

South Coast Air Quality Management District

**SOx RECLAIM
CONSULTATION MEETING**

**February 7, 2008
10:00 a.m. - 12:00 p.m.
Conference Room GB**

Background

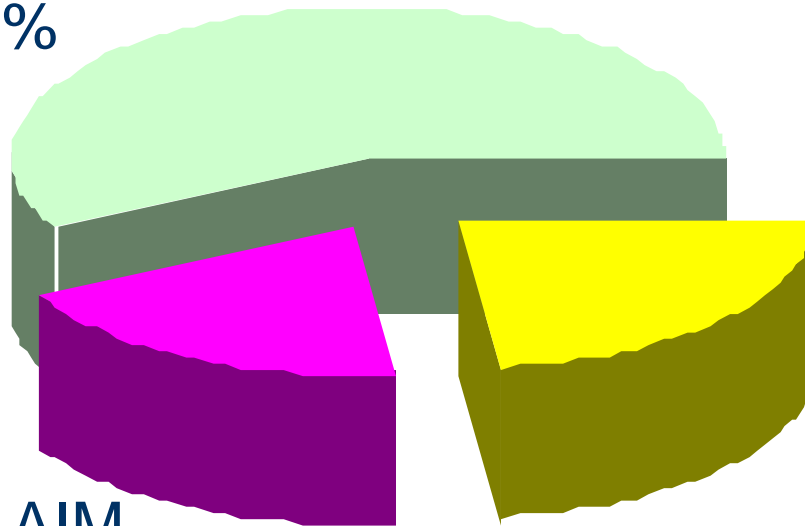
- Non-Attainment for Ozone and PM2.5
- 52% National Wide Exposure for PM2.5
- 2015 Deadline for PM2.5 Standards
- Further Reduce Direct PM2.5 & Precursors

Control Measure CMB-02

- One-and-Only Stationary Source Measure Contributed to PM_{2.5} Attainment in 2014
- BARCT Reassessment
- 3 Tons Per Day Reductions
- Adoption Date: 2008
- Implementation Period: 2011-2014

Emission Inventory (2002)

