

SCAQMD

Working Group Meeting

NO_x RECLAIM



Diamond Bar, CA

March 20, 2013



Agenda

- Review of 2005 amendment shave methodology
- Current equipment and emissions profile
- Potential equipment for BARCT analysis
- Survey questionnaire
- Schedule



Determining Reductions in RTC Holdings

What was done in the 2005 NO_x
RECLAIM Amendment?



RTC Reductions

- **Method**
- Amount
- Timing



AQMP Method (2005 Amendment)

- 1997 inventory
- 2003 AQMP growth
- BARCT control factors
- 10% Adjustment



AQMP Method (2005 Amendment)

Projected Emissions = 1997 Baseline x
SCAG Growth Factors x
New BARCT Control Factors

RTC Reductions = CY 2004 RTC Holdings –
[Projected Emissions x
10% Adjustment Factor]



AQMP Method (Projected Emissions)

Example: Boilers and Heaters

$$\begin{aligned} \text{Projected Emissions} &= 4.2 \text{ TPD (1997 Baseline)} \times \\ &\quad 1.19 \text{ (SCAG Growth Factor)} \times \\ &\quad 0.279 \text{ (New BARCT Control} \\ &\quad \text{Factor)} \\ &= 1.38 \text{ TPD} \end{aligned}$$

Reference: January 2005 RECLAIM Staff Report, pg. 56



AQMP Method (RTC Reductions)

$$\begin{aligned} \text{RTC Reductions} &= 34.2 \text{ TPD (CY 2004 RTC} \\ &\quad \text{Holdings)} - \\ &\quad [24.02 \text{ (Projected} \\ &\quad \text{Emissions)} \times \\ &\quad 1.1 \text{ (Adjustment Factor)}] \\ &= 7.7 \text{ TPD} \end{aligned}$$



Basis for AQMP Method

- Baseline inventory and growth projection - most recent benchmark for C&C equivalency determination.
- Growth projections – the latest planning assumptions of the regional economy
- Similar to the original RECLAIM program that used the 1991 AQMP, which used 1987 as the base year.



Basis for AQMP Method

- CARB requires that the RECLAIM program be evaluated periodically
- Equivalent to C & C
 - Growth accommodating
 - BACT & BARCT
- Part of attainment strategy



Basis for AQMP Method

- Consistent in approach for future program evaluation.
- More amenable to future revisions to emissions inventory and growth forecast.



10 Percent Adjustment

- Compliance margin needs to be explicitly considered in a market based program.
- Some companies:
 - Made corporate decisions not to sell unused RTCs
 - Typically retain extra RTCs in a given compliance year, should the audit results show more emissions than reported.

