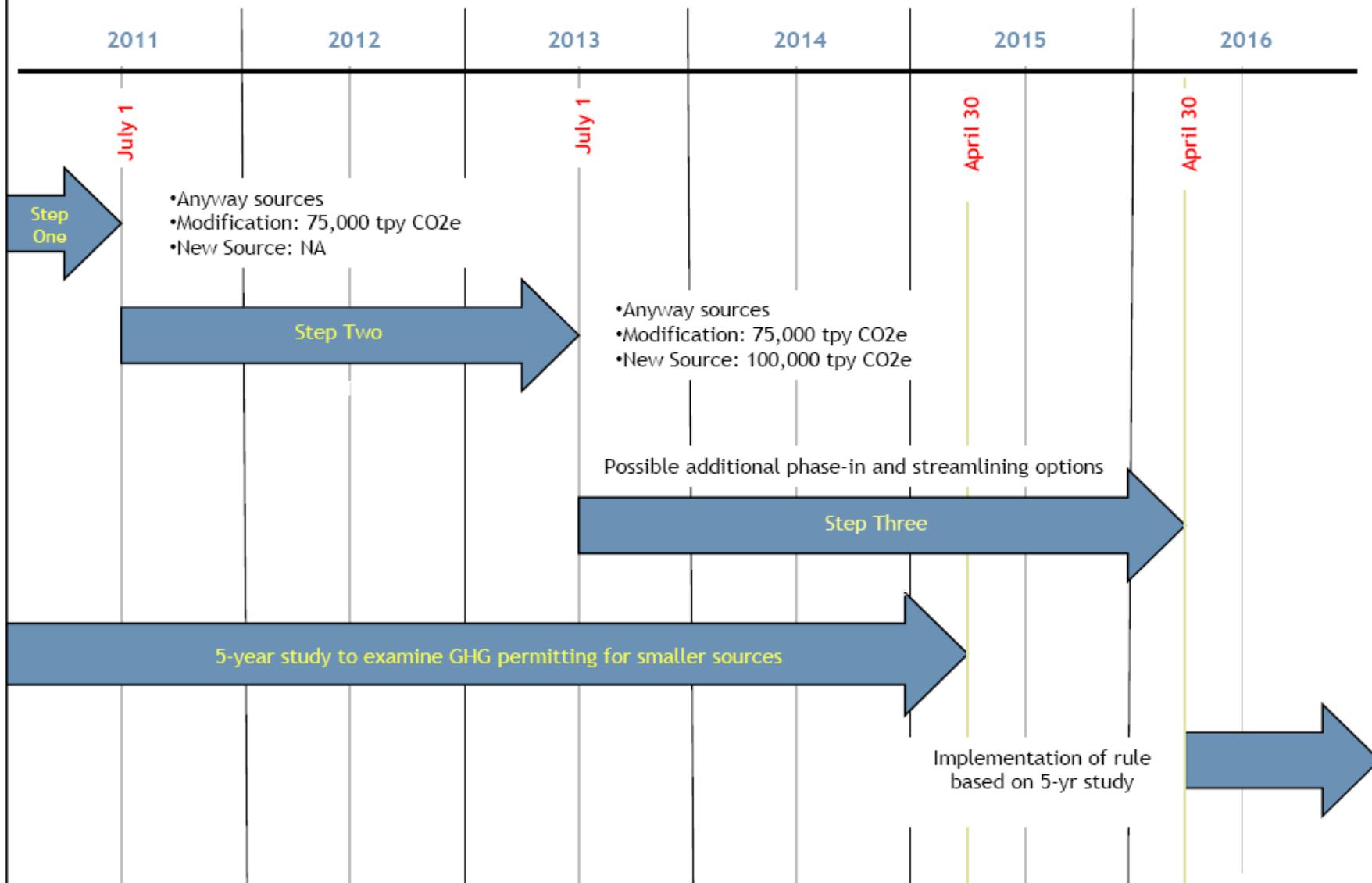
280 already have
Title V permits.

65 more sources
may require Title
V permits
because of their
GHGs, but not
until July 1, 2011.

Final Tailoring Rule

- Higher thresholds than the 9/30/09 proposed rule of 10,000/25,000 tons per year (tpy).
- Phased-in approach.
- Regulated pollutant is GHGs – combination of 6 gases.
- Threshold is potential-to-emit (PTE) in units of short tons carbon dioxide equivalent (CO₂e).

