SUMMARY OF STATE NO_x RACT RULES

Final Report

EPA CONTRACT NO. 68-D3-0034
WORK ASSIGNMENT NO. 1-10

September 29, 1995

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Summary of the NO_x RACT Rules

Region	State	Area	Name of Rule (Category)
I	CT	All counties	Major Stationary Sources: Reciprocating Engines, Turbine Engines, Cyclone Furnace, Boilers (Fast-Response Double Furnace Naval, Others)
	ME	Know & Lincoln counties, Lewistown-Auburn, Portland, Androscoggin, Kennebed, Cumberland, Sagadahoc, York	Stationary Sources: Boilers (Large, Mid-Size, Kraft Recovery, MgO Recovery), Lime Kilns, Refuse Derived Fuel (RDF) Municipal Solid Waste (MSW) Incinerators, Mass Burn MSW Incinerators
	MA	All counties	Any facility with pte >50 tpy Boilers (Large, Medium-Size, Small), Stationary Combustion Turbines, Stationary Reciprocating Internal Combustion Engines, Incinerators, Glass Melting Furnaces
	NH	All counties	Boilers (Utility, Steam Electric, Industrial, Auxiliary), Stationary Combustion Turbines, Stationary Internal Combustion Engines, Asphalt Plant Dryers, Incinerators, Wallboard Dryers, Calcining Mills, Calciners, Gypsum Dryers, Emergency Generators, Load Shaving Units

Summary of the NO_x RACT Rules (continued)

Region	State	Area	Name of Rule (Category)
	RI	All counties	All Stationary Sources with pte 50 tpy: Boilers (Utility, Industrial-Commercial-Institutional), Internal Combustion Engines
II	NJ	All counties	Stationary Sources: Boilers (Utility, Non-Utility) Turbines, Stationary Internal Combustion Engines, Glass Mftg. Furnaces, Asphalt Plants
	NY	New York City (Nassau, Suffolk, Westchester, & Rockland Counties), Lower Orange county, & remainder of NY state	Major Stationary Sources: Boilers (Very Large, Large, Mid-Size, Small), Combustion Turbines, Internal Combustion Engines
III	DC		Fossil-fuel-fired Steam-Generating Units Stationary Combustion Turbines Asphalt Concrete Plants Other Major (>50 tpy) Stationary Sources
	MD	Baltimore & 2 other multi-county areas	Fuel Burning Equipment and Stationary Internal Combustion Engines

Summary of the NO_x RACT Rules (continued)

Region	State	Area	Name of Rule (Category)
	PA		Five Source Specific permits, all covering Boilers (Utility and Auxiliary) at Electric Power Generation Plants
	VA	Northern Virginia, Richmond, Hampton Roads	Stationary Sources including Steam Generating Units, Process Heaters, and Turbines
IV	FL	South Florida, Broward, Parlm Beach, and Dade counties	Furnaces: -rear wall fired, forced circ., 16 burner -front wall fired, natural circ., 18 and 24 burner -tangentially fired, low heat release Gas Turbines, Carbonaceous Fuel Burning Facilities, Diesel Generators, Cement Plants
	GA		13 Source Specific permits covering Boilers, Turbines, Reciprocating Engines, Glass Melting Furnaces, a Natural Gas/Propane Liquification/Vaporization Facility, and an Automobile Plant with several fuel burning sources
	KY	Jefferson county	Stationary Sources with pte >100 tpy: Non-Utility Boilers and Process Heaters (gas,oil,coal), Stationary Internal Combustion Engines (gas, diesel), Gas Turbines

Summary of the NO_x RACT Rules (continued)

Region	State	Area	Name of Rule (Category)
	NC	Charlotte, Greensboro, Raleigh (Mecklenburg, Gaston, Davidson, Forsyth, Guilford, Davie, Durham, Wake, & Granville counties)	Boilers (Utility and Non-Utility), Process Heaters, Stationary Gas Turbines, Stationary Internal Combustion Engines,
	TN	Nashville (Davidson, Rutherford, Sumner, Williamson, & Wilson counties)	Stationary Sources with pte 100 tpy: Tangentially-fired coal burning boiler
V	OH	Ashtabula, Clark, Cuyahoga, Geauga, Greene, Lake, Lorain, Lucas, Medina, Miami, Montgomery, Portage, Summit, & Wood counties	Utility Boilers, Large Industrial, Commercial, or Institutional Boilers, Stationary Combustion Turbines, Stationary Internal Combustion Engines

Summary of the NO_x RACT Rules (continued)

