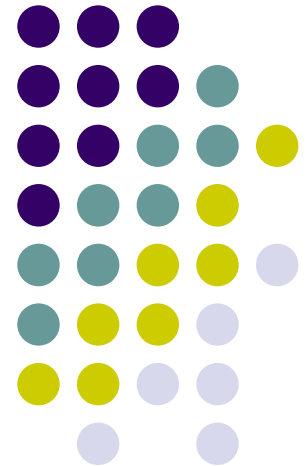


SOx RECLAIM Proposed Amended Regulation XX

Public Workshop &
CEQA Scoping Meeting
SCAQMD
June 23, 2009

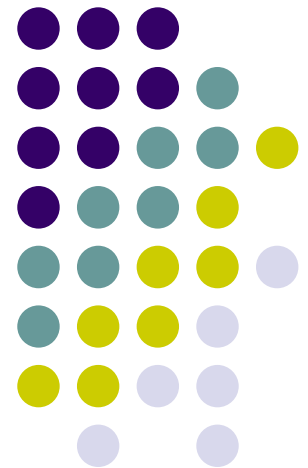


Outline Presentation

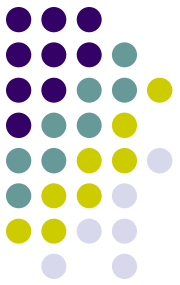


- Background
- BARCT Determination Process
- RTC Reductions & Scenario Study
- Draft Proposal
- CEQA Scoping
- Public Input & Schedule

Background

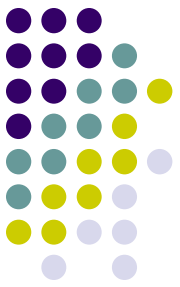


Background



- 2007 AQMP Control Measure CMB-02:
“Further Reductions of SO_x for RECLAIM (BARCT)”
- Initial Public Consultation Meeting
 - February 7, 2008
- Taskforce Meetings
- Meetings with Affected Industries
- Stationary Source Committee Updates
 - June 20, 2008
 - June 19, 2009

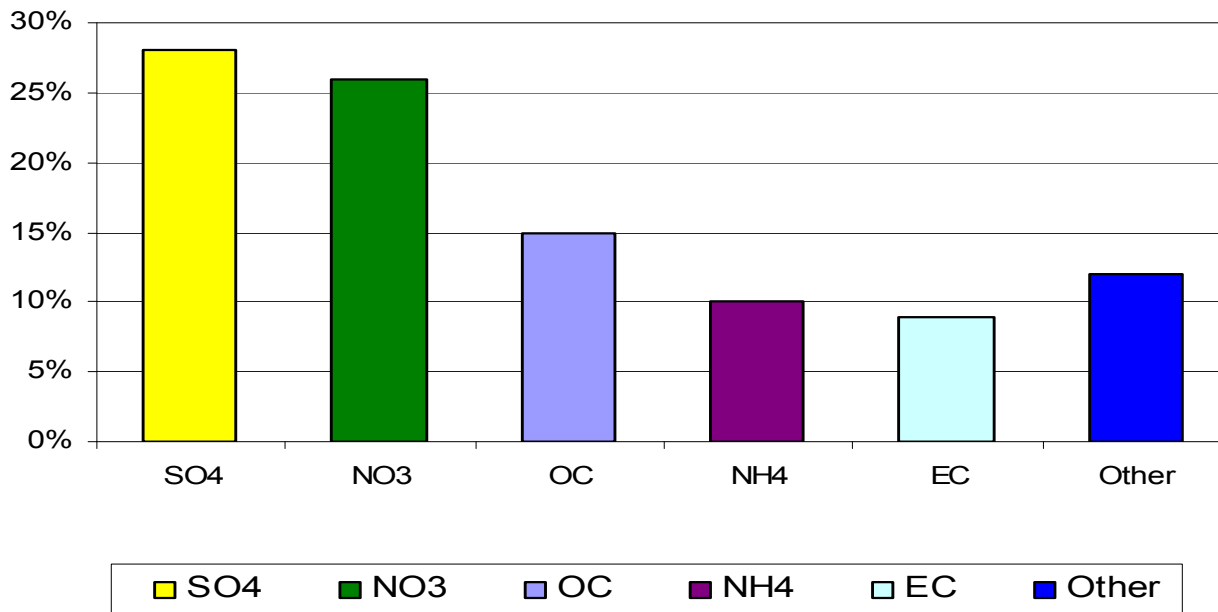
Background



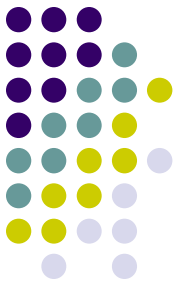
■ Why Reduce SO_x?

