Addressing Regional Haze
Pollutants from Industrial
Boilers II

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Process Overview of a Pulp and Paper Mill

- LIME KILN
- DIGESTERS
- EVAPORATORS
- POWER BOILER
- WASHERS
- BLEACH PLANT
- RECOVERY FURNACE
- PAPER MACHINE
Power Boiler
Paper and Pulp Mills

- Paper and pulp mills are large, complex, with integrated manufacturing operations
- Highly regulated with numerous applicable technology and air quality-based standards
- Produces 60% of energy needed through cogeneration and burning biomass (purchased energy down 53% since 1980)
- Since 1980, SO2 down 65%, NOx down 31%
- Environmental spending is 15% of total capital expense
- Leader in energy innovation and committed to environmental improvement
Paper and Pulp Boilers

- Paper and pulp boilers have varying designs and wide, rapid load swings to meet dozens of steam uses
  - Designs include Stoker boilers, pulverized coal, fluidized bed, package gas/oil, etc.

- Diverse fuel profiles (biomass, coal, tires, natural gas, often fired simultaneously in the same unit)

- Controls for industrial boilers need to be considered on a case-by-case basis due to the variety of boiler types, fuels, uses, and controls already in place
Paper and Pulp Boilers

- All solid-fired boilers at facilities that are a major source of HAPs must comply with Boiler MACT (deadline is September 2007)

- AF&PA evaluation of existing installations for NOx controls show lower (and often substantially lower) removal efficiencies than projected
Boiler load swings due to widely varying steam demand in the operation of pulp digesters, paper machines, etc. (unlike the use of steam to power electric generators or to simply heat buildings)

Load swings make it particularly difficult to retrofit boilers with SCR or SCNR, as appropriate temperature windows are hard to maintain.
Recovery Boilers

• Recovery boilers are different from power boilers because of the nature of the fuel used (black liquor) and because their primary purpose is to recover pulping chemicals, not generate steam.

• NOx emissions are normally low, and SO2 emissions often very low.
Boiler Control Considerations

- SCR not demonstrated on multi-fuel boilers burning wood or coal
- Need to avoid creating disincentives to burning biomass
- High % removal requirements for multi-fuel boilers burning coal, natural gas, or other fuels with biomass are technically infeasible or prohibitively expensive
- Need to avoid affecting the capability for Combined Heat and Power operations (paper and pulp is the largest CHP sector in the U.S.)
Boiler Control Considerations

- Controls considered must be realistic for the boiler considered
- Most boilers already have controls due to existing requirements, energy efficiency upgrades, and/or fuel switching (baseline emissions vary tremendously affecting removal efficiency and cost effectiveness of further reductions)
Boiler Control Considerations

- Cost, air quality improvement due to controls, associated impacts from controls, existing controls at the facility, and other factors need to be considered to provide maximum value to the public.
- BART analysis provides these considerations and does not rely on presumptive control levels.
- AF&PA plans to meet with EPA to provide data to improve the estimated cost and efficiency of controls for boilers.
Modeling Assumptions for Boilers

- The presumptive control levels proposed on September 27 for industrial boilers are not realistic for boilers in the paper and pulp industry.

- If MANE-VU assumes unrealistic removal efficiencies for our industry’s boilers, modeling may incorrectly project attainment, and states may face unexpected emission reduction shortfalls just as the attainment deadlines are approaching.
Summary

• The Forest Products Industry Wishes to Do Our Part to Meet Air Standards but boiler controls considered must be realistic for the boiler and affordable

• AF&PA will submit further written comments to MANE-VU on potential boiler controls

• Controlling visibility impairing pollutants is the goal of BART, not installing controls

• Modeling a facility’s visibility impact should be an alternative for the facility

• AF&PA will continue to work to further define how a realistic emissions trading program might work under the Regional Haze Program
Thank you for this opportunity

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