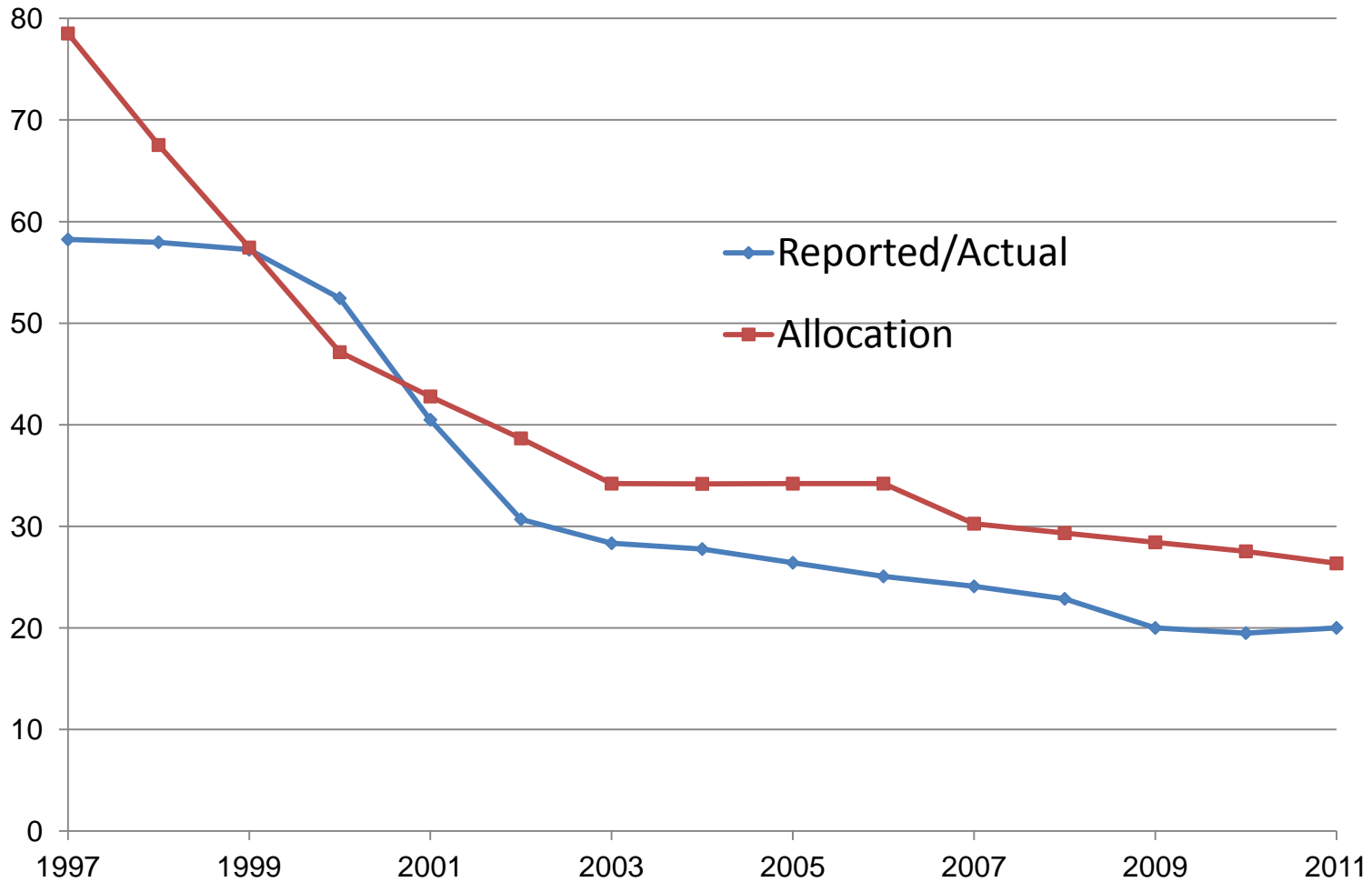


10 Percent Adjustment

- Staff analysis indicated that there were about 9% of total 2002 RTCs unused by the end of compliance year 2002 potentially held back by facilities as compliance margin or because suitable buyers could not be identified in the market.

NOx RTC Reductions (Tons per Day)

(With Current Emission Data)