EPA Timeline for the GHG Tailoring Rule



Step 1: January 2, 2011 - June 30, 2011

- No sources will be subject to Title V or PSD permitting requirements based solely on GHG emissions.
- Only sources undertaking permitting actions *anyway* for other pollutants will need to address GHGs.
 - Anyway sources will be subject to the PSD requirements only if they increase GHG emissions by 75,000 tpy CO₂e or more.
 - Only those sources currently with Title V permits will address GHGs, and only when renewing or revising their permits.

Step 2: July 1, 2011 – June 30, 2013

- Step 1 sources
- PSD permitting applicability: Sources that emit or have a potential to emit 100,000 tpy CO₂e or more will also be subject to GHG permitting requirements as follows:
 - A newly constructed source (which is not major for another pollutant) will be subject to PSD if it has the potential to emit 100,000 tpy CO₂e or more.
 - A modification project at a major stationary source will be subject to PSD if it results in a net GHG emissions increase of 75,000 tpy CO₂e or more.

Step 2 (continued):

- Title V permitting applicability:
 - A facility which is not already subject to Title V will become subject to Title V on July 1, 2011 if it has a potential to emit 100,000 tpy or more on a CO₂e basis.
 - These newly subject sources must apply for a Title V permit within one year (July 1, 2012).

Step 3:

- The rule establishes an enforceable commitment for EPA to complete another rulemaking no later than July 1, 2012.
- EPA will propose or solicit comment on a possible step 3 of the phase-in plan:
 - Permit additional sources?
 - Streamlining?
 - Permanent exclusion of certain sources from permitting?
- Step 3 would take effect on July 1, 2013 and would not require permitting of sources with GHGs below 50,000 tpy CO₂e.



Further Action

- EPA to complete a study within 5 years projecting the administrative burdens that remain for small sources.
- Study will serve as the basis for an additional rulemaking that would take further action to address small sources.
- EPA will not require permits for smaller sources (<50,000 tpy CO₂e) until April 30, 2016 or later.



Who will be affected?

- Estimate ~65 new Title V sources
 - 2/3 are dry mill ethanol plants; actual emissions $> 100,000$ tpy CO₂e
 - 1/3 are carbon-intensive sources such as municipal generators, hospitals, food processors, and seed processors
- Some landfills
- PSD may affect sources listed above + 10 facilities that have industrial process emissions $\geq 100,000$ tpy CO₂e

How do I determine if my landfill is affected?

- Calculate GHG potential emissions:
 - Run LandGEM model to determine landfill emissions
 - Use highest CO₂ and methane (CH₄) m³/year values from modeling results. This may be a year well into the future.
 - Apply control efficiency to methane only if landfill has a collection system that destroys methane.
 - Convert emissions to units of CO₂e.

Note: the current version of LandGEM (v. 3.02) already assumes only 75% of emissions can be captured by a collection system.

How do I determine if my landfill is affected?

- Calculate emissions from fossil fuel-fired sources such as generators, boilers, heaters, engines, etc.
 - Do not include emissions from mobile sources such as bulldozers and other vehicles.
 - Use emission factors in calculation guidance on DNR website (*will be updated later this year*) or use emission factors in federal Mandatory Reporting Rule (MRR) - 40 CFR 98 - Table C-1 & C-2.

Converting to CO₂e

- CO₂e is computed by multiplying the mass amount of emissions (tpy) for each of the 6 individual GHGs by the gas's associated global warming potential (GWP).
 - *Global Warming Potential (GWP)* – An index that allows for comparison of various greenhouse gases. It is the radioactive forcing that results from the addition of 1 kilogram of a gas to the atmosphere, compared to an equal mass of carbon dioxide.
 - Use GWP from Mandatory Reporting Rule - 40 CFR 98 Subpart A Table A-1.

Example Calculation

Facility has potential emissions of 5,000 tons/year CO₂; 5,000 tons/year CH₄; 0.5 tons year N₂O

| Pollutant | tons/year | GWP | tons/year CO ₂ e |
|------------------|-----------|-----|-----------------------------|
| CO ₂ | 5,000 | 1 | 5,000 |
| CH ₄ | 5,000 | 21 | 105,000 |
| N ₂ O | 0.5 | 310 | 155 |
| Total | | | 110,155 |

$$\text{CO}_2\text{e} = (5000*1)+(5000*21)+(0.5* 310) = 110,155 \text{ tpy}$$

What do I do next?

