



## New Source Review Program Update

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# NSR Rules/Guidance Update

- Upcoming GHG Rules
- State GHG Programs Status
- GHG Permitting Status
- PM<sub>2.5</sub> Rules
- 1 hour NO<sub>2</sub>/SO<sub>2</sub> NAAQS / implementation guidance
- Fugitive Emissions Rule
- Reasonable Possibility Rule
- Aggregation, Debottlenecking and Project Netting Rule
- Ozone NSR Anti-backsliding Rule
- Tribal NSR Rules



# Upcoming GHG Rules/Actions

- Step 3 Rulemaking
  - To establish thresholds from July 2013 to April 2016
  - Rule must be completed by July 2012
  - Levels could stay the same or go as low as 50K
  - Gives us the opportunity to assess the manageability of GHG permitting



## Upcoming GHG Rules/Actions (Cont..d)

- Biomass Deferral
  - Biomass Scientific Study / GHG Accounting Rule
  - In Jan 2011, EPA announced an expedited rulemaking to defer completely the application of pre-construction permitting requirements to biomass-fired CO<sub>2</sub> and other biogenic CO<sub>2</sub> emissions for a **period of three years**.
    - Proposal available at <http://www.epa.gov/nsr/actions.html>; (comment period ended May 5)
    - Deferral applies to CO<sub>2</sub> emissions only.
  - EPA will use this time to conduct a detailed examination of the scientific and technical issues associated with biogenic CO<sub>2</sub> emissions and develop an accounting methodology, including a review by an independent panel
    - Science Advisory Board solicitation for panel nominations at <http://yosemite.epa.gov/sab/sabproduct.nsf/0/2F9B572C712AC52E8525783100704886?OpenDocument>
  - We will use the results of this study to develop a rulemaking on how biogenic CO<sub>2</sub> emissions should be treated and accounted for in PSD and Title V permitting based on the feedback from the scientific and technical review.



## Upcoming GHG Rules/Actions (Cont..d)

- Tailoring Rule Discussed Potential Streamlining Techniques
  - General permits
  - Presumptive BACT
  - Defining PTE for smaller sources
  - Electronic permitting
- Title V Program Revisions to adopt tailoring rule
- 5 Year Study / Step 4
- Most of these will require State adoption (SIP and title V program changes)



# GHG Permitting: The Year Ahead

- January 2012 – Proposed Tailoring Step 3 Rule
- Spring 2012 – Biomass scientific study released
- July 2012 – Final Tailoring Step 3 Rule (one year for states to adopt)
- Late 2012 – If necessary, proposed rule addressing biomass study
- July 2013 – Tailoring Rule Step 3 goes into effect
- Ongoing – Additional Q&A's, guidance as necessary



# EPA Resources to Assist States and Industry

To ensure that GHG permitting runs smoothly for the larger sources that remain covered, EPA has provided the following:

- Guidance on key GHG Permitting topics (BACT, Biomass, etc.)
- White Papers on
  - utilities, refineries, cement, large commercial/industrial/institutional boilers, pulp and paper, iron and steel, and nitric acid plants
- Control Technology Clearinghouses
  - RACT/BACT/LAER, GHG Mitigation Strategies
- GHG Permitting Action Team
  - Primary and Secondary Contacts for each EPA Regional Office
  - Weekly internal meetings to address and coordinate issues
- GHG Training for States, Industry and Other Interested Stakeholders
  - [www.epa.gov/apti/broadcast2010.html#GHGTraining1210](http://www.epa.gov/apti/broadcast2010.html#GHGTraining1210)
- Updates on NACAA monthly permitting committee calls; special purpose calls as needed
- Website for GHG permitting resources: [www.epa.gov/nsr/ghgpermitting](http://www.epa.gov/nsr/ghgpermitting)
  - Contains links to White Papers, Clearinghouses, Permitting Action Team, etc.
  - Updated to include new Q&A's as issued (3 posted; more likely)
  - Also updated to include EPA comment letters on proposed permits involving GHG



# 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..d)

- As of September 2011, 5 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, California (Sacramento)
  - **Awaiting Approval (States with \* are Delegations)**
    - Arizona (Pinal Co., Rest of AZ)\*, Kentucky (Jefferson Co.), Nevada (Clark Co.), Oregon, Idaho
- Once EPA approves the plan for Nevada (Clark Co.), EPA or the states will have authority to permit GHG sources for all states



# GHG Permitting Status

- As of October 2011, about 100 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 100 permit applications, 48 include a GHG BACT analysis



# GHG Permitting Guidance

## GHG Applicability

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



## GHG Permitting Guidance (Cont..d)

- Issued November 2010; technical correction posted March 2011.
- Provides statutory and regulatory background for the permitting and regulation of GHGs.
- Explains that the PSD and Title V permitting requirements are generally no different for GHGs.
- Emphasizes the importance of developing a good record.
- Document is guidance, not a rule.
- SIP approved Permitting Authorities have discretion to be more stringent than this policy.