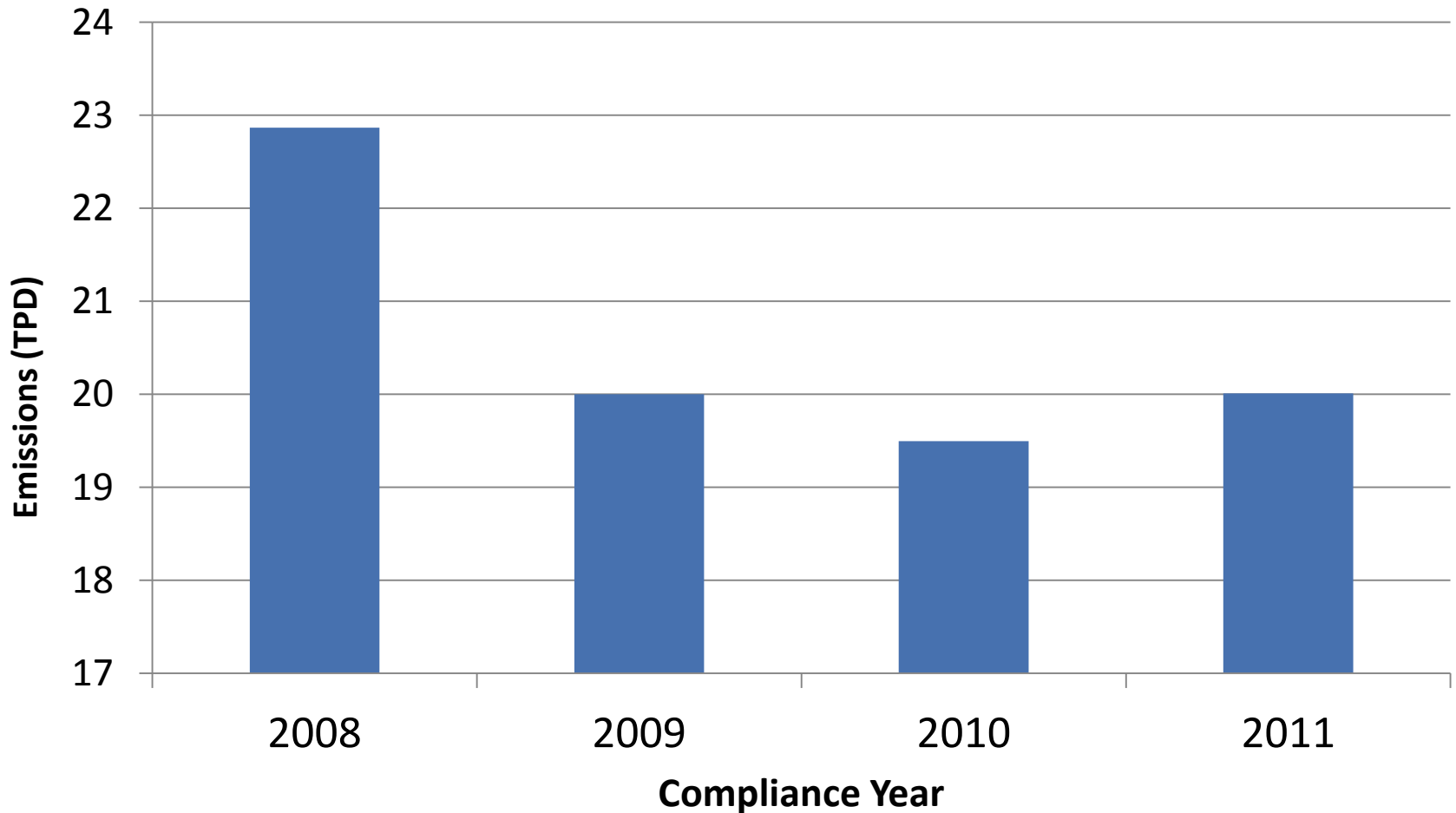




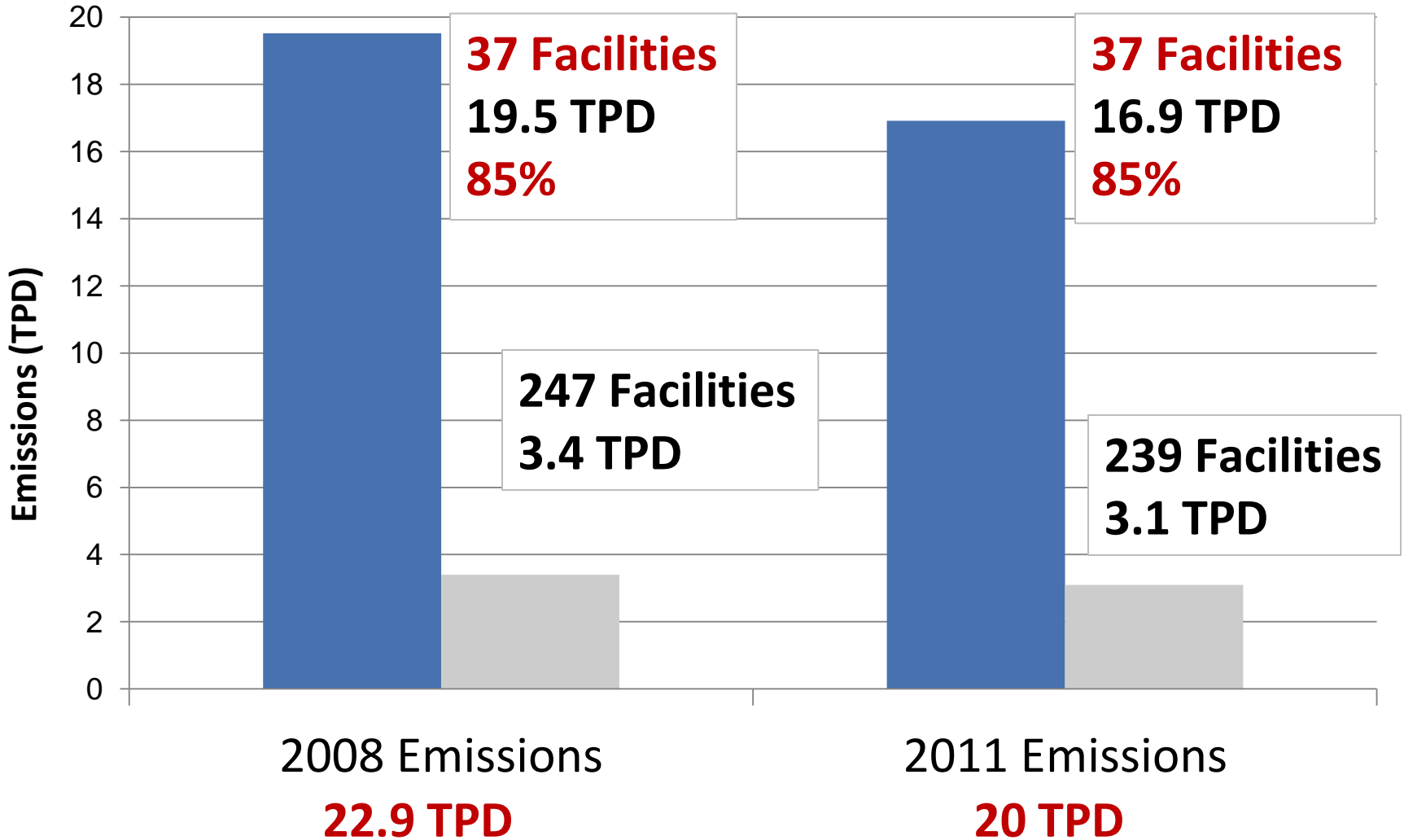
NO_x RECLAIM Profile