- Federal Annual Average Standard By 2015
- Federal 24-Hour Average Standard By 2020
- PM_{2.5} Formation Potential

SO_x : PM_{2.5} : NO_x = 15 : 10 : 1



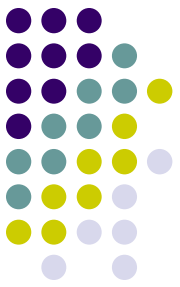
Speciated PM_{2.5} Predicted 24-Hour By 2021 (2007 AQMP)



■ Regulatory Requirements

- SIP Commitment:
 - 3 TPD SO_x Emission Reduction by 2014
- Command and Control Equivalency
- Periodic BARCT Updates

Best Available Retrofit Control Technology (BARCT)



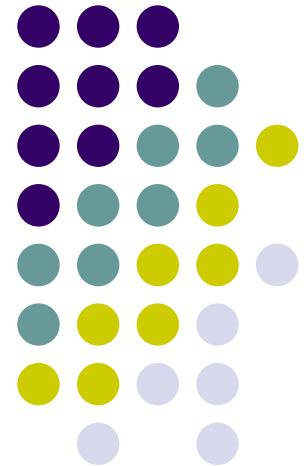
- ... an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of sources. (H&S Code §40406)
-achieve an equivalent or greater level of emission reductions at an equivalent or lower cost as would have been achieved under a command-and control rule. (H&S Code §39616)

BARCT Determination Process



- Identify Retrofit Control Technologies Having Maximum Degree of Reduction
- Evaluate Control Effectiveness
- Conduct Cost Effectiveness Analysis
- Conduct Impact Analysis for Environment, Energy & Economic
- Select BARCT

BARCT Determination Process

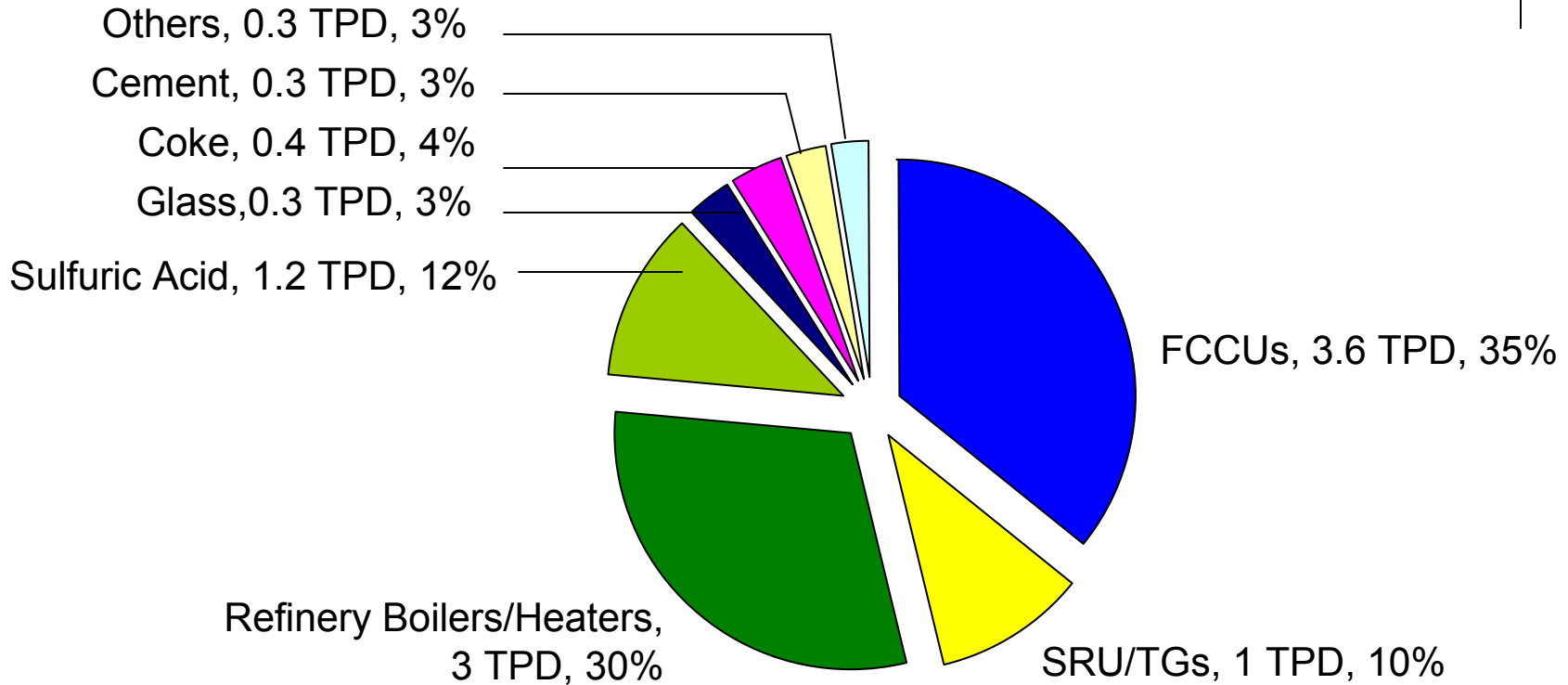
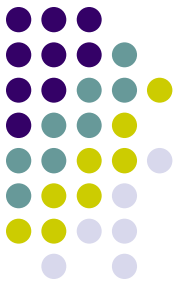