## GHG Permitting Guidance (Cont..d)

- Long-standing and familiar processes apply to GHGs
  - BACT determinations continue to be state- and project-specific decisions
  - GHG BACT is not prescribed for any source type
- In most cases, energy efficiency improvements will satisfy the BACT requirement for GHGs.
- Carbon Capture and Sequestration (CCS) should be considered an available control option for certain types of sources, but required consideration of costs will likely rule CCS out for now.
  - However, there are cases now where the economics of CCS may be more favorable – e.g., enhanced oil recovery.



## GHG Permitting Guidance (Cont..d)

- Specific types of fuels or facility design neither required nor precluded
- A BACT analysis for greenhouse gas emissions does not need to consider a fuel switch that would fundamentally redefine the source.
- Ranking of control options should be based on total CO<sub>2</sub>e, 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 PSD Permits issued

- 11 Permits have been issued by States
  - – Russell City Energy Center, Natural gas plant, California
  - – Nucor, Direct Reduced Iron Production, Louisiana
  - – PacifiCorp Lakeside, CC Gas Turbines, Utah
  - – We Energies, Biomass Cogen, Wisconsin
  - – Hyperion, Refinery, South Dakota
  - – Abengoa, Bioenergy , Kansas
  - – MidAmerican, FGD/SNCR/ACI controls , Iowa
  - – Wolverine, Coal/biomass CFB boilers, Michigan
  - – LaFarge Cement, Ravena, New York
  - – U.S Steel, Steel Mill, Minnesota
  - – Sumpter Energy, Carleton Farms, Michigan
  - \* First EPA issued Permit for Palmdale Hybrid Energy Center, CA



# Permits under EPA review

1. Lower Colorado River Authority-Thomas C. Ferguson Power Plant, Horseshoe Bend, TX
2. ETC Texas Pipeline, Natural Gas Processing Plant, Jackson County, TX
3. BASF FINA Petrochemical LP (BFLP), Port Arthur, TX
4. INEOS Olefins and Polymers, Alvin, TX
5. BHP Billiton Petroleum, Sake Exploratory Drilling Project, OCS Eastern GOM
6. Eni Holy Cross Drilling Project, OCS Eastern GOM
7. Port Dolphin Energy LNG Port, OCS Eastern GOM
8. Hydrogen Energy California (HECA), Kern County, CA
9. Pio Pico Energy Center, San Diego, CA
10. Energy Answers, Arecibo, PR
11. Pioneer Valley Energy Center, Westfield, MA
12. Cheyenne Generating Station, Cheyenne, WY





# EPA Comments on GHG Permits

- 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-CO<sub>2</sub> constituents— CH<sub>4</sub> and N<sub>2</sub>O – 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..d)

- State should consider setting a lb/MWh GHG Carbon Dioxide equivalent (CO<sub>2</sub>e) 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 CO<sub>2</sub>e limits.
- Source must ensure that the CO<sub>2</sub>e emissions during start-up and shut-down are included in the compliance calculation for the CO<sub>2</sub>e BACT limits in lb/MWh.
- **Bottom line: documentation of GHG control considerations and BACT limits is important for a robust permit record**



## PM 2.5 Repeal of the Grandfathering Provision

- First issue in Petition for Reconsideration of 2008 final PM<sub>2.5</sub> rule addressed through rulemaking
- 2/11/2010 NPRM to repeal grandfather provision (which allowed continued use of PM<sub>10</sub> Surrogate Policy for “grandfathered” sources) and end early the use of the PM<sub>10</sub> Surrogate Policy in states with approved PSD SIPs.
- Final rule published 5/18/2011, effective 7/18/2011. In the final repeal rule, EPA took no action on proposal to end use of surrogate policy in SIP approved States, since the default end date was May 16, 2011



# Condensable PM<sub>2.5</sub>

- NPRM to end NSR transition period (TP) for condensable particulate matter (CPM) (sought comment as part of NPRM for PM Test Methods - 3/25/2009 )
- Test Methods Rule delayed and promulgated in December 2010. Hence, we did not take final action on ending the CPM transition period, which ended by default as of January 1, 2011.