Region	State	Area	Name of Rule (Category)
VI	TX	Houston/Galveston& Beaumont/Port Arthur areas	Utilities Commercial, Institutional, & Industrial Sources Adipic Acid Nitric Acid Manufacturing Gas-fired Steam Generation
IX	CA	Bay Area	Utility Electric Power Generating Boilers Industrial, Institutional & Commercial Boilers, Steam Generators, & Process Heaters Stationary Internal Combustion Engines Stationary Gas Turbines Petroleum Refineries (Boilers, STeam Generators & Process Heaters) Glass Melting Furnaces Source Specific - Kaiser Cement
		El Dorado	Industrial, Institutional & Commercial Boilers, Steam Generators, & Process Heaters Stationary Internal Combustion Engines Biomass Boilers
		Kern	Cogeneration Gas Turbine Engines Boilers, Steam Generators, & Process Heaters Portland Cement Kilns Hot Mix Asphalt Plants Stationary Piston Engines Residential Water Heaters

Summary of the NO_x RACT Rules (continued)

Region	State	Area	Name of Rule (Category)
		Mojave	Electric Utility Operations Boilers & Process Heaters Internal Combustion Engines Stationary Gas Turbines Portland Cement Kilns
		Monterey	Utility Power Boilers Minerals Processing Kilns
		Placer	Industrial, Institutional & Commercial Boilers, Steam Generators, & Process Heaters Stationary Gas Turbines Biomass Suspension Boilers Biomass Boilers
		Sacramento	Boilers Stationary Internal Combustion Engines Located at Major Stationary Sources of NO_x Stationary Gas Turbines
		San Diego	Fuel-Burning Equipment Industrial & Commercial Boilers, Process heaters & Steam Generators Stationary Reciprocating Internal Combustion Engines Stationary Gas Turbine Engines
		San Joaquin	Boilers, Steam Generators, & Process Heaters Solid Fuel Fired Boilers, Steam Generators, & Process Heaters Stationary Internal Combustion Engines Stationary Gas Turbines Glass Melting Furnaces

Summary of the NO_x RACT Rules (continued)

Region	State	Area	Name of Rule (Category)
		Santa Barbara	Boilers, Steam Generators & Process Heaters Reciprocating Internal Combustion Engines
		South Coast	Electric Power Generating Systems Industrial, Institutional & Commercial Boilers, Steam Generators, & Process Heaters Small Industrial, Institutional & Commercial Boilers, Steam Generators, & Process Heaters Gaseous- & Liquid-Fueled Internal Combustion Engines Stationary Gas Turbines Petroleum Refineries (Boilers, & Process Heaters)
		Ventura	Electric Power Generating Equipment Boilers, Steam Generators, & Process Heaters Stationary Internal Combustion Engines Stationary Gas Turbines Natural gas-fired Residential Water Heaters Natural gas-fired Fan-Type Central Furnaces Oilfield Drilling Operations
		Yolo-Solano	Industrial, Institutional & Commercial Boilers, Steam Generators, & Process Heaters Stationary Internal Combustion Engines Stationary Gas Turbines

Summary of the NO_x RACT Rules (continued)

List of Symbols and Abbreviations

Frequently Used Terms

APPCD	Air Pollution Control District
ASB	Auxiliary Steam Boilers
CEM	Continuous Emissions Monitors
FBN	Fuel Bound Nitrogen
HHR	High Heat Release
LHR	Low Heat Realeas
LNB	Low NO_x Burner
LNG	Liquified Natural Gas
LPG	Liquified Petroleum Gas
MRC	Maximum Rated Capacity
MWC	Municiple Waste Combustion
PEM	Predictive Emissions Monitors
PH	Process Heaters
PTE	Potential to Emit
RICE	Reciprocating Internal Combustion Engines
SCR	Selective Catalytic Reduction
SG	Steam Generators
SGT	Stationary Gas Turbines
SNCR	Selective Non-catalytic Reduction
TPY	Tons per Year
UB	Utility Boilers

Frequently Used Units

@ X% O_2	corrected to "x" percent Oxygen
°F	degrees Farenheit
g	grams
g/bkhp-hr	grams per brake-horsepower hour
g/hp-hr	grams per horsepower hour
hp	horsepower
hr	hr
kg	kilogram
lbs	pounds
MMBtu	One million British thermal units
MW	megawatts
ng	nangoram
ppm	parts per million
ppmv	parts per million, volume basis
ppmvd	parts per million, dry volume basis
ppmvw	parts per million, wet volume basis
therms	100,000 BTUs
tpy	tons per year
yr	year

