



GHG Permitting – Regulatory Update

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GHG Program/Permit Status

- Status of State GHG Programs
- GHG Permit Status
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- EPA Comments on GHG Permits



Status of State GHG Programs

- In 2010, EPA took a series of actions to ensure that PSD permitting would continue without disruption after the date when GHG emissions regulations were going to take effect - January 2, 2011.
- First, EPA issued a “SIP Call,” requiring 13 states to revise their PSD programs to cover GHG emissions.
 - Arizona (Pinal Co., Rest of AZ), Arkansas, California (Sacramento), Connecticut, Florida, Idaho, Kansas, Kentucky (Rest of KY, Jefferson Co.), Nebraska, Nevada (Clark Co.), Oregon, Texas, Wyoming
- Second, EPA issued FIPs to cover those programs that did not address how the program will apply to pollutants newly subject to regulation or that did not submit revised SIPs by their selected deadline.
 - Arizona (Pinal Co. and Rest of AZ), Arkansas, Florida, Idaho, Kansas, Kentucky (Jefferson Co.), Oregon, Texas, Wyoming



Status of State GHG Programs (Cont.)

- As of May 2011, 4 of the 13 “SIP Called” states have received approval of their plans to regulate GHGs and 5 of these states are awaiting approval of their plans to receive that authority
 - **Approved**
 - Connecticut, Kansas, Kentucky (Rest of KY), Nebraska
 - **Awaiting Approval (States with * are Delegations)**
 - Arizona (Pinal Co., Rest of AZ)*, California (Sacramento), Kentucky (Jefferson Co.)*, Nevada (Clark Co.), Oregon

- Once EPA approves the plans for California (Sacramento) and Nevada (Clark Co.), EPA or the states will have authority to permit GHG sources for all the states



GHG Permit Status

- As of May 2011, **109** permit applications that include a GHG component have been submitted
- They include source categories such as:
 - Biofuel Production
 - Cement Plants
 - Electric Generating Units
 - Lime Production Facilities
 - Outer Continental Shelf Exploration
 - Pulp and Paper Mills
 - Refineries
- Of these 109 permit applications, **30** include a GHG BACT analysis



GHG Permitting Guidance

GHG Applicability

- Reiterates applicability framework from Tailoring Rule
 - GHG applicability based on mass (statutory thresholds) and CO₂e (“subject to regulation”) emissions.
 - Results in 2-part test for new sources and a 4-part test for modifications.
- Demonstrates how to calculate CO₂e-based emissions using global warming potential (GWP).

GHG BACT

- Long-standing and familiar permitting requirements and processes apply to GHGs.
 - BACT decisions continue to be state- and project-specific.
 - GHG BACT is not pre-determined for any source type.



GHG Permitting Guidance (cont.)

GHG BACT

- CCS could be considered an available BACT option in many cases, but costs will likely rule out CCS for now.
 - However, there are cases now where the economics of CCS are more favorable – e.g., enhanced oil recovery.
- Ranking of control options should be based on total CO₂e, rather than total mass or mass for the individual GHGs.
- Should focus on longer-term averages (e.g., 30- or 365-day rolling average) rather than short-term averages.
- Emphasizes proper documentation of BACT decisions to bolster the permit record.



GHG Permitting Guidance (cont.)

Modeling and Monitoring

- Since there are no NAAQS or PSD increments, ambient modeling (i.e., additional impacts analysis or Class I area) is not required for GHG emissions.
- EPA does not consider it necessary for applicants to gather monitoring data to assess ambient air quality for GHGs, since GHGs do not affect “ambient air quality” in the sense that EPA intended in its rules for other pollutants.



EPA Comments on GHG Permits

- To date, EPA Regions have provided GHG BACT related comments on seven proposed State PSD permits.
- – Nucor in Louisiana, Direct Reduced Iron Production
- – PacifiCorp Lakeside in Utah, CC Gas Turbines
- – We Energies in Wisconsin, Biomass Cogen
- – Hyperion in South Dakota, Refinery
- – Abengoa in Kansas, Bioenergy (*withdrawn*)
- – MidAmerican in Iowa, FGD/SNCR/ACI controls
- – Wolverine in Michigan, Coal/biomass CFB boilers



EPA Comments on GHG Permits (Cont.)

- Include adequate support and explanation for form of GHG BACT emissions limit
 - Numerical emissions limit, or design standard or some other type of requirement if numerical limit deemed infeasible.
- Ensure practical enforceability, adequate compliance monitoring to measure emissions or efficiency over time.
 - Consideration of non-CO₂ constituents— CH₄ and N₂O – for combustion sources.
- Provide adequate explanation for rejecting control options (e.g., CCS) based on feasibility or cost. The permit record should clearly show where in the top down BACT analysis CCS was eliminated as a potential control technology
- Proposing to install a “high efficiency” CT/HRSG as BACT does not meet the definition of BACT (undefined, unenforceable design standard).



EPA Comments on GHG Permits (Cont.)

- State should consider setting a lb/MWh GHG Carbon Dioxide equivalent (CO₂e) BACT limit when the biomass-fired boiler is operating in co-generation mode. For the biomass and natural gas boiler, clarify whether all the GHGs emitted by the project are included in the CO₂e limits.
- Affirm that the CO₂e emissions during start-up and shut-down are included in the compliance calculation for the CO₂e BACT limits in lb/MWh.
- **Bottom line: documentation of GHG control considerations and BACT limits is important for a robust permit record**