Emissions and RTC Holdings

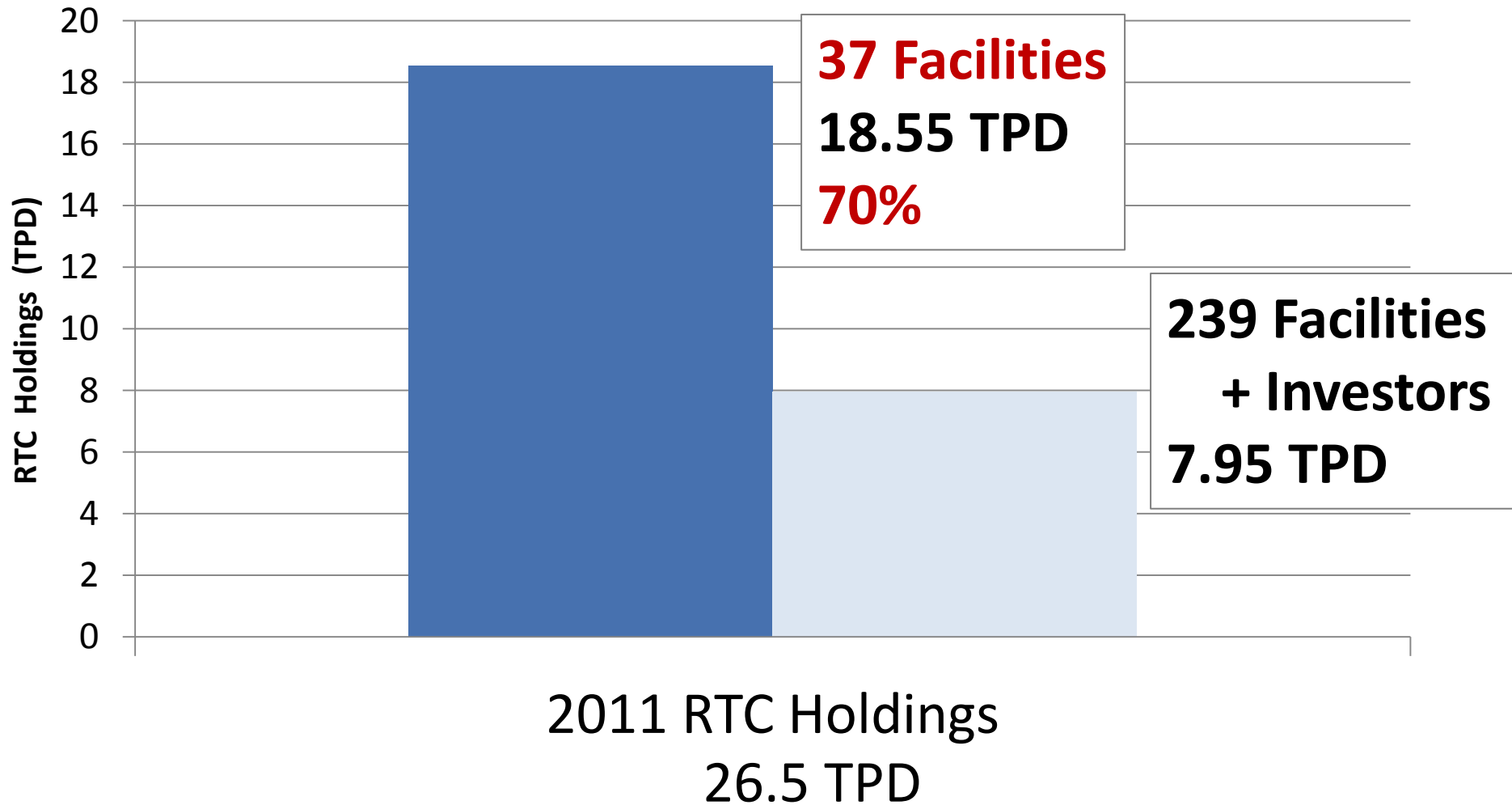
NOx RECLAIM Annual Emissions 2008-2011