Summary of California NO_x RACT Rules

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
Bay Area							
	Utility Electric Power Generating Boilers > 250 MMBTU/hr	Gaseous fuel Non-gaseous fuels Gaseous & Non-gaseous fuels	175 ppmvd @ 3% O_2 300 ppmvd @ 3% O_2 Weighted average	rated heat input > 1,750 MMBTU/hr	System wide limit calculated each day as a rolling average of 30 days worth of hourly data	Install a non-resettable totalizing fuel meter in each fuel line; Install in-stack CEMs	Boiler with a rated heat input < 250 MM BTU/hr.
		Gaseous fuel Non-gaseous fuels Gaseous & Non-gaseous fuels	175 ppmvd @ 3% O_2 700 ppmvd @ 3% O_2 Weighted average	rated heat input > 1,500 and < 1,750 MMBTU/hr			
		Gaseous fuel with refractory lined furnace hoppers Gaseous fuels all other Non-gaseous fuels Gaseous & Non-gaseous fuels	175 ppmvd @ 3% O_2 120 ppmvd @ 3% O_2 500 ppmvd @ 3% O_2 Weighted average	rated heat input < 1,500 MMBTU/hr			
		System wide average rate	0.28				
	Institutional and Commercial Boilers, Steam Generators and Process Heaters	Gaseous fuel	30 ppmvd @ 3% O_2				Units with a rated heat input < 10 MM BTU/hr fired with natural gas or LPG; Units < 1 MM BTU/hr any fuel; Electric Utilities; Waste heat recovery boilers or combustion turbines or reciprocating internal combustion engines: Kilns, ovens, and furnaces used for drying, baking, heat treating, cooking, calcining, or vitrifying; Low fuel usage (annual heat input less than 90,000 therms during each consecutive 12-month period).
		Non-Gaseous fuel	500 ppmvd @ 3% O_2				
		Gaseous and Non-gaseous fuel	Weighted average of above				
		Low fuel usage (<90,000 therms during each consecutive 12-month period)	Maintain stack-gas O_2 concentrations at ≤ 3% by volume on a dry basis; or tune-up every 12 months				
		If natural gas is unavailable	150 ppmvd @ 3% O_2				
		Equipment testing Non-gaseous fuel	150 ppmvd @ 3% O_2 equipment testing not to exceed 48 hours/yr				
	Stationary Internal Combustion Engines	Fossil derived fuel gas - rich burn lean burn	56 ppmvd @ 15% O_2 140 ppmvd @ 15% O_2	stationary internal combustion engines fired on gaseous or combination or gaseous and liquid fuels			Engines rated < 250 brake hp output rating; Fired exclusively by liquid fuels; or Used for the growing of crops or raising of fowl or animals.
		Waste derived fuel gas - rich burn lean burn	140 ppmvd @ 15% O_2 210 ppmvd @ 15% O_2				
	Stationary Gas Turbines	Gas turbines	42 ppmvd @ 15% O_2	rated 0.3 to 10.0 MW			Power rating < 0.3 MW; Testing of aircraft gas turbine engines for certification; Firefighting and/or flood control; Emergency stand by engines.
		Gas turbines without SCR	15 ppmvd @ 15% O_2	rated ≥ 10.0 MW			
		Gas turbines with SCR	9 ppmvd 15% O_2	rated ≥ 10.0 MW			
		Low usage	42 ppmvd 15% O_2	Rated ≥ 4.0 MW Operating < 877 hrs/yr			

