BARCT – Boilers and Heaters (other than refinery or utility)

SCAQMD Rules	Applies To	Emission Factors	Exceptions/ Exemptions	Notes
Rule 1146	≥ 5 mmBtu/hr	30 ppm .036 lb/mmBtu	Electric utility boilers Boilers > 40 mmBtu/hr used at refineries Sulfur plant reaction boilers Limited exemption for low fuel usage	
Rule 1146.1	> 2 and < 5 mmBtu/hr	30 ppm .037 lb/mmBtu	Limited exemption for low fuel usage	
Rule 1146.2	≤ 2 mmBtu/hr	30 ppm .037 lb/mmBtu	Units at RECLAIM facilities	
Other Districts' Rules				
Bay Area Air Quality Management District (BAAQMD) 9-7	> 1 mmBtu/hr	30 ppm .037 lb/mmBtu	Natural gas/LPG-fired ≤ 10,000 mmBtu/hr Electric utility boilers Refinery boilers/heaters Waste heat recovery boilers Kilns, ovens, furnaces Limited exemption for low fuel usage	Non-gaseous fuel 40 ppm
Kern County APCD 425.2	≥ 5 mmBtu/hr			Less stringent than SCAQMD
Sacramento Metropolitan AQMD (SMAQMD) 411	≥ 5 mmBtu/hr	30 ppm		Similar to SCAQMD
San Diego Co APCD 69-2	≥ 5 mmBtu/hr	30 ppm		Similar to SCAQMD
San Joaquin Valley Unified APCD (SJVUAPCD) 4305	≥ 5 mmBtu/hr	30 ppm gaseous fueled 40 ppm liquid fueled		Similar to SCAQMD
SJVUAPCD 4306	≤ 20 mmBtu/hr > 20 mmBtu Refinery boilers/heaters	15 ppm gaseous fuel 40 ppm liquid fuel 9 ppm gaseous fuel 40 ppm liquid fuel see next category	Solid fuel units Dryers & glass melting furnaces Kilns & smelters Waste heat recovery boilers	More stringent than SCAQMD
Ventura Co APCD 74-15	≥ 5 mmBtu/hr	40 ppm		Less stringent than SCAQMD
Ventura Co APCD 74-15-1	≥ 1 and < 5 mmBtu/hr	30 ppm		Similar to SCAQMD

Other Regulations

No other more stringent regulations were found searching on the internet for RACT or BARCT for boiler NOx emissions.

Control Technologies

Technology	Emission Limit Achievable	Retrofit Feasibility	Cost
Ultra-low NOx Burner	15 ppm (0.018 lb/mmBtu)	Manufacturer guarantee Achieved in practice	Cost effective

Recommended BARCT:
15 ppm (0.018 lb/mmBtu)
determined as a weighted average
using equipment counts and unit ratings
based on available information.

Basis:
Other District's rule (SJVUAPCD)
Achieved in practice
Manufacturer guarantee
Existing technology for retrofits
Cost effective

BARCT – Refinery Boilers/Heaters (Rule 1109)

SCAQMD Rule	Applies To	Emission Factors	Exceptions/ Exemptions	Notes
R1109	Boilers and process heaters at petroleum refineries > 40 mmBtu/hr	0.030 lb.mmBtu (25 ppm)	≤ 40 mmBtu/hr Sulfur plant reaction boilers Units operated < 10% capacity for 12 months	12/31/92 compliance date
Other Districts' Rules				
BAAQMD 9-10		0.20 lb/mmBtu input NOx facility-wide or 300 ppm NOx daily avg	CO Boilers Various	Less stringent
Kern Co.				No separate rule
SMAQMD				No separate rule
San Diego Co.				No separate rule
SJVUAPCD 4306	≤ 110 mmBtu/hr >110 mmBtu/hr	25 and 30 ppm 5 ppm 0.0062 lb/mmBtu		Similar or less stringent than SCAQMD R1109 for ≤ 110 mmBtu/hr More stringent for >110 mmBtu/hr
Ventura Co				No separate rule

Other Regulations

No other more stringent regulations were found searching on the internet for RACT or BARCT for boiler NOx emissions.

Control Technologies for > 110 mmBtu/hr units

Technology	Emission Limit Achievable	Retrofit Feasibility	Cost
SCR	5 ppm	Achieved in practice	Cost effective

Recommended BARCT:
>110 mmBtu/hr: 5 ppm (0.006 lb/mmBtu)

Basis:
Other District's rule (SJVUAPCD) for large units
Achieved in practice
Existing technology for retrofits
Cost effective

BARCT – Petroleum Refinery FCCUs

SCAQMD Rules	Applies To	Emission Factors	Exceptions/ Exemptions	Notes
None for NOx from FCCUs				
Other Districts' Rules				
None for FCCUs				

Control Technologies

Technology	Emission Limit Achievable	Retrofit Feasibility	Cost
SCR	1.439 lb/1000 BBL	Achieved in practice at 2 facilities in SCAQMD	Cost effective

Recommended BARCT:
1.439 lb/1000 BBL

Basis:
Achieved in practice
Existing technology for retrofits
Cost effective