Staff Assessment In 2008



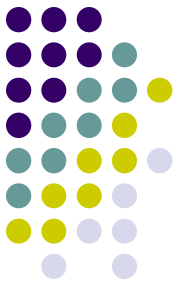
- Preliminary Draft Staff Report – April 2008
- 33 Facilities in SO_x RECLAIM
- Amendment Focus:
 - 11 Top Facilities & 7 Top Categories of Sources
 - Fluid Catalytic Cracking Units
 - Sulfur Recovery Units/Tail Gas
 - Refinery Boilers/Heaters
 - Sulfuric Acid Plants
 - Coke Calciner
 - Glass Melting Furnace
 - Cement Kilns & Coal-Fired Boiler

2005 Reported Emissions



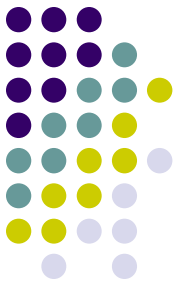
Total 33 Facilities: 9.9 TPD
Top 11 Emitting Facilities & Top 7 Sources

Contracts



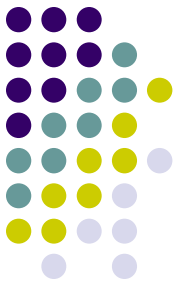
- RFP Released in July 2008
- Evaluation Panel
 - Assistant DEO of Planning & Rule Development Division
 - Supervisor of Technology Advancement (BACT Team)
 - Supervisor of Engineering & Compliance (Refinery Team)
 - WSPA
- Awards \$335 K to 2 Contractors and 1 Sub-contractor

Contracts



- NEXIDEA Inc.
 - Sulfuric Acid Plants & Coke Calciner
- ETS Inc.
 - Glass Melting Furnace, Cement Kilns
- ETS Inc. & AEC Engineering Inc.
 - Refinery FCCUs, SRUs & Boilers/Heaters
- 3-Month Project (Sept 08 – December 08)
- Extended to April 09 for Refinery Project

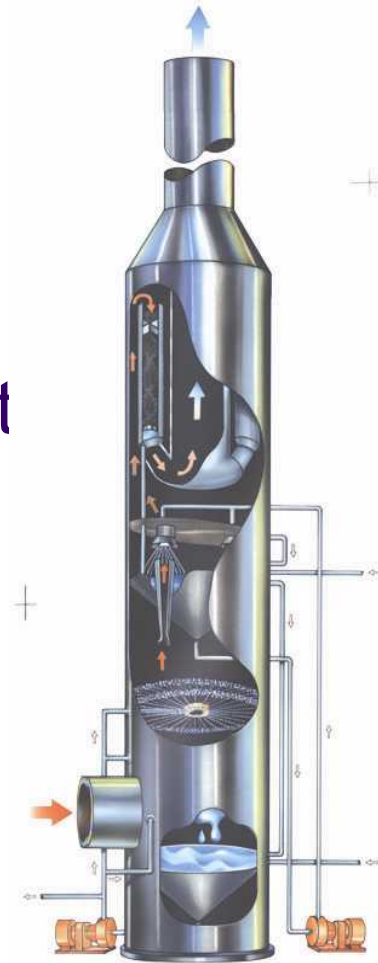
Consultants' Approach



- Visit Affected Facilities
- Research for Available Control Technology
- Contact Control Manufacturers/Vendors
- Conduct Top Down Analysis
- Assess Site-Specific Implementation Costs & Cost Effectiveness
- Recommend Potential BARCT Levels

Fluid Catalytic Cracking Units

- Consultants' Recommendation: 5 PPMV for Measurement Certainty
 - 1 PPMV Feasible & Cost Effective
- Control Technology: Wet Gas Scrubbers
- Achieved in Practice at Refinery in District
- Guaranteed Letters from BELCO, MECS
- Implementation Costs: \$493 Million
- Potential Emission Reductions: 3.07 TPD
- Cost Effectiveness: \$25 K Per Ton
- 3 Years to Build