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
	Petroleum Refineries	Refinery-wide emission rate from affected units excluding CO boilers	0.20	Boilers, steam generators, and process heaters in petroleum refineries.	Operating day average.		Rated heat input < 10 MMBTU/hr fired with natural gas, or LPG; Rated heat input < 1 MMBTU/hr fired with any fuel; Waste heat recovery boilers for combustion turbines or reciprocating internal combustion engines; Units processing H_2S process flue gas or H_2SO_4 manufacturing plants; Units firing non-gaseous fuel when natural gas is unavailable.
	Glass melting Furnace	Glass melting furnace (limit is phased by a reduction to 90% of baseline - 1/1/97; then 75% of baseline 1/1/99; then 55% of baseline 1/1/01; then 10% less each year until the standard)	2.75 g/Kg (5.5 lbs/short/ton)				Furnaces with all heat from submerged electrodes; Furnaces with production capacity < 5 short tons/day.
	Kaiser Cement	All kiln emission points	1158 lb/hr and maximum concentration of 615 ppm (dry basis) without correction for O_2 measured as an average over a 2 hour period	Limited to process 1.6 MM tons/yr of clinker			
Monterey Bay Unified APCD							
	Utility Power Boilers (9/15/93) **Moss Landing Power Plant**	750 MW Unit Boilers natural gas or fuel oil Effective 12/31/96 one unit and 12/31/01 the second unit Natural Gas Fuel Oil	225 ppmvd @ 3% O_2 10 ppmvd @ 3% O_2 25 ppmvd @ 3% O_2	Turbine-Generator unit numbers 6 & 7 (boiler #'s 6-1 & 7-1)	One hour average		Force majeure natural gas curtailment; Fuel oil system or emissions test; Emergency conditions; Units operate at < 2% capacity between 5/1 - 10/31 and annual capacity < 4%; 110 unit average capacity factor < 10 % during previous 3 years and capacity factor < 20% for those years.
		120 MW Unit Boilers Natural gas Fuel oil After 12/31/94 Natural gas Fuel Oil After 12/31/99 Natural Gas Fuel oil	 200 ppmvd @ 3% O_2 500 ppmvd @ 3% O_2 90 ppmvd @ 3% O_2 500 ppm **and all units not to exceed 0.30 lbs/MM BTU** 30 ppmvd @ 3% O_2 110 ppmvd @ 3% O_2	Turbine-Generator unit numbers 4 & 5 (boiler #'s 7 & 8)	One hour average; Maximum rate based on a 30 day rolling average		
		110 MW Unit Boilers Natural gas Fuel oil After 12/31/93 Natural gas Fuel Oil After 12/31/94 After 12/31/99 Natural Gas Fuel oil	 150 ppmvd @ 3% O_2 500 ppmvd @ 3% O_2 125 ppmvd @ 3% O_2 500 ppmvd @ 3% O_2 **All units not to exceed 0.30 lbs/MM BTU** 30 ppmvd @ 3% O_2 110 ppmvd @ 3% O_2	Turbine-Generator unit numbers 1-3 (boiler #'s 1-6)	One hour average; Maximum rate based on a 30 day rolling average		
12/24/94	Preheater Precalciner Portland Cement Kilns	O_2 concentrations Firing rate limit	2.5% 3.4 MMBTU/ton product		24-hour averaging period		Facilities that emit < 100 tons NO_x/yr; Kilns operate < 100 hr/yr; Dryers operating < 800°F used to release physically bound water; Kilns used exclusively to produce ceramic ware with heat from natural gas, propane, or electricity.
	Dolomite Rotary Kilns	Firing rate limit	7.50 MMBTU/ton product				
	Magnesia Rotary Kilns	Firing rate limit	26.5 MMBTU/ton product				

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
	Dolmite hearth Kilns	Firing rate limit	23.5 MMBTU/ton product				
	Magnesia Hearth Kilns	Firing rate limit	23.5 MMBTU/ton product				
Ventura County APCD (4/1/93)							
	Utility boilers	After 4/1/93 Natural gas only			Rolling 24 hr average for lbs/MW-hr.	Auxiliary boilers test for compliance once/yr.	
		gaseous fuel Total NO_x not to exceed	250 ppm 125 ppm 4,460 tpy	> 25 MMBTU/hr > 2150 MMBTU/hr			
		After 6/4/94: electric generating steam boiler	0.10 lb/MW-hr	≥ 2150 MMBTU/hr			
		After 6/4/96: electric generating steam boiler	0.20 lb/MW-hr	< 2150 MMBTU/hr			
		After 6/4/92: auxiliary boiler	0.040 lb/MMBTU fuel consumed				
	Boilers, Steam Generators, and Process heaters (Industrial, institutional and commercial)	Annual heat input rate < 9,000 MMBTUs/yr	Maintain stack gas O_2 at ≤ 3% on a dry basis; or Tune twice a year	Rated heat input capacity ≥ 5 MMBTUs/hr			
		Annual heat input > 9,000 MMBTU/yr	40 ppmv				
	Stationary Internal Combustion Engines	rich-burn, general lean-burn, general diesel, rich-burn, waste gas lean-burn, waste gas	25 ppmv at 15% O_2 45 ppmv at 15% O_2 80 ppmv at 15% O_2 50 ppmv at 15% O_2 125 ppmv at 15% O_2	Rated at > 50 horsepower burning gaseous fuel including LPG or diesel fuel.			
Adopted 3/14/95	Stationary Gas Turbines						
12/31/85	Natural gas-fired residential water heaters		93 lb/1000 MMBTU (40 nanograms of NO_x/joule heat output)	Persons selling, offering for sale, or installing.			
5/31/94	Natural gas-fired fan-type central furnaces		93 lb/1000 MMBTU (40 nanograms of NO_x/joule heat output)	Persons selling, offering for sale, or installing.			
	Oilfield drilling operations	All drilling operations shall be powered by grid power; or Drilling engines or any exhaust stack of multiple engines permanently manifolded together	515 ppm @ 15% O_2				