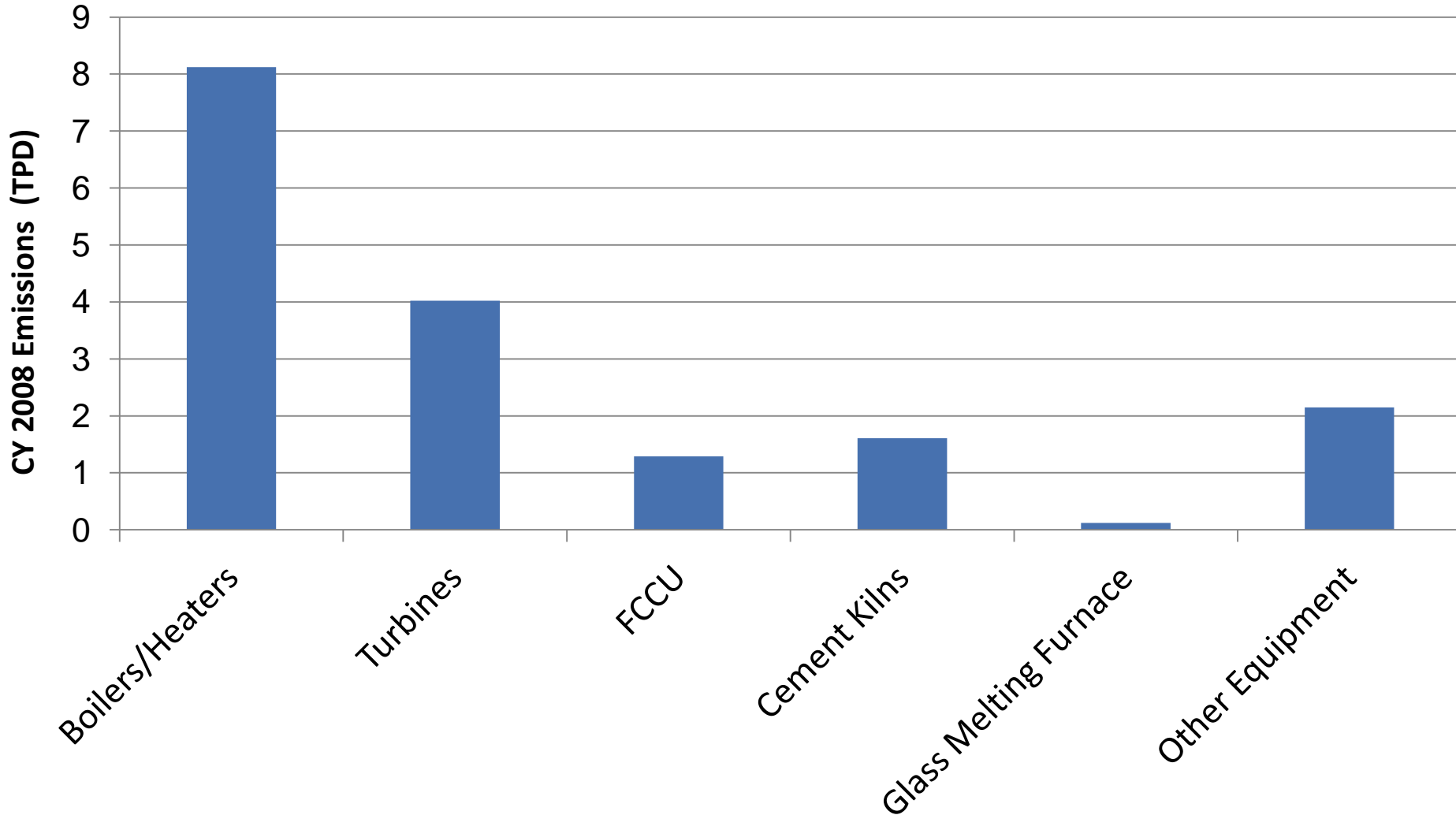
Emissions Distribution



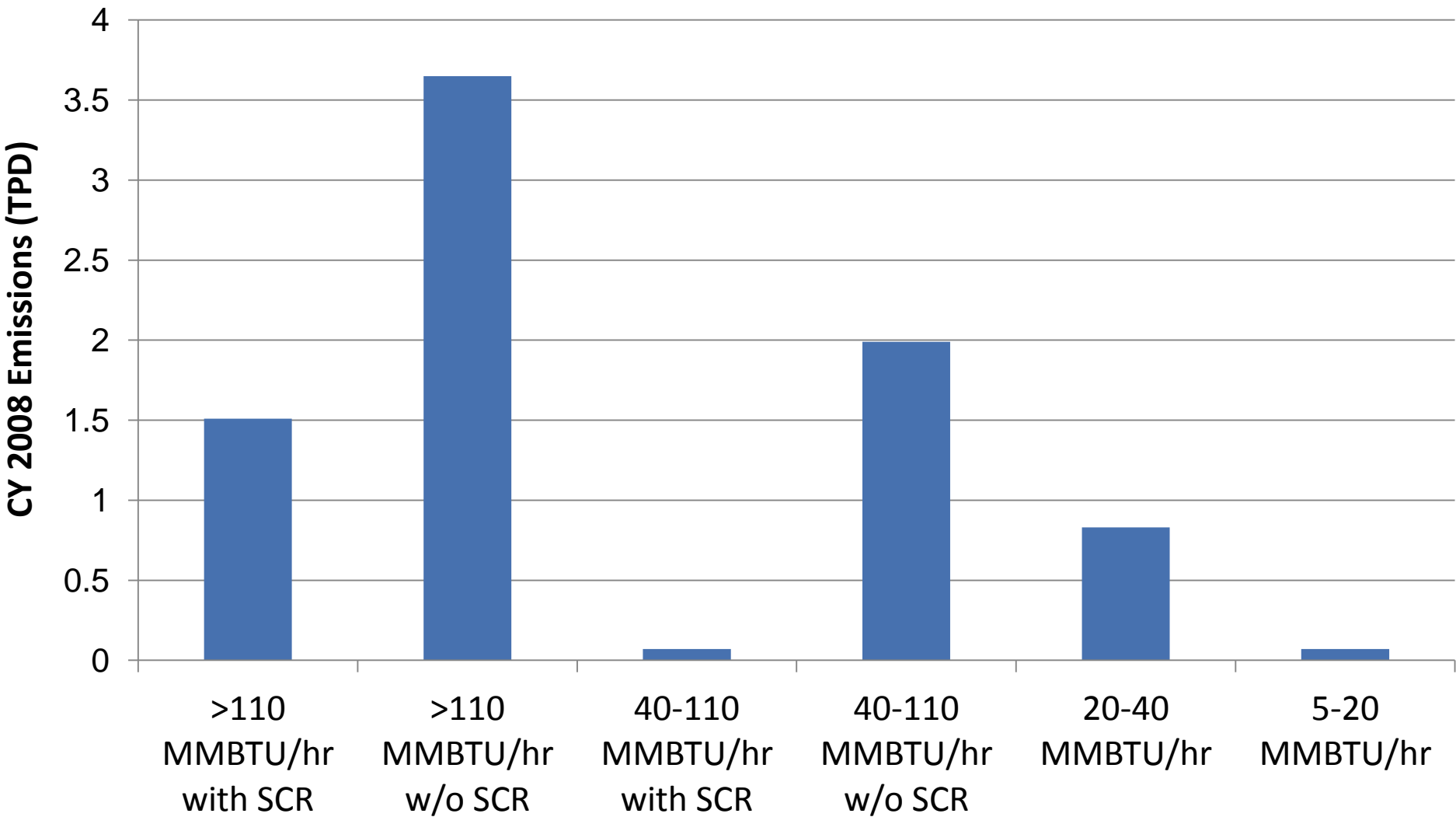
RTC Holdings Available for CY 2011



Top 37 Facilities Device Emissions Distribution (Major & Large Sources)