Mobile Sources
31 tpd, 58%

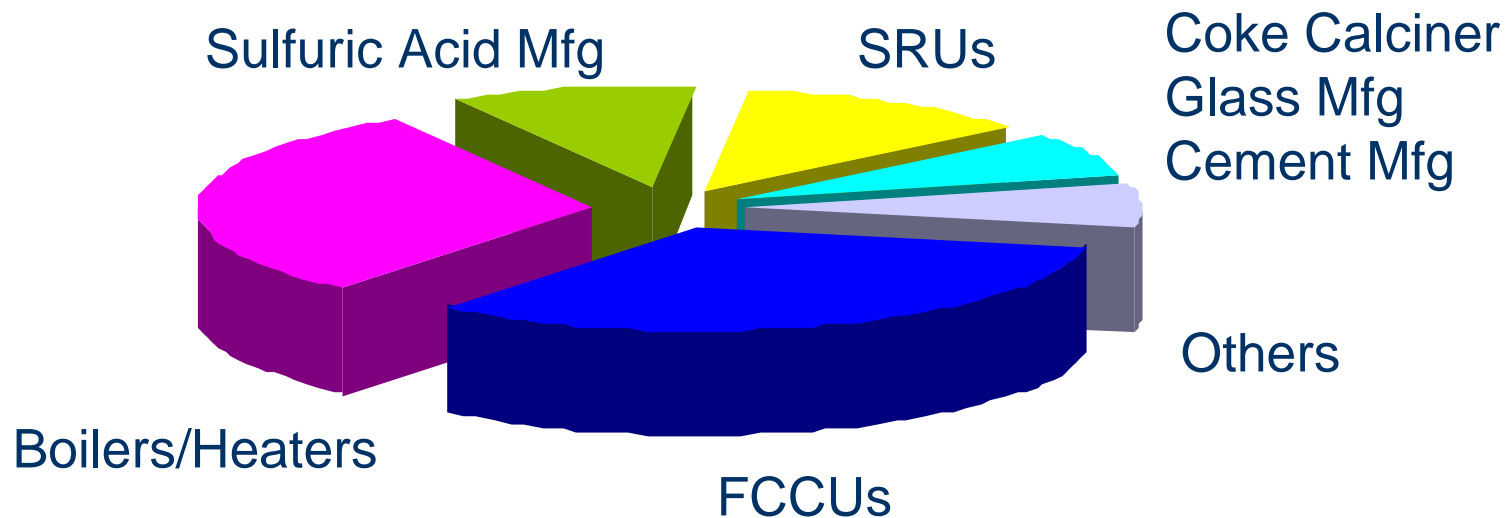


RECLAIM
12 tons per day
23%
Second Highest
Category

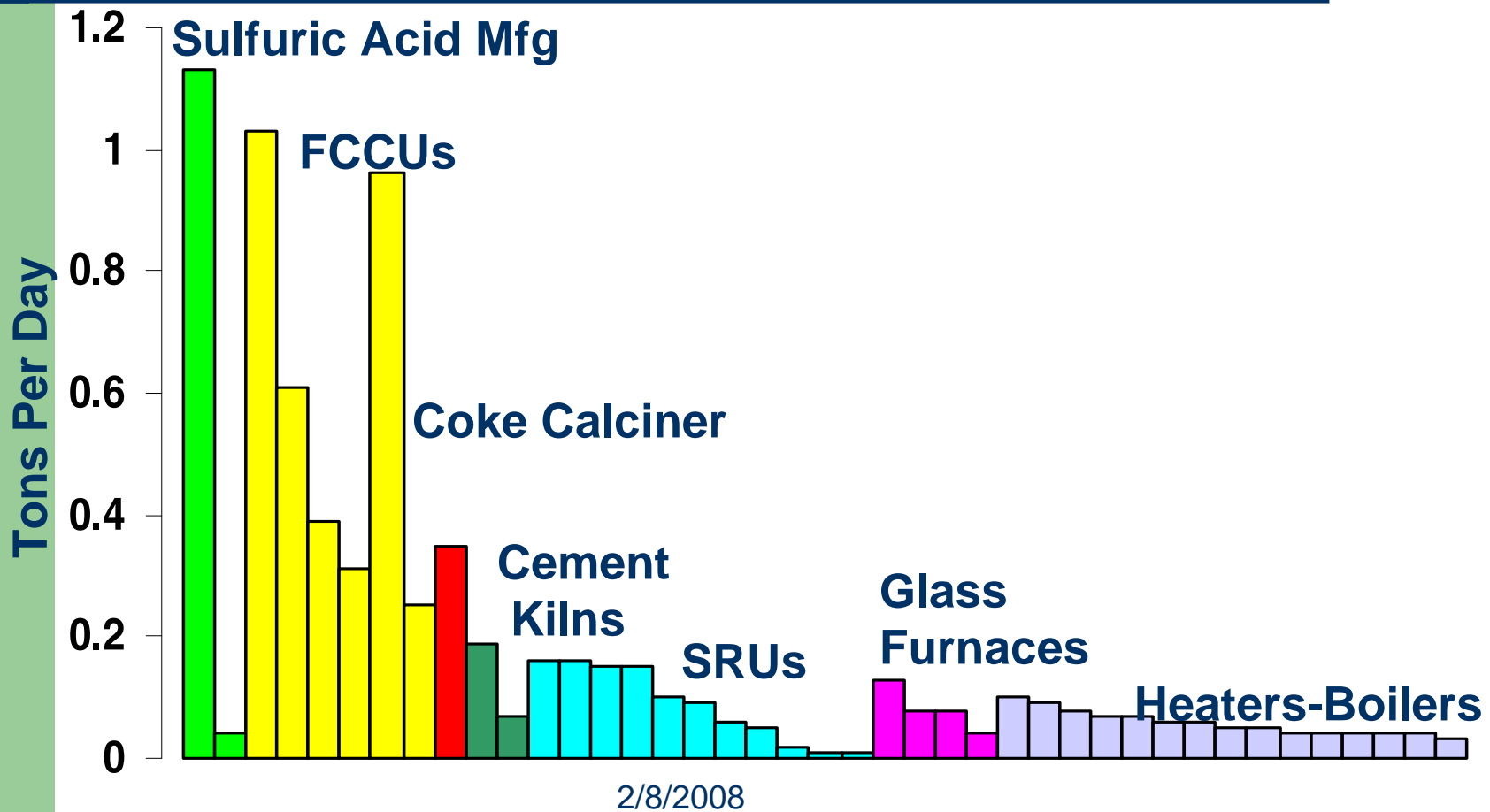
Non-RECLAIM
9 tpd, 9%

Emission Inventory (2005)

33 Facilities - Total 10 tpd
12 Top Facilities - Total 9.5 tpd
7 Top Equipment Categories - Total 7.5 tpd



Emission Inventory (2005)



Allocations & Emissions

Preliminary Technology Assessment

- FCCUs
- Refinery Boilers/Heaters
- Sulfur Recovery Units/Tail Gas Treatment
- Sulfuric Acid Manufacturing
- Container Glass Manufacturing
- Coke Calciner
- Cement Kilns

Allocations & Emissions

Analysis Background

- U.S. EPA Consent Decree
- EPA RACT/BACT/LAER Clearinghouse
- CARB BACT Clearinghouse
- BARCT Reports
 - Lake Michigan Air Directors Consortium (LADCO)
 - Northeast States for Coordinated Air Use Management (NESCAUM)
 - Mid-Atlantic Regional Air Management (MARAMA)
 - Minnesota Pollution Control Agency (MPCA)

Allocations & Emissions

Analysis Background (Cont.)

- Title V Permits from Other Agencies
- Technical Publication
 - Chemical Engineering
 - Petroleum Technical Quarterly
 - Journal of Air Pollution Control Association
 - International Petroleum Conference
- Communications with Air Agencies, Manufacturers, Vendors

Allocations & Emissions

FCCUs

- 6 Sources
- Allocations = 2.17 tpd