# PM<sub>2.5</sub> Test Methods Rule

- Methods for Measuring Filterable PM<sub>10</sub>/PM<sub>2.5</sub> and CPM
  - Final rule published in 12/21/2010 FR: effective 1/1/2011
  - Amends Methods 201A and 202
  
- Method 201A
  - Add particle sizing device for PM<sub>2.5</sub>
  
- Method 202
  - Revises sample collection and recovery procedures
  - Reduces formation of reaction artifacts that could overestimate CPM
  - Increases precision of method and improves consistency in measurements obtained between different source tests



## PM<sub>2.5</sub> Test Methods Rule (Cont..d)

- New Method 202 sampling concern
  - Several parties have recently raised concerns about CPM formation from chemical reactions caused during sampling
    - Allege formation of solid sulfate from reaction of free ammonia (from NO<sub>x</sub> control) with SO<sub>2</sub> in test equipment
  - EPA has concluded that reaction does not occur as a result of the test equipment
    - Reaction occurs either in the process, the control device, in the stack or very soon after release from the stack
  - Consequently, Method 202 does not artificially enhance the ammonia/SO<sub>2</sub> reaction beyond conditions not otherwise present prior to stack exit



# Inter-pollutant Trading Policy

- EPA has re-evaluated the recommended inter-pollutant offset ratios and concluded that its applicability as a “one size fits all” approach is not appropriate
- EPA issued guidance in July 2011 clarifying that the recommended offset ratios were not presumptively approvable; if states adopted these ratios in their SIPs they must include a technical demonstration showing air quality benefits of such ratios; states of course could develop different ratios with justification



## PM<sub>2.5</sub> Increments, SILs, SMC

- Final rule published on October 20, 2010  
FR
- Rule establishes PM<sub>2.5</sub> increments for Class I, II and III PSD areas
  - “Trigger date”: 10/20/2011
  - “Major source baseline date”: 10/20/2010
- Rule establishes Significant Impact Levels (SILs) and Significant Monitoring Concentration (SMC)
  - SILs: Class I, II and III (annual, 24-hr)
  - SMC (adjusted correction factor)





# Petition of PM2.5 Increments Rule

- Administrative Petition for Reconsideration and stay of final PM2.5 Increments rule
  - filed by TCEQ
- Petitions for review (U.S. Court of Appeals)
  - TCEQ & Sierra Club
- EPA is granting reconsideration for 3 issues
  - Final rule's inclusion of precursor emissions in the significant impact analysis
  - Final definition of "baseline area" for PM2.5 increments
  - Final SMC value



## Petition of PM2.5 Increments Rule (Cont..d)

- . Inclusion of precursor emissions in the significant impact analysis
  - o NPRM indicated that significant impact (SIL) test would involve direct PM2.5 emissions
  - o Final rule removed reference to “direct PM2.5 emissions.”
    - Regulatory text says “emissions increase” would cause air quality impacts less than...[SIL]...”
  - o TCEQ alleges the inclusion of precursor emissions was done without notice and comment



## Petition of PM2.5 Increments Rule (Cont..d)

- Definition of “baseline area” for PM2.5 increments
  - Significant impact is used to extend size of “baseline area” beyond area where source would locate
  - NPRM used “1  $\mu\text{g}/\text{m}^3$ ” (annual average)
  - Final rule uses “0.3  $\mu\text{g}/\text{m}^3$ ,” the annual PM2.5 SIL

### 3. SMC for PM2.5

- NPRM relied on original (1979) “uncertainty factor” of “5” times the MDL
- Final rule based “correction factor” of “2” on updated analysis of ambient monitoring technology and quality assurance measurements of PM2.5



# 1-hour NO<sub>2</sub> Standard

- New 1-hour NO<sub>2</sub> NAAQS: Published in FR on 2/9/2010; effective date 4/12/2010
  - NAAQS = 100 parts per billion
  - Standard is attained when the 3-year average of the 98<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 100 ppb
  
- Permitting problems immediately surfaced when sources experienced difficulty modeling compliance with the new 1-hour NO<sub>2</sub> NAAQS
  - Probabilistic form of NAAQS
  - Emergency equipment and other low-stack emissions units
  - Small property boundaries: “Ambient air”
  