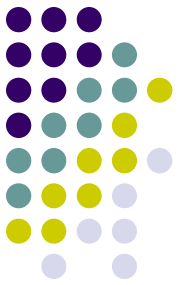
BELCO EDV® Scrubber

Sulfur Recovery Units



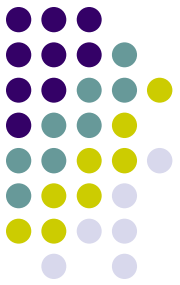
- Consultants' Recommendation:
 - Non-Combusted Tail Gas: 10 PPM H₂S & 300 PPM Other Sulfur Compounds
 - Combusted Tail Gas: 5 PPM for Measurement Certainty
(1 PPM Feasible & Cost Effective)
- Control Technology: Absorber Catalysts, WGS
- Guaranteed Letters from Tri-Mer, BELCO, EmeraChem
- Implementation Costs: \$282 Million
- Potential Emission Reductions = 0.83TPD
- Cost Effectiveness: \$37 K Per Ton
- 3 Years to Build

Boilers/Heaters



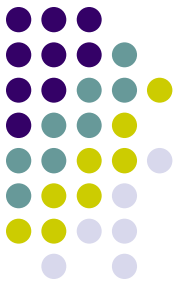
- Consultants' Recommendation: 40 PPM Sulfur
- Control Technology: Various Fuel Gas Treatment Technology
- Implementation Costs: \$136 Million
- Potential Emission Reductions: 0.89 TPD
- Cost Effectiveness: \$17 K Per Ton
- 1-2 Years to Build

Sulfuric Acid Plants



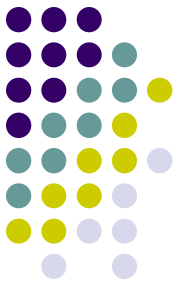
- Consultant's Recommendation: 10 PPMV for Greater Operational Certainty
 - 5 PPMV Technologically Feasible & Cost Effective
- Control Technology: Wet Gas Scrubbers
- BELCO, MECS, Cansolv, Tri-Mer
- Implementation Costs: \$27 Million
- Potential Emission Reductions: 1.00 TPD
- Cost Effectiveness: \$2 K Per Ton
- 3 Years to Build

Coke Calciner



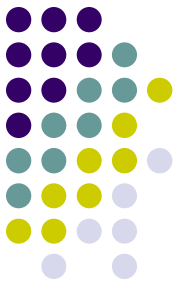
- Consultant's Recommendation: 10 PPMV for Greater Operational Certainty
 - 5 PPMV Technologically Feasible & Cost Effective
- Control Technology: Wet Gas Scrubber
- BELCO, MECS, Cansolv, Tri-Mer
- Implementation Costs: \$25 Million
- Potential Emission Reductions: 0.28 TPD
- Cost Effectiveness: \$10 K Per Ton
- 3 Years to Build

Glass Melting Furnace



- Consultant's Recommendation: <5PPMV
- Control Technology: Wet Gas Scrubber
- MECS, Tri-Mer, Dustex, McGill Air Clean
- Implementation Costs: \$9 Million
- Potential Emission Reductions: 0.19 TPD
- Cost Effectiveness: \$5 K Per Ton
- 1 Year to Build

