# Emission Trends and SIP Scenarios for SO2 and NOx

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# Stationary source issues are a key component of the regional haze plans

- –NOx and SO2 are the pollutants of concern
- –Specific requirements related to BART sources
- –85% to 9O% of the NOx and SO2 emissions from BART eligible units are from power plants

# Where We've Been

- Western states take leadership role on regional haze

  - –Grand Canyon Commission
  - –WRAP formed as successor organization
  - –309 option included in final 1999 rule
  - –Annex submitted Sept 30, 2000
  - –5 309 SIPs submitted December 2003
  - –Conducting state-of-the-art technical analysis

# Laws, Regulations and Lawsuits

- July 1999: Regional Haze Rule
- July 2001: BART guidelines proposed
- May 2002: Decision in *Corn Growers* vacates BART
- Jun 2003: Haze rule revised to incorporate Annex
- July 2003: EPA revises mobile source section of 309
- Apr 2004: BART rule and guidelines reproposed
- Feb 2005: Decision in *CEED* vacates WRAP Annex
- July 2005: BART rule finalized
- Aug 2005: BART alternatives & 309 reproposed
- Sep 2005: Parties file notice to sue on BART
- Sep 2005: Comments on alternatives proposal
- Jan 2006?: Final Trading & 309 rule
- 2006 and beyond: More lawsuits and rule revisions???
- 2000-2005: No revisions to the Clean Air Act
- 2004-2005: EPA elects not to extend CAIR to the West

# But What About Emissions?

- 1998-2004 (11 state region & tribal sources):
  - **35% reduction in SO2 from EGU's**
  - **202,500 tons per year (573 K to 370 K)**
- How'd that happen?
  - Centralia
  - 4 Corners and San Juan
  - Craig, Hayden and Metro Denver Plants
  - Navajo
  - Apache
  - Coronado

## More Reductions on The Way!!

- Springerville
- Commanche
- San Juan
- Four Corners
- Mohave
- Cholla
- PacifiCorp Plants
  - –Huntington 2, Dave Johnston 3 & 4, Jim Bridger

## What's Left?

- –Pawnee
- –Boardman
- –5 to 1O units that are small and/or partially controlled

- Additional 125,OOO to 15O,OOO tons of reduction from these plants

# Net Result

- 2018 SO2 emissions from existing plants:
  - 222,000 to 247,000 tons per year
  - 0.17 to 0.19 #/mmbtu average emission rate
  - Compares to presumptive BART limit of 0.15
  - Down from 573,000 tpy in 1998
  - Approximately 60% reduction from 1998
    - 325,000 to 350,000 tons per year reduced
  - Includes increased capacity at existing plants
  - Forecast for SO2 from new plants is 39,000 tons per year in 2018: approx. 12,000 MW

# Where does that leave us?

- GCVTC recommended 5O to 7O% reduction in SO2 from 199O levels by 2O4O
  - –9 state transport region & tribal sources
- 199O SO2 emissions were 829,OOO tons
- 2OOO SO2 emissions were 622,OOO tons
- Current emissions are 5O1,OOO
  - –Non utilities in 2OO2: 158,OOO
  - –Utilities in 2OO4: 343,OOO
- 4O% reduction achieved in 14 years

# 9 State 2O18 Forecast

- Utilities
  - –231,OOO to 253,OOO tons per year
  - –Includes 34,5OO tons per year from new sources
- Non Utilities
  - –19O,3OO tons per year
  - –Includes net 37,OOO ton increase: growth less retirements
- 2O18 total: 422,OOO to 444,OOO tons per year
- 45% to 5O% reduction from 199O levels
  - –Well below 2O18 Annex milestone for 9 states of 48O,OOO tpy

# Comparison to 5 State Program

- 5 State 309 Milestone for 2O18 =309,000 tons

  - –For comparison:
  - –Adjust milestone by 1O,OOO tons for CEMs
  - –Move 16,OOO tons for suspended smelter to smelter set aside

  - –Equals 283,OOO tons

  - –2O18 Base Case
    - Existing Utilities: 191,5OO
    - Non Utilities:  127,3OO
    - New Utility Sources: 21,3OO
    - Total: 34O,1OO

- Additional reductions needed to meet milestone: 57,1OO

- Additional reductions expected: 57,OOO to 73,OOO

# What about NOx?

- EGU emissions = about 15% of inventory
- NOx generally contributes < 10% of haze
- No significant trend in NOx emissions from power plants
- Some areas have larger NOx contributions
  - Significant NOx reductions coming from mobile sources
- NOx emissions are of concern for other reasons (ozone, acid deposition, etc.)

# What about NOx?

- 46 BART-eligible units >200 MW in 13 states that exceed presumptive limits
- Achieving presumptive limits at BART-eligible units = 30% reduction
- Plants > 750 MW = 16% reduction
- Presumptive limits on all units (including non-BART) = 40% reduction
- Combustion controls on all units = 34% reduction
- Several utilities have identified problems meeting presumptive limits with combustion controls

# Questions and Issues

- Revisions to 309 SIPs
  - –How to do better than BART demonstration
  - –309 states need to determine next steps. Work with stakeholders.
- BART for 308 and NOx?
  - –Unlikely that SO2 program will be expanded
  - –Trading alternative may have value for NOx. Possible expansion to all non-CAIR states.
  - –Utility only program for NOx?
- What non-utility sources are of concern (BART and non-BART)?
  - –How many, what kind, where?

# In conclusion…….

- Most of the progress through 2018 will be in the base case (incl., federal mobile source controls)
- Biggest effect in control case will be from SO2 reductions that are already in the pipe
  - –How do we package our success to meet the requirements (especially when BART remains a moving target)
- Work with EPA to address outstanding issues with alternative programs and 309.
  - –Reaffirm state leadership role, working with stakeholders, to establish solutions that work for the West
- NOx is a question that effects more sources
  - –Presumptive limits on 750 MW plants is ½ the battle
  - –Several options exist. What do sources and states want?
  - –Can do some sensitivity runs