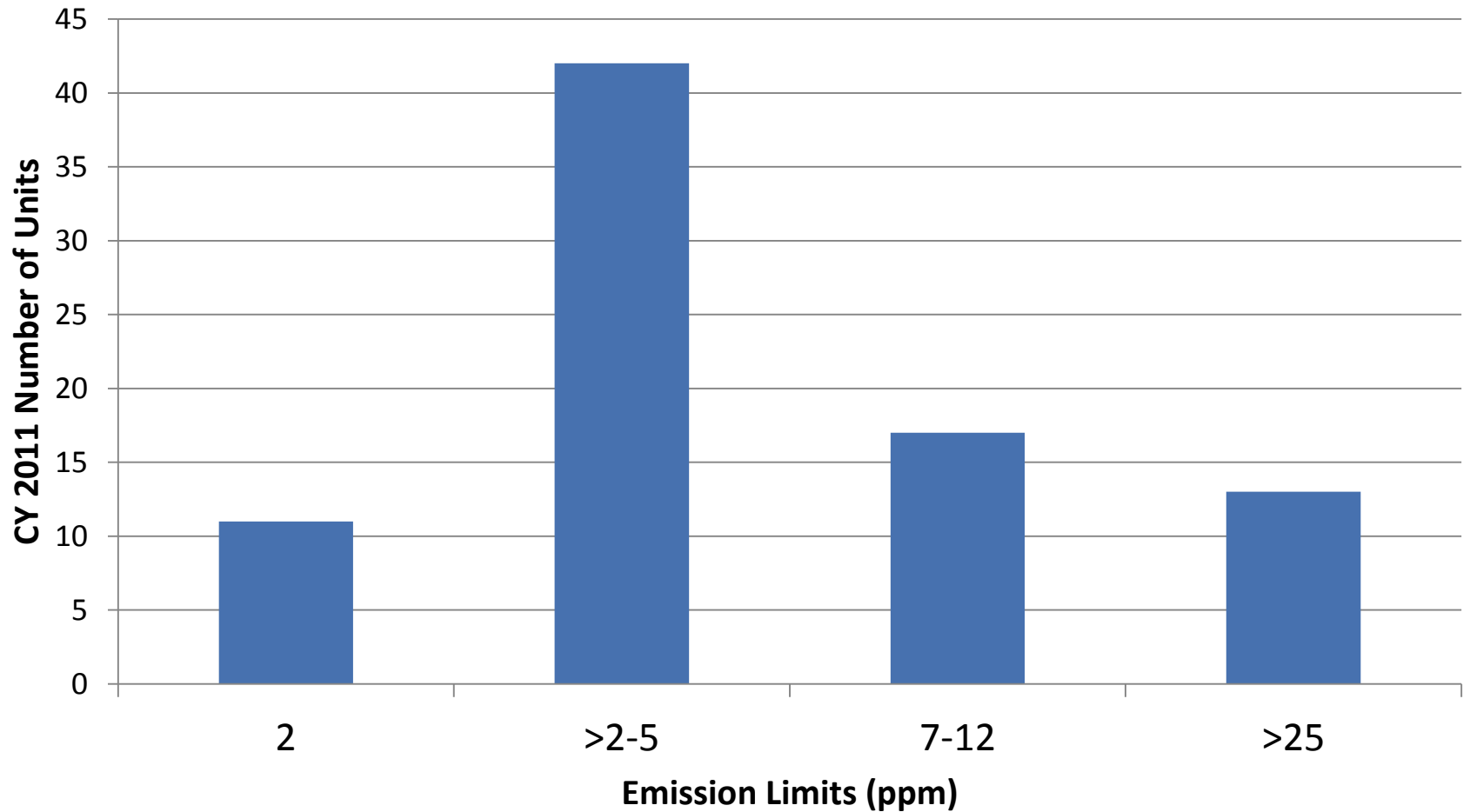


Top 37 Facilities Boiler/Heater Emissions Distribution (Major and Large)