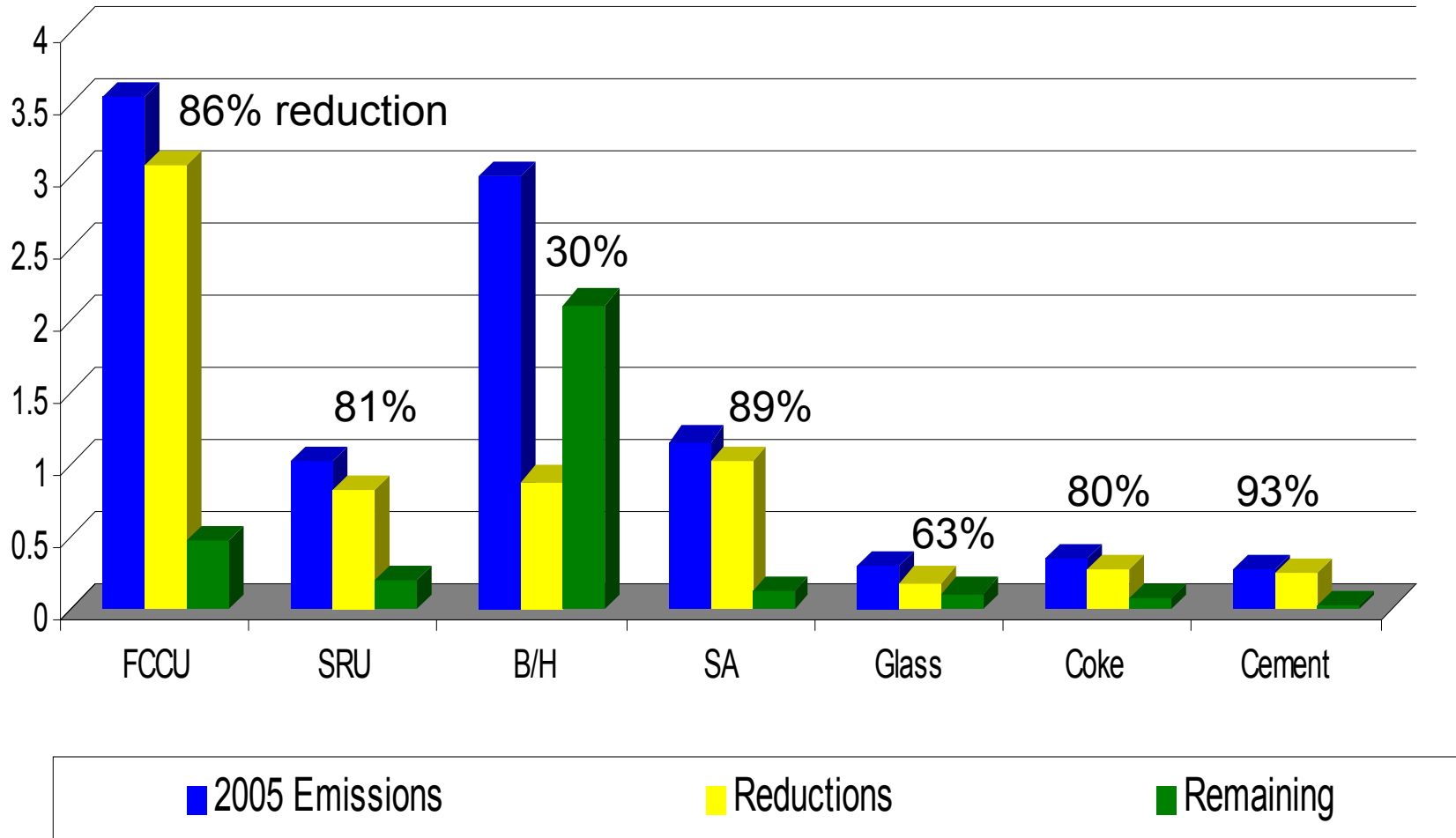
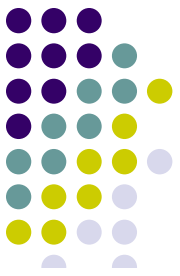
Cement Kilns & Coal Fired Boiler



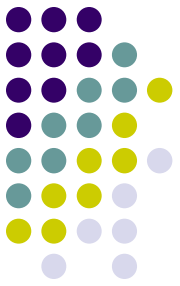
- Consultant's Recommendation: <5PPMV
- Control Technology: Limestone Absorber
- MECS, Dustex, BoldEco, Solios
- Implementation Costs: \$12 Million – \$43 Million
- Potential Emission Reductions: 0.25 TPD
- Cost Effectiveness: \$4 K - \$18 K Per Ton
- 2 Years to Build

Consultant's Recommendations

Potential Emissions Reduction = 6.5 TPD

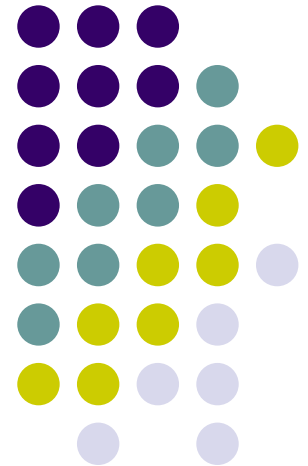


Consultants' Results

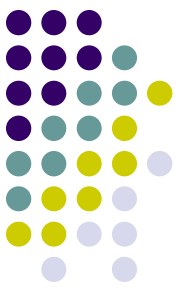


- Total Emission Reductions from 2005 = 6.5 TPD
- Total Present Worth Value = 1.03 Billion Dollars
- Weighted Average Cost Effectiveness
= \$15K - \$17K Per Ton SO_x Reduced
- Resulting RTC Shave: ≈ 70%

RTC Reductions & Scenario Study



RTC Reductions Methodology Approach



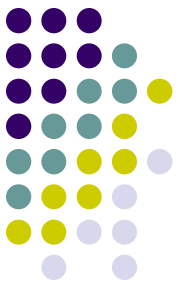
**Projected 2014 Emissions = 1997 Baseline x
Growth Factor x Control Factor**