- 2005 Emissions = 3.55 tpd
- BARCT = 25 ppmv
- SOx Reducing Catalysts
- Wet Scrubbers

Allocations & Emissions

FCCUs – SOx Reducing Catalysts

- Intercat
- Grace Davidson
- Efficiency: 65% - 80%
- FCCU Capacity < 150,000 Barrels/Day
- Used by 4 Refineries in the Basin

Allocations & Emissions

FCCUs – Wet Scrubbers

- Non-Regenerative (e.g. Belco EDV)
- Regenerative (e.g. Belco/Cansolv)
- Valero Delaware City Refinery
- BP, Texas City, Texas
- Deer Park Refining, Texas
- Sunoco, Philadelphia
- Marathon Petroleum, Louisiana

Allocations & Emissions

Refinery Boilers/Heaters

- Allocations = 0.89 tpd (All 300+)
- 2005 Emissions = 0.91 tpd (Top 16)
- BARCT = 25 ppmv
- Dry or Wet Scrubbers

Allocations & Emissions

Boilers/Heaters – Wet Scrubbers

- Consent Decree
- EPA/CARB RACT/LAER/BACT
- MARAMA & NESCAUM BARCT Analysis
- Marathon Petroleum (All)
- Equilon Deer Park Refinery (All)
- Arizona Yuma Refinery (All)
- Tosco Refinery (Hydrogen Reforming)

Allocations & Emissions

Sulfur Recovery/Tail Gas Treatment

- Allocations = 1.61 tpd
- 2005 Emissions = 0.96 tpd
- BARCT = 99% - 99.9%
- Increase Efficiency of SR/Tail Gas
- Wet Scrubbers

Allocations & Emissions

SRU/Tail Gas – SO_x Catalyst

- Motiva Enterprises Port Arthur Refinery
 - Criterion Catalysts
 - 99% Sulfur Recovery
 - 22 ppmv – 28 ppmv SO_x