If your calculated potential emissions are $\geq 100,000$ tpy CO₂e, you have two options:

1. Submit a complete Title V application for the entire facility by July 1, 2012.
2. Take a limit in a construction permit to lower your potential emissions below 100,000 tpy CO₂e.

What if I already have a Title V permit?

- Step 1 (January 2, 2011 – June 30, 2011)
 - GHG requirements apply only in **rare** cases where the facility receives a PSD construction permit during Step 1 that includes GHG requirements. Depending on the time left in the term of the permit, the permit may need to be reopened/revised to include the BACT requirements.
- Step 2 (July 1, 2011 – June 30, 2013)
 - If the facility has a GHG PTE of $\geq 100,000$ tpy CO₂e the facility must address GHGs at the time of renewal or revision. If your current permit only includes the landfill, you will have to update your renewal permit application and permit to include all air pollution sources at the landfill.

Implementation by DNR

- Rulemaking to adopt Tailoring Rule into Iowa rules
- Outreach
 - Iowa Air Quality list serve
 - Webinar(s)
 - Presentations to industry groups
 - Website
 - Notification letters to affected sources
- Updating application forms, instructions and permit templates
- Updating calculation guidance

DNR Rulemaking

- Adopts federal Tailoring Rule, as written into Iowa rules:
 - Defines “greenhouse gases” and “CO₂e”
 - Modifies definitions of “major source” and “emissions increase”
 - Adds definition of “subject to regulation”
 - Does not require fees on greenhouse gas emissions

DNR Rulemaking Schedule

- 6/29/10: Draft rulemaking posted to DNR GHG website
- 7/20/10: Notice of Intended Action approved by Environmental Protection Commission (EPC) for publication
- 8/11/10: Notice published in Iowa Administrative Bulletin (IAB)
- 9/13/10: Public hearing
- 9/14/10: Deadline for public comment period

DNR Rulemaking Schedule

- Late Sept: Review comments & prepare final rulemaking for October EPC
- 10/19/10: Present final rulemaking to EPC for decision
- 11/17/10: Adopted & filed rulemaking published in IAB and in Iowa Administrative Code (IAC)
- 12/22/10: Effective date for final rules published in IAC

Where to find more information

- DNR GHG website:

<http://www.iowadnr.gov/air/prof/ghg/ghg.html>

- EPA Tailoring Rule website:

<http://www.epa.gov/NSR/actions.html#may10>

- EPA Climate Change website:

<http://www.epa.gov/climatechange/index.html>



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Questions?

Mandatory Reporting of Greenhouse Gases Rule



Mandatory Reporting of GHGs

- Federal rule implemented and enforced by EPA.
 - Proposed March 10, 2009
 - Final September 22, 2009
 - Effective December 29, 2009
- More comprehensive and stringent than DNR GHG reporting requirements.

Key Elements of the Rule

- Requires annual reporting of GHG emissions directly to EPA by more than 35 source categories including:
 - Suppliers of fossil fuels or industrial GHGs
 - Manufacturers of vehicles and engines
 - Facilities that emit 25,000 metric tons or more per year of GHG emissions
- First reports are due to EPA March 31, 2011 for 2010 emissions.

Subpart HH – GHGs to Report

- Emissions are calculated using formulas in the rule (40 CFR 98.343), not LandGEM.
 - Annual modeled methane generation and emissions.
 - Annual methane destruction resulting from collection and combustion.
 - Annual carbon dioxide, methane, and nitrous dioxide emissions from each stationary fossil fuel combustion unit.
- Requires specific monitoring and QA/QC plans and procedures (40 CFR 98.3 and 98.344).

Assistance Available from EPA

<http://www.epa.gov/climatechange/emissions/ghgrulemaking.html>

- Online applicability tool
- Fact sheets, technical support documents, FAQs;
- Training materials
- Visit website to sign up for upcoming applicability tool training (October) and e-GGRT Reporting Tool Training (October and November)

Questions?

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