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
Placer County APCD							
	Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process heaters	annual heat input ≥ 90,000 therms - gaseous fuel " - nongaseous fuel " - combination fuel	0.036 lb/MMBTU (or 30 ppmv) 0.052 lb/MMBTU (or 40 ppmv) heat-input weighted average	rated heat inputs ≥ 5 MMBTUs/hr			Biomass boilers; Cement and lime kilns; Direct-contact dryers; Electric utility boilers; Medical waste incinerators; Nongaseous fuels; Waste heat recovery boilers
		Annual heat input < 90,000 therms	Maintain stack-gas O_2 at ≤ 3.00% by volume on a dry basis; or tune once a year; or meet above				
	Stationary Gas Turbines	gas oil	42 ppm @ 15%O_2 65 ppm @ 15% O_2	0.3 to < 2.9 MW; & units ≥ 4 MW operating < 877 hrs/yr	Averaged over 15 minutes.		Laboratory, firefighting/flood control, and pipeline units; Emergency standby and small units.
		gas oil	25 X EFF/25 65 ppm @ 15% O_2	2.9 to < 10 MW			
		with SCR - gas " - oil	9 X EFF/25 25 X EFF/25	≥ 10.0 MW			
		without SCR - gas " - oil	15 X EFF/25 42 X EFF/25	≥ 10.0 MW			
	Biomass Suspension Boilers	Suspension-type boilers	80% uncontrolled NO_x	Potential to emit > 25 tpy; primary energy source (75%) biomass from a medium density fiberboard plant			Boilers, steam generators, process heaters; Biomass boilers; Municipal solid waste; Waste heat recovery boilers.
	Biomass Boilers		50 % uncontrolled NO_x in exhaust stream; or 115 ppmv corrected to 12% by volume stack gas CO_2	Potential to emit > 25 tpy; primary energy source (75%) biomass			Boilers, steam generators, process heaters; Biomass suspension boilers; Municipal solid waste; Waste heat recovery boilers.

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
Yolo-Solano APCD							
Adopted 10/27/93	Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process heaters	annual heat input ≥ 90,000 therms - gaseous fuel " - nongaseous fuel " - combination fuel	0.036 lb/MMBTU (or 30 ppmv) 0.052 lb/MMBTU (or 40 ppmv) heat-input weighted average	Rated heat inputs ≥ 5 MMBTUs/hr			Nongaseous fuels; Electric utility boilers; Waste heat recovery boilers; Dryers; Cement and lime kilns, glass melting furnaces, and smelters.
		annual heat input < 90,000 therms	maintain stack-gas O_2 at ≤ 3.00% by volume on a dry basis; or tune once a year; or meet above				
Adopted 7/13/94	Stationary Gas Turbines	gas oil	42 ppm @ 15% O_2 65 ppm @ 15% O_2	0.3 to < 2.9 MW; & units ≥ 4 MW operating < 877 hrs/yr	Averaged over 15 minutes		Laboratory, firefighting/flood control, and pipeline units; Emergency standby and small units.
		gas oil	25 X EFF/25 65 ppm @ 15% O_2	2.9 to < 10 MW			
		with SCR - gas " - oil	9 X EFF/25 25 X EFF/25	≥ 10.0 MW			
		without SCR - gas " - oil	15 X EFF/25 42 X EFF/25	≥ 10.0 MW			
Adopted 8/10/94	Stationary Internal Combustion Engines	Rich burn Lean burn Diesel fired	640 ppmv or 9.5 g/bkhp-hr 740 ppmv or 10.1 g/bkhp-hr 700 ppmv or 9.6 g/bkhp-hr	Stationary engines rated at > 50 brake hp operated on gaseous or diesel fuel (Before 3/10/95)			Engines rated < 50 brake hp; Engines operated < 200 hr/yr; Emergency standby engines; Research or teaching programs; Test stands for evaluating performance; Diesel engines with permitted capacity factor of ≤ 15%; Diesel engines powering cranes and welding equipment.
		Rich burn Lean burn Diesel fired	90 ppmv 150 ppmv 600 ppmv	Stationary engines rated at > 50 brake hp operated on gaseous or diesel fuel (After 3/10/95)			