**RTC Reductions in 2014 = RTC Holdings –
(1.1 x Projected 2014 Emissions)**

Where:

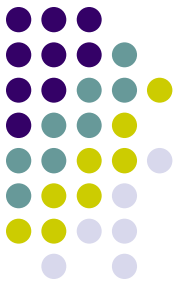
- 1997 Baseline = Actual Emissions in 1997
- Growth Factor = SCAG Growth Factor from 1997–2014
- Control Factor = New BARCT/Start Emission Factor
- ETC Holdings = 11.76 TPD
- 1.1 Adjustment Factor = 10% Compliance Margin

Scenario Study



- Four Scenarios
- Scenario 1 – Most Stringent
 - 1 PPMV for FCCUs, SRU/TGTUs, Glass, Cement
 - 5 PPMV for Sulfuric Acid, Coke Calciner
 - All Possible Additional Control for Boilers/Heaters
- Scenario 2 – Consultants' Recommendation
 - 1 PPMV for Glass, Cement
 - 5 PPMV for FCCUs, SRU/TGTUs
 - 10 PPMV for Sulfuric Acid, Coke Calciner
 - All Possible Additional Control for Boilers/Heaters

Scenario Study



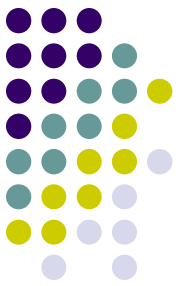
- Scenario 3 – Less Stringent than Consultants’ Recommendation
 - 5 PPMV for FCCUs ,Cement & Glass, SRU/TGTUs,
 - 10 PPMV for Sulfuric Acid & Coke Calciner,
 - Tier I Level For Boilers/Heaters
- Scenario 4 – No Additional Control Beyond Tier I

Draft Staff Recommendation for BARCT – Scenario 3



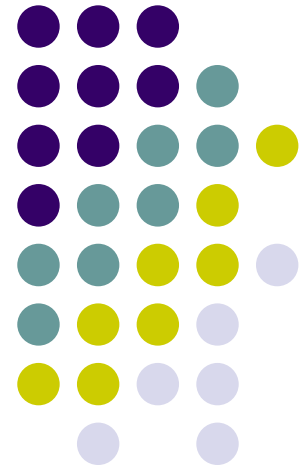
Basic Equipment	AQMD's Recommendation
Fluid Catalytic Cracking Units	5 ppmv
SRUs/TGs	Incinerated tail gas: 5 ppmv; Non incinerated tail gas: 10 ppmv H ₂ S & 300 ppmv non H ₂ S
Refinery Boilers/Heaters	40 ppmv
Calciner, Petroleum Coke	10 ppmv
Sulfuric Acid Mfg	10 ppmv
Container Glass Melting Furnace	5 ppmv
Cement Kiln & Coal-Fired Boiler	5 ppmv

Scenario Study - Results

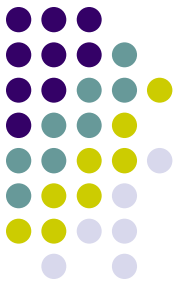


Case	Potential 2014 RTC Reductions	Present Worth Value (\$)	Cost Effectiveness (\$/ton)
1	8.5 TPD (72% Reduction)	1 Billion	15K
2	8 TPD (69% Reduction)	1 Billion	17K
3	7 -7.7 TPD (60% -65% Reduction)	883 - 944 Million	16K
4	1.5 TPD (12% Reduction)	---	---

Draft Proposal

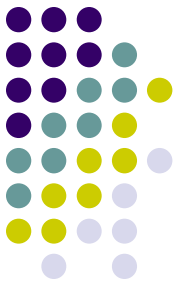


Proposed Amended Rule 2002



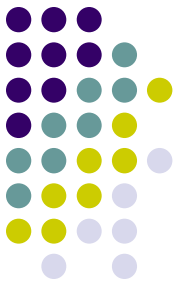
- Potential RTC Reductions = 3 TPD – 8 TPD
- Produce Equivalent Reductions to Implementing Command-Control Rules
- Draft Staff Proposal for BARCT – Scenario 3 Subject to Further Refinement
- Six-Year Implementation
 - 1.5 TPD in CY 2012
 - 1.5 TPD in CY 2013
 - 1.5 TPD in CY 2014
 - 1.0 TPD in CY 2015
 - 1.0 TPD in CY 2016
 - 0.5 TPD in CY 2017

