

GHG BACT: News from the Front Line

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Sharon Stock, PE
Shell Engineering and Associates, Inc.
573-445-0106 sharon@shellengr.com



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Overview

- Recap
- GHG BACT vs Traditional BACT
- Selected Points
- Links



Recap

- What are GHGs?
 - Since January 2, 2011, GreenHouse Gases are regulated by EPA as a criteria pollutant
 - GHGs are treated as a single pollutant
- What is BACT?
 - Best Available Control Technology
 - Determined as the result of a Prevention of Significant Deterioration (PSD) permit



GHG BACT vs Traditional BACT

- How are they similar?
 - Both follow the 5-Step “Top-Down” Process
 - EPA’s *PSD and Title V Permitting Guidance for Greenhouse Gases (Final – March 2011)*
 - Based on EPA’s *New Source Review Workshop Manual (Draft – October 1990)*
 - BACT determinations can be found on EPA’s RACT/BACT/LAER Clearinghouse



GHG BACT vs Traditional BACT

- How are they different?
 - Technology issues are not as developed for GHGs
 - Increased energy efficiency plays a prominent role in GHG BACT reviews
 - No air quality modeling/monitoring required
 - No NAAQS or PSD increments established
 - No visibility, soils, and vegetation analysis required



You've been BACT into a corner and PSD'd on . . . NOW WHAT??

SELECTED POINTS



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Selected Points

Step 1: Identify Available Control Technologies

- Include anything that reduces GHG emissions, *regardless of cost*
 - Increased energy efficiency strategies
 - Advanced Combustion Controls
 - Options to utilize waste heat to pre-heat raw materials/fuel/air
 - Cleaner fuel options
 - Coal vs. Natural Gas vs. Biomass
 - Coal vs. Coal/Biomass Mix
 - Add-On Technology
 - CO₂ Capture and Sequestration (CCS)



Selected Points

Step 1: Identify Available Control Technologies

- POTENTIAL PITFALL
 - Will the use of a “cleaner” fuel “Redefine the Source”?
 - » Determined case-by-case
 - » What is the source’s Fundamental Business Objective?
 - besides making money...



Selected Points

Step 1: Identify Available Control Technologies

- Some places to look for ideas include:
 - Performance Benchmarking within industries
 - » EPA's ENERGY STAR Energy Performance Indicators for selected industrial sectors
 - EPA's GHG Control Measures White Papers
 - EPA's RBLC



Selected Points

Step 2: Eliminate Technically Infeasible Options

- Control technologies for GHGs are in various stages of development
 - Whether an option is “available” and “applicable” can be difficult to evaluate for GHGs
- CCS can be eliminated if one of the components is infeasible
 - Capture/compression (Is there enough space for equipment?)
 - Transport (Is there a pipeline available? Can a pipeline be built?)
 - Storage (Onsite? Nearby? Enhanced Oil Recovery?)
- Nothing can be eliminated in Step 2 because of cost!



Selected Points

Step 2: Eliminate Technically Infeasible Options

- POTENTIAL PITFALLS

- Whether an option is “available” and “applicable” can be difficult to evaluate for GHGs
- Document everything (and then document it again)
- When in doubt, cost it out in Step 4!



Selected Points

Step 3: Ranking of Controls

- Each option is ranked according to emissions of CO₂e (not individual GHG)
 - EPA's GHG Control Measures White Papers can be very useful to assess control effectiveness of energy efficiency measures



Selected Points

Step 3: Ranking of Controls

- POTENTIAL PITFALL
 - What is “uncontrolled” or “baseline” with regards to energy efficiency options?



Selected Points

Step 4: Economic, Energy, and Environmental Impacts

- EPA realizes that CCS will often be eliminated in this step because of the cost



Selected Points

Step 4: Economic, Energy, and Environmental Impacts

- Since CO₂e emissions are well above 100,000 tons/year, cost effectiveness numbers will be much lower than for traditional pollutants
 - While a cost effectiveness of \$20/ton of CO₂e removed may not sound unreasonable at first glance, if 100,000 tons of CO₂e are removed annually, it would add \$2,000,000 to the cost of the project every year



Selected Points

Step 5: Selecting BACT

- At the time the GHG PSD Guidance was written, EPA expected there would be an initial emphasis on energy efficiency measures



Selected Points

Step 5: Selecting BACT

- There are 49 permits with CO₂e limits on RBLC since January 2, 2011 with control measures including:
 - Fuel selection
 - Improved combustion measures
 - Insulation
 - Proper maintenance/tune-ups
 - Pre-heaters
 - Advanced combustion controls



In conclusion...

HELPFUL LINKS



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Helpful Links

- EPA's *PSD and Title V Permitting Guidance for Greenhouse Gases (Final – March 2011)*
<<http://www.epa.gov/nsr/ghgdocs/ghgpermittingguidance.pdf>>
- EPA's ENERGY STAR Industrial Sector Guides
<<http://www.energystar.gov/buildings/facility-owners-and-managers/industrial-plants/measure-track-and-benchmark/energy-star-energy>>
- EPA's GHG Control Measures White Papers
<<http://www.epa.gov/nsr/ghgpermitting.html>>
- EPA's RACT/BACT/LAER Clearinghouse
<<http://cfpub.epa.gov/RBLC/>>



QUESTIONS?



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