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
El Dorado County APCD							
	Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process heaters	annual heat input ≥ 90,000 therms - gaseous fuel " - nongaseous fuel " - combination fuel	0.036 lb/MMBTU (or 30 ppmv) 0.052 lb/MMBTU (or 40 ppmv) heat-input weighted average	Rated heat inputs ≥ 5 MMBTUs/hr.			Nongaseous fuels; Electric utility boilers; Waste heat recovery boilers; Dryers; Cement and lime kilns, glass melting furnaces, and smelters; Biomass boilers.
		annual heat input < 90,000 therms	maintain stack-gas O_2 at ≤ 3.00% by volume on a dry basis; or tune once a year; or meet above				
	Stationary Internal Combustion Engines	Rich burn Lean burn Diesel fired	640 ppmv 740 ppmv 700 ppmv	Stationary engines rated at > 50 brake hp operated on gaseous or diesel fuel			Engines rated < 50 brake hp; Engines operated < 200 hr/yr; Emergency standby engines; Research or teaching programs; Test stands for evaluating performance; Diesel engines with permitted capacity factor of ≤ 15%; Diesel engines powering cranes and welding equipment; Engines exclusively used for growing crops or raising of fowl & animals.
		Rich burn Lean burn Diesel fired	90 ppmv 150 ppmv 600 ppmv	Stationary engines rated at > 50 brake hp operated on gaseous or diesel fuel			
	Biomass Boilers		50 % uncontrolled NO_x in exhaust stream; or 115 ppmv corrected to 12% by volume stack gas CO_2	Rated heat input ≥ 5 MMBTU/hr & Primary energy source (75%) biomass			Boilers, steam generators, process heaters; Municipal solid waste; Waste heat recovery boilers.
Mojave Desert AQMD (Adopted 2/22/95)							
	Electric Utility Operations	Baseline units - gaseous fuel " liquid fuel	70 ppmv @3% O_2 115 ppmv @3% O_2	annual capacity factor ≥ 60%	Hourly average		Cogeneration Facility; Process heaters; Independent power producers; Solar power production facilities; Located outside of ozone FIP area.
		Cycling units - gaseous fuel " liquid fuel	100 ppmv @3% O_2 115 ppmv @3% O_2	annual capacity factor 31 to 59%			
		Peaking units - gaseous fuel " liquid fuel	125 ppmv @3% O_2 225 ppmv @3% O_2	annual capacity factor ≤ 30%			
		Combined cycle turbine engines - gaseous fuel " - liquid fuel	42 ppmv @15% O_2 65 ppmv @15% O_2		Hourly average		
		Permit units - aggregated annual cap 12/31/96 12/31/97 12/31/98 12/31/99 12/31/00 12/31/01 12/31/02 after 12/31/02	 1,516 tpy 1,484 tpy 1,453 tpy 1,421 tpy 1,387 tpy 1,353 tpy 1,319 tpy 1,319 tpy	Southern California Edison or successor located at Coolwater Facility in Dagget, CA		Initial CEM certification test	
Adopted 10/26/94	Boilers and Process heaters	low heat input	Maintain stack gas O_2 at ≤ 3% on a dry basis; or Tune once a year	Annual heat input rate < 50,000 MMBTUs/yr & rated heat input capacity ≥ 5 MMBTUs/hr		Annual tests	Electric generating units.