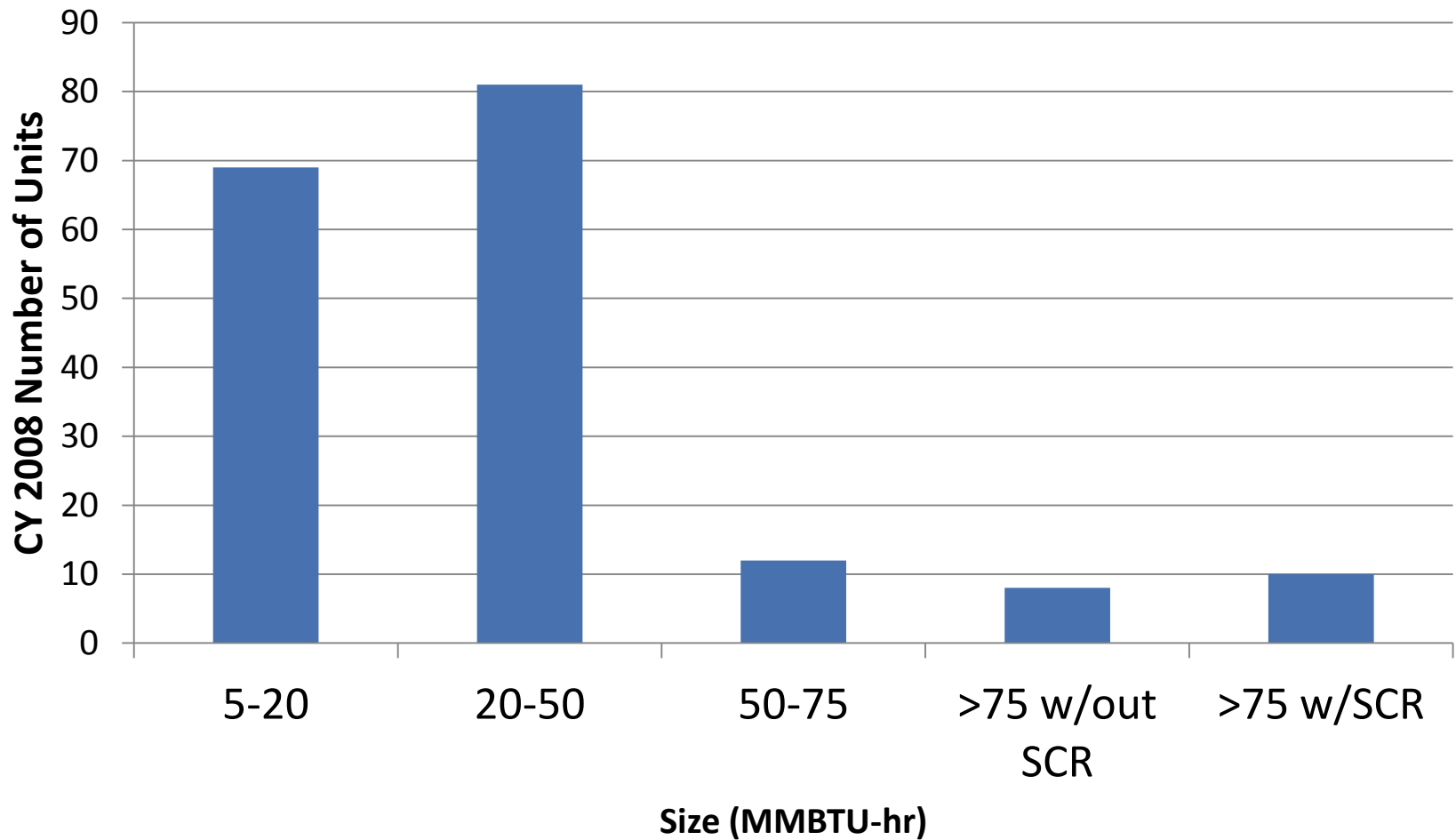
Top 37 Facilities

Distribution of Non-Refinery Gas Turbines



Top 37 Facilities

Distribution of Non-Refinery Boilers/Heaters





BARCT Categories



Potential Technologies

- Low-NO_x and Ultra Low-NO_x burners
- Selective Catalytic Reduction (SCR)
- Alternative technologies
- Fuel technologies

BARCT

2005

Future
Consideration

- Ref B/H >110
mmbtu/hr 0.006 lb/mmbtu
(5 ppmv) Any further
control?
- Ref B/H 40-110
mmbtu/hr 0.03 lb/mmbtu
(25 ppm) 5 ppmv with
SCR?
- Fluid Catalytic
Cracking Units 85% Control Any further
control?

BARCT

2005

Future
Consideration

- | | | |
|-----------------------------------|-----------------------------|---|
| • Industrial B/H
>20 mmbtu/hr | 0.01 lb/mmbtu
(9 ppmv) | 5 ppmv w/ LNB
or SCR? |
| • Industrial B/H
5-20 mmbtu/hr | 0.015 lb/mmbtu
(12 ppmv) | 9 ppmv w/
LNB? |
| • Utility Boilers | 0.008 lb/mmbtu
(7 ppmv) | } 2 ppmv (NG)
w/SCR?

} 2.5 ppmv
(RFG) w/SCR? |
| • Turbines | 0.06 lb/mmbtu
(17 ppmv)* | |

*Concentration value can vary due to operating configuration

BARCT

2005

Future
Consideration

• Cement Kilns	No further control	85% further control?
• Glass Furnaces	1.2 lb/ton (container glass) 4.0 - 5.6 lb/ton (others)	1.2 lb/ton (all types)?
• Other Furnaces/Ovens	30-45 ppmv	Any further control?

•Process Units: No further control

•Innovative ideas for reducing NOx from Major/Large sources?



Survey Questionnaire

As needed in order to supplement and/or provide operational details (location of equipment, costs, etc.)



Rule Development Schedule

- Working Group Meetings
 - Monthly as needed
- Public Workshop
 - June 2013
- Board Hearing
 - October 2013