- Two Guidance memos prepared for implementing PSD permit requirements



# 1-hour NO<sub>2</sub> Permit Implementation Guidance

- June 29, 2010 Phase I Guidance Memo
  - Permitting guidance
    - Credit for GEP height
    - Air quality-based emissions limits
    - Accounting for emergency equipment
    - Interim 1-hour NO<sub>2</sub> SIL
  - Modeling guidance
    - 3-tiered approach for modeling NO conversion to NO<sub>2</sub> [Greater focus on tier 3 detailed modeling]
    - Probabilistic form of NAAQS
- March 1, 2011 Supplemental Modeling Guidance for NO<sub>2</sub>
  - Clarification of procedures for NAAQS compliance analysis using interim 1-hour NO<sub>2</sub> SIL
  - Clarification of use of Tier 2 and 3 options for NO<sub>2</sub> conversion
  - Recommended exclusion for “intermittent emissions”
  - Clarification of determination of background concentrations and their incorporation in cumulative analysis



# 1-hour SO<sub>2</sub> Standard

- New 1-hour SO<sub>2</sub> NAAQS: published in FR on 6/22/2010: effective date 8/23/2010
  - NAAQS = 75 parts per billion
  - Standard is attained when the 3-year average of the annual 99<sup>th</sup> percentile of 1-hour daily maximum concentrations does not exceed 75 ppb
  - Eventual revocation of annual and 24-hr NAAQS for SO<sub>2</sub>
- In anticipation of PSD compliance problems, EPA issued guidance to assist in the PSD permitting and modeling procedures



# 1-hour SO<sub>2</sub> Permit Implementation Guidance

- August 23, 2010 SO<sub>2</sub> Guidance Memo
- Permitting guidance
  - Importance of short-term emissions limits
  - Interim 1-hour SO<sub>2</sub> SIL
  - Air quality-based emissions limits
  - Proper use of GEP stack height
  - Retention of existing annual and 24-hr increments for SO<sub>2</sub>
- Modeling guidance
  - Accounting for probabilistic form of 1-hr NAAQS
  - Representativeness of available monitoring data
  - Appropriate methods for combining modeled concentrations with monitored background data



# Fugitive Emissions Rule

- 12/19/08 Rule
  - Do not count fugitive emissions when determining whether a major modification has occurred unless in one of 28 + 2 source categories (same as for major stationary source qualification)
- Reconsideration and stay granted 4/24/09
- 2 additional rules extended stay till 10/3/11
- Interim Rule published 3/30/11
  - Clarified stay by reverting CFR text back to pre-2008 rule language until EPA completes reconsideration
- EPA intends to complete reconsideration of 2008 Rule by 10/4/12





# Reasonable Possibility Rule

- Rule identifies when a source should do recordkeeping and reporting after undergoing a modification that does not trigger major NSR
- Requires recordkeeping and reporting when the projected increase in emissions to which the "reasonable possibility" test applies equals or exceeds 50 percent of the Clean Air Act's NSR significance levels for any pollutant.
- Granted reconsideration on 4/24/09
- Now preparing for a Fall 2011 re-proposal.



# Aggregation, Debottlenecking and Project Netting Rule

- 2006: EPA proposed three changes to the NSR program:
  - Aggregation – clarified how to group related projects at a single source for NSR purposes
  - Debottlenecking – considers emission increases at units downstream and/or upstream from the changed unit
  - Project Netting (PN) – considers emissions decreases when calculating the emissions change from a project rather than using contemporaneous netting
- Final Policy on Aggregation only: 1/09
  - Combine emissions when projects are substantially related either technically or economically
  - 3 year presumption against aggregation
  - Debottlenecking rule withdrawn and took no action on PN.
- Reconsideration granted 2/09
- On 5/20/2010, effective date delayed indefinitely pending judicial review



## Ozone NSR Anti-backsliding Rule

- Purpose: Determine final EPA policy on the criteria under which an area's legacy nonattainment NSR regime must be retained.
- Proposed rules on August 24, 2010.
- Now preparing responses to comments for Fall 2011 rulemaking.



# Tribal NSR Rules

- Regulations for nonattainment major NSR and minor NSR in tribal lands
- Proposed 8/21/2006
- Final Rule signed on June 10, 2011.



# Tribal NSR Rules (Cont..d)

- The requirements for minor sources include:
  - Case-by-case review of control technology
  - Air Quality Impact Analysis (AQIA)
  - Monitoring, recordkeeping, and reporting
  - Public participation
  - Source registration with the reviewing authority
- 3 types of permits available:
  - Site-specific permits
  - General permits
  - Synthetic minor permits
- The requirements for major sources in nonattainment areas include:
  - Installing Lowest Achievable Emission Rate (LAER)
  - Obtaining emissions offsets
  - Certifying compliance
- Same as the existing nonattainment major NSR rules for areas lacking an approved nonattainment major NSR program - 40 CFR part 51, Appendix S