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
		high heat input - gaseous fuel " - liquid &/or solid fuel " - combination of fuels	70 ppmv &/or 0.084 lbs/MMBTU 115 ppmv &/or 0.150 lbs/MMBTU weighted average	Rated heat input capacity ≥ 5 MMBTUs/hr & annual heat input > 50,000 MMBTU/yr			
Adopted 12/20/94 Amended 10/26/94	Internal Combustion Engines	Rich burn Lean burn Diesel-cycle engines	50 ppmv @ 15% O_2 or 90% reduction 140 ppmv @ 15% O_2 or 80% reduction 700 ppmv @ 15% O_2 or 30% reduction	Stationary engines rated at > 500 brake hp in ozone FIP area	15 consecutive minutes	Inspect once per year or every 2000 hours of operation; Annual emissions test	Engines < 500 brake hp; Operating < 100 hrs/yr; Emergency internal engines; Engines located outside ozone FIP area.
Adopted 2/22/95	Stationary Gas Turbines	gas fired turbines oil fired turbines	42 ppmvd @ 15% O_2 65 ppmvd @ 15% O_2	≥ 0.3 MW in FIP ozone area	Average over 15 minutes		
		gaseous fuel	90 ppmvd @ 15% O_2	Southern California Gas Company Turbine Model LM 1500			
Adopted 6/28/95	Portland cement kilns	preheater-precalciner kilns or long dry kilns	6.4 lbs/ton of clinker	Existing portland cement kilns operated within the ozone FIP area	Averaged over any 30 consecutive day period	CEM system	Start-up & shut-down (limit 36 hrs); maintenance; breakdown; when gaseous/liquid fuel is used and limit is exceeded (limit 14 days/yr).
		short dry kilns	7.2 lbs/ton of clinker				
		kiln systems which recover waste heat and convert it to electricity	above x [1 + waste heat recovered (BTU/hr)/ kiln heat input (BTU/hr)]				
San Joaquin Valley APCD							
Adopted 10/20/94	Boilers, Steam Generators, and Process Heaters with rated heat input > 5 MMBTU/hr fired with gaseous &/or liquid fuel included in a major NO_x source (p.t.e > 50 tpy) located outside of Fresno county oil field source, Western Kern County oil field source, or oil field sources located west of Interstate 5 in Kings county.	Except Natural & Induced Draft gaseous fuel distillate oil residual or crude oil	95 ppmvd @ 3% O_2 (0.10 lb/MMBTU) 115 ppmvd @ 3% O_2 (0.15 ") 165 ppmvd @ 3% O_2 (0.22 ")	Units rated heat input > 5 MM/hr and heat input ≥ 9,000 MMBTUs/yr	Averaged over 60 minutes.	Units > 9,000 MMBTUs once per year. Complying gaseous units every 3 years.	Heat < 5 MMBTU/hr; Unfired waste heat recovery boilers recovering heat from exhaust of combustion turbines or internal combustion engines; Natural gas curtailment (not to exceed 336 cumulative hrs); Emergency standby units (not to exceed total of 9,000 MMBTUs/yr).
		Natural & Induced draft gaseous fuel distillate oil residual or crude oil	147 ppmvd @ 3% O_2 (0.18 lb/MMBTU) 155 ppmvd @ 3% O_2 (0.20 ") 194 ppmvd @ 3% O_2 (0.25 ")				
			tune once/yr or stack gas ≤ 3.00 % O_2 by volume, dry basis	Rated heat input > 5 MMBTU/hr and heat input < 9,000 MMBTUs/yr			
		Between 5/31/95 and 5/31/97	tune once/yr or stack gas ≤ 3.00 % O_2 by volume, dry basis	Any unit rated > 5 MMBTU/hr			
		After 5/31/97 gaseous fuel liquid fuel	30 ppmvd @ 3% O_2 (0.36 lb/MMBTU) 40 ppmvd @ 3% O_2 (0.052 ")				

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
		After 5/31/99 - Natural and induced draft rated heat ≤ 40 MMBTU/hr - gaseous fuel distillate oil residual or crude oil	74 ppmvd @ 3% O_2 (0.085 lb/MMBTU) 78 ppmvd @ 3% O_2 (0.102 ") 97 ppmvd @ 3% O_2 (0.127 ")				
Adopted 9/14/94	Solid Fuel Fired Boilers, Steam Generators, and Process Heaters	Municipal solid waste	200 ppmv @ 12% CO_2 referenced at dry stack gas conditions calculated to 3% O_2, or 7% O_2, or 12% CO_2 by volume	Part of a major NO_x (pte > 50 tpy) source.	24 hour averaging period	once/year; source using ammonia injection shall operate a CEM	Start up and shutdown periods.
		Biomass using multiple hearth furnace	0.35				
		All others	0.20				
Adopted 5/21/92 Amended 10/20/94	Stationary Internal Combustion Engines	Rich burn Lean burn Diesel-cycle engines	640 ppmv @ 15% O_2 or 9.5 g/bkhp-hr 740 ppmv @ 15% O_2 or 10.1 g/bkhp-hr 700 ppmv (@15%O_2) or 9.6 g/bkhp-hr	Any gaseous diesel or other liquid-fueled engine > 50 brake horsepower and part of a source with potential to emit > 50 tpy		CEMs or testing once every 8760 hours of operation	Engines rated < 50 brake hp; Engines operated < 200 hr/yr; Engines used directly and exclusively for growing crops or raising fowl or animals; Emergency standby engines; Laboratory engines used in research & testing; Engines operated for performance verification & testing; Gas turbine engines; Portable internal combustion engines; 336 cumulative hr/yr for engines normally fired with natural gas during natural gas curtailment.
		Rich burn Lean burn Diesel-cycle engines	90 ppmv @ 15 %O_2 or 90 %reduction 150 ppmv @ 15% O_2 or 80% reduction 600 ppmv @ 15% O_2 or 30% reduction	Rated > 50 brake hp & natural gas fired in Central & Western kern County Fields excluding cyclic loaded engines			
Adopted 8/18/94	Stationary Gas Turbines	gas oil	42 ppm @15%O_2 65 ppm @15%O_2	≥ 4 MW and < 877 hr/yr	Averaged over 3 hours		Engines < 0.3 MW; Laboratory units for research & testing for the advancement of gas turbine technology; Firefighting and/or flood control; standby units < 200 hr/yr; units < 4 MW & operating < 877 hr/yr.
		gas oil	42 ppm @15%O_2 65 ppm @15%O_2	0.3 to < 10.0 MW and ≥ 877 hr/yr			
		gas oil	15 x EFF/25 42 x EFF/25	≥ 10.0 MW without SCR & ≥ 877 hr/yr			
		gas oil	9 x EFF/25 25 x EFF/25	≥ 10.0 MW with SCR & ≥ 877 hr/yr			
		gas oil	18 x EFF/25 42 x EFF/25	G.E. Frame 7 with Quiet Compressors			
		gas oil	50 ppm @15%O_2 50 ppm @15%O_2	solar saturn 1100 hp gas turbine powering centrifugal compressor			
Adopted 9/14/94	Glass melting furnaces	Container glass or Fiberglass	5.5 lb/ton glass or 80 % reduction by weight from baseline			Annual	Electric glass melting furnaces where heat is supplied by electric current from electrodes submerged in molten glass; Start-up, shutdown, or idling.
		Flat glass	32 lbs/ton - (0.2 lbs/ton actual tons pulled/permitted tons * 100%)				