Allocations & Emissions

SRU/Tail Gas – Wet Scrubber

- Casper Refinery (2004)
- Sinclair Oil Refinery (2004)
- Tula Refinery (2005)
- Dynaware Scrubbers
- Test Results:
 - 99.99%
 - 0.5 ppmv SO_x Outlet Concentration

Allocations & Emissions

Sulfuric Acid Manufacturing

- Rhodia and ConocoPhillips
- Allocations = 2.53 tpd (4 – 9.5 lbs/ton)
- 2005 Emissions = 1.16 tpd
- BARCT = 2 lbs/ton
- Increase Efficiency of Process Units
- Wet Scrubbers

Allocations & Emissions

Sulfuric Acid Mfg – BARCT

- Consent Decree – Dupont & Rhodia
- Dupont, New Jersey – 0.2 lbs/ton
- Dupont, Texas – 1 lbs/ton
- Dupont, Delaware – 1.4 lbs/ton
- Dupont, Louisiana – 2.4 lbs/ton
- Dupont, Ohio – 2.2 lbs/ton

Allocations & Emissions

Container Glass Manufacturing

- Owens Brockway & Saint Gobain
- Allocations = 1.01 tpd (2.1 – 3.2 lbs/ton)
- 2005 Emissions = 0.32 tpd
- BARCT = 0.8 lbs/ton
- Wet Scrubbers

Allocations & Emissions

Container Glass – BARCT

- San Joaquin Valley APCD
 - Proposed Rule 4354 – 0.8 lbs/ton
- Saint Gobain Containers, Washington
 - Tri-Mer Cloud Chamber Wet Scrubber
 - Permit Condition: 1.6 lbs/ton
 - Source Testing: 99.9% control efficiency,
0.1 ppmv SO_x, 0.1 lbs/ton

Allocations & Emissions

Coke Calciner

- BP Wilmington
- Allocations = 1.28 tpd (2.47 lbs/ton)
- 2005 Emissions = 0.35 tpd
- BARCT = 0.15 – 1.64 lbs/ton
- Wet Scrubbers, Wet ESPs

Allocations & Emissions

Coke Calciner - BARCT

- BP Cherry Point Refinery
- Monsanto Dynaware Wet Scrubber/ESP
- 96% Control Efficiency
- 0.14 lbs/ton
- Permitted at 35 ppmv SO_x
- Tested at 10 ppm - 12 ppmv

Allocations & Emissions

Cement Kilns

- California Portland Cement
- Allocations = 0.33 tpd
- 2005 Emissions = 0.27 tpd
- Dry/Wet Scrubbers

Allocations & Emissions

Cement Kilns - BARCT

- LADCO BARCT Assessment
- NESCAUM BARCT Assessment
- Dry Scrubber: EnviroCare
 - Control Efficiency 55% - 65%
- Wet Scrubber: Monsanto Dynaware
 - Control Efficiency 90%+

Survey Questionnaire

- Collect Up-to-Date Information
- Collect CEMS Data (Concentration, Flow)
- Ideas on Control Strategies
- Information on Costs
- Example: SO_x Reducing Catalysts for FCCUs

Survey Questionnaire (Cont.)

Does the facility currently use FCCU SO_x reduction catalysts?
If yes, please provide the following information:

- **Name of catalyst manufacturer** and name of SO_x reduction catalyst
- **Usage rate** (pounds of catalysts added per day, or pounds of catalyst per pound of FCCU catalyst)
- **Baseline SO_x emissions and control efficiency.** If available, please submit a copy of manufacturer's quote including specifications and guarantee
- **Costs of SO_x reduction catalysts.** Please provide annual operating costs and any modification costs to the FCCU if needed in order to use the SO_x reduction catalysts.

Survey Questionnaire (Cont.)

- [Request Due Date: February 21](#)
- For Questions or Comments, Contact
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Tentative Schedule

- Monthly Working Group Meeting
- Public Workshop & CEQA Scoping:
April 2008 – May 2008
- Public Hearing:
October 2008 – December 2008

Contact

- Rule Development

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End of Presentation