Main Issues



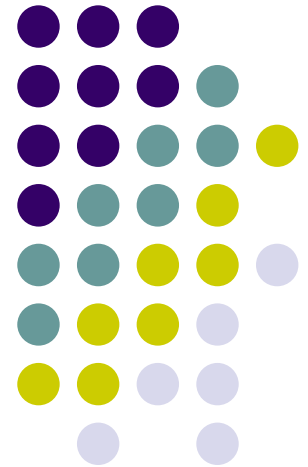
- **BARCT Levels**
 - Comparison with BACT
 - Consideration of other factors (e.g. cost, energy etc.)
- **Cost & Cost Effectiveness**
 - Incremental costs
- **RTC Shave**
 - Viability of the market
- **Other Environmental Impacts**
 - GHG Emissions
 - Water Usage & Waste Water
 - Potential increase in NO_x or PM emissions
- **Implementation Schedule**

Future Rule Development Process

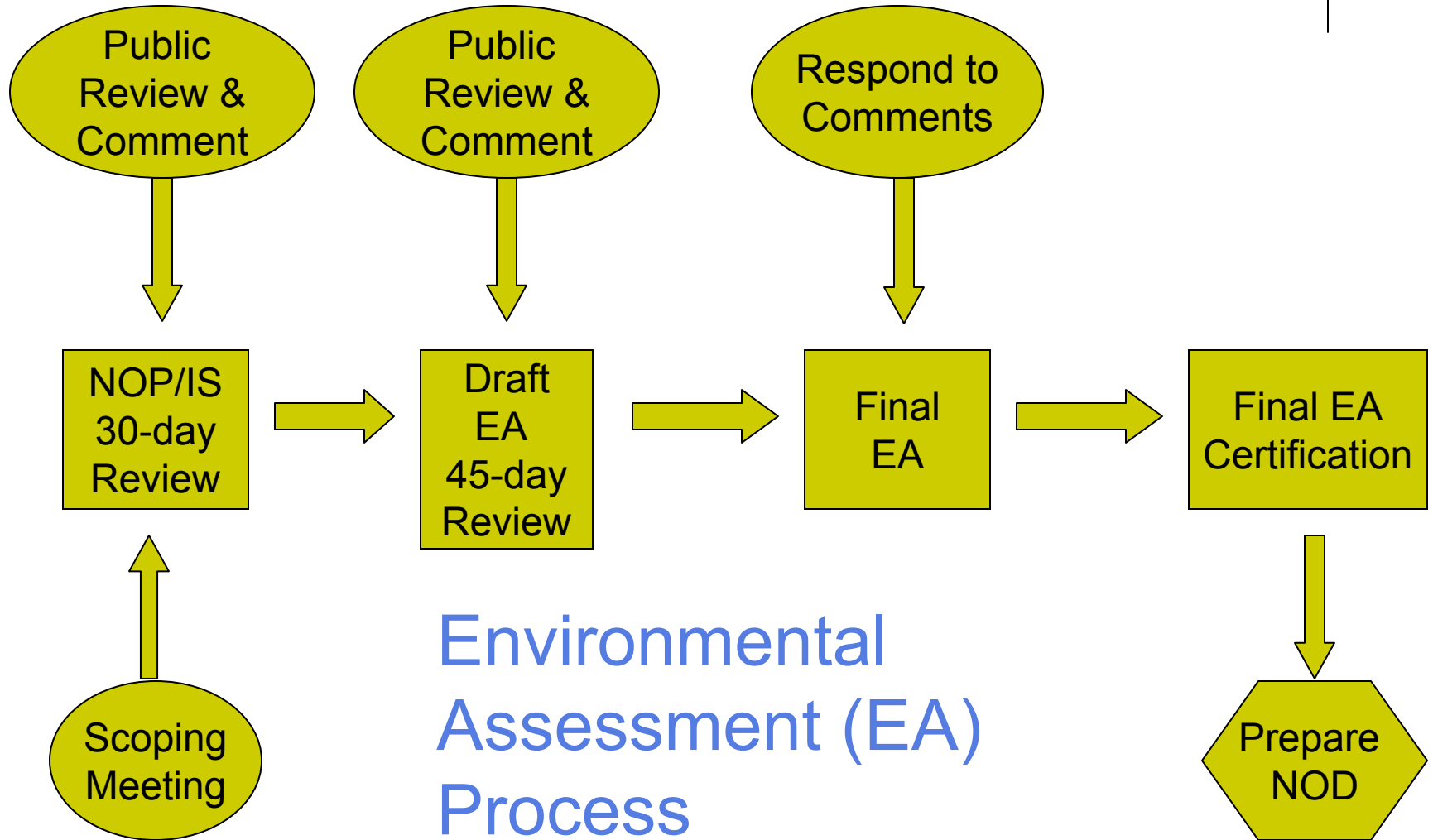
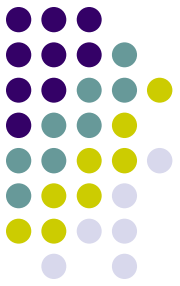


- Continue to Meet with Stakeholders
- CEPA, CEQA & SocioEconomic Analyses
- Further Evaluation To Select Final BARCT Levels & RTC Reduction

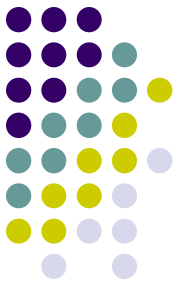
CEQA Scoping



California Environmental Quality Act (CEQA)

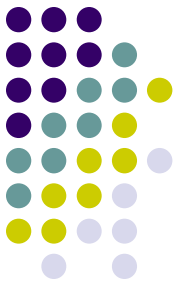


CEQA (continued)



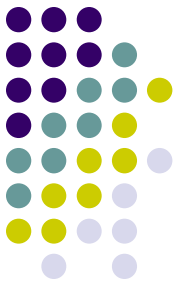
- Initial Study (IS) prepared to identify appropriate CEQA document & includes:
 - Project Description
 - Environmental Checklist
- Potentially significant adverse impacts identified for the following topics:
 - Aesthetics
 - Air Quality
 - Energy
 - Hydrology & Water Quality
 - Hazards & Hazardous Materials
 - Transportation & Traffic

CEQA (continued)



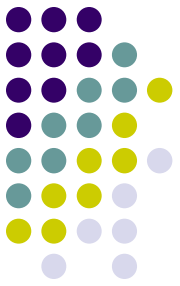
- Notice of Preparation of Draft EA prepared & circulated with IS for a 30-day public review period
 - Start of comment period – Friday, June 19, 2009
 - Close of comment period – Tuesday, July 21, 2009, 5:00 pm
- NOP/IS & Scoping Meeting comments plus responses to all comments will be included in Draft EA

CEQA (continued)



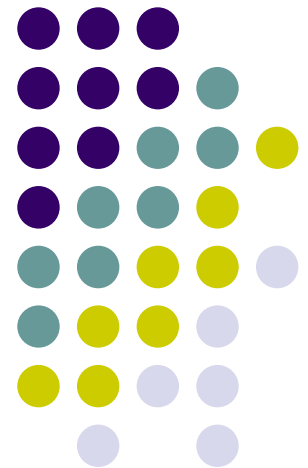
- Preparation of Draft EA is underway
 - Project Description
 - Existing Setting
 - Analysis of potentially significant environmental impacts identified in the IS
 - Analysis of cumulative impacts
 - Project alternatives analysis
 - Other CEQA topics

CEQA (concluded)

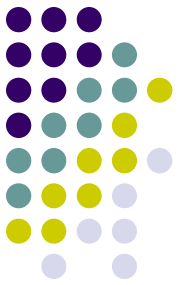


- Once completed, Draft EA will be released for 45-day public review and comment period & will be available via:
 - Public Information Center in person or by calling 909.396.2039
 - Online: <http://www.aqmd.gov/ceqa/aqmd.html>
- Prepare Final EA, which includes:
 - Any modifications to the Draft EA
 - Responses to Comments
- As necessary, prepare Findings, Overriding Considerations, and Mitigation Monitoring Plan

Public Input & Schedule



Schedule



End of Public Comment

- Comments on Rule

July 7, 2009

- Comments on NOP/IS

July 21, 2009

Release Draft EA

Mid-August 2009

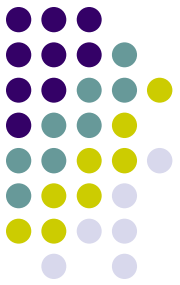
Finalize EA

October 2009

Board Hearing

November 6, 2009

Information



- Draft Rule Language & Staff Reports

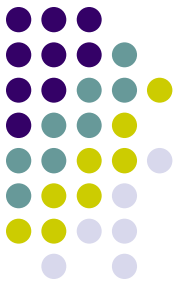
<http://aqmd.gov/rules/proposed.html#RegulationXX>

- CEQA Document (NOP/IS) Available:

http://www.aqmd.gov/ceqa/documents/2009/aqmd/is_nop/RegXX.pdf

- Hardcopy from Public Information Center in person or by calling (909) 396-2039

Contacts



- For Rule Questions & Comments, Contact:
 - Joe Cassmassi (909) 396-3155
 - Gary Quinn (909) 396-3121
 - Minh Pham (909) 396-2613
- For CEQA Questions & Comments, Contact:
 - Barbara Radlein by phone: (909) 396-2716,
fax: (909) 396-3324, or email: bradlein@aqmd.gov
- For Socioeconomic Questions & Comments, Contact:
 - Shah Dabirian (909) 396-3076