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
Kern County APCD							
Adopted 8/16/93	Cogeneration Gas Turbine Engines	Gas turbine using SCR - gas " oil	10 ppmv @15% O_2 40 ppmv @15% O_2	≥ 10.0 MW until 1/1/97		Annual testing	
		Gas turbine using SCR - gas " oil	9 x EFF/25 25 x EFF/25	≥ 10.0 MW after 1/1/97			
		Before 1/1/97 gas fired oil fired After 1/1/97 gas fired oil fired	96 ppmv @15% O_2 114 ppmv @15% O_2 20 x EFF/25 42 x EFF/25	≥ 10.0 MW Westinghouse 251B10 gas turbine with authority to construct issued before 1/1/83 using dry low-NO_x combustors to meet 1/1/97 limit			
Adopted 10/13/94	Boilers, Steam Generators, and Process heaters	After 11/30/97 annual heat input ≥ 90,000 therms - gaseous fuel " - nongaseous fuel Natural gas curtailment Combination fuel	0.10 (70 ppmv) 0.16 (115 ppmv) 0.22 (150 ppmv) heat-input weighted average	Rated heat input > 5 MMBTU/hr with gaseous &/or liquid fuels	Averaged over 15 minutes	Once/year. Complying gaseous fuel-fired units once/3 years.	Units < 5 MMBTU/hr fired.
		Before 11/30/97 or annual heat input < 90,000 therms	tune once/yr or maintain stack-gas O_2 @≤3% by volume on a dry basis				
Adopted 10/13/94	Portland Cement Kilns	RACT can be combustion controls; low-NO_x burners; staged combustion; or NO_x reducing fuels	11.6 lbs/ton (averaged over 24 hrs) or 6.4 lbs/ton (averaged over 30 days)	Portland cement kilns operated in Kern county	24 consecutive hrs or 30 consecutive days	Equipped with a continuous NO_x emissions monitoring system	Kilns constructed & placed in operation after 1/1/90 are subject to BACT instead of RACT.
Adopted 10/13/94	Hot Mix Asphalt Paving Plants	Hot mix asphalt paving plant	0.15 lbs (as NO_2)/MMBTU heat input	All hot mix asphalt paving plants located and operated in Kern county	One hour	Exhaust stack must be equipped with a continuously recording stack gas O_2 monitor	Equipment used to heat liquid asphalt prior to mixing with aggregate to form hot mix asphalt paving.
Adopted 6/1/87 Amended 10/13/94	Stationary Piston Engines		Change lubricating oil & filter once/3 months or every 300 hrs operation; Clean inlet air filter once/3 months or every 300 hrs operation and replace every 1000 hrs operation; Clean fuel filter once/year or replace every 1000 hrs operation; Intake & exhaust valves, spark plugs, spark timing & dwell or fuel injection timing, & carburetor mixture - adjust once/year or 100 hrs operation; Change coolant once/year; Check exhaust system once/year.	Engines ≥ 50 bkhp and < 250 bkhp; Engines ≥ 250 bkhp (until 1/1/97)	Averaged over not less than 15 minutes	Install operate and maintain analytical equipment	Engines used exclusively for growing crops or raising fowl or animals; Emergency standby engines (operated < 200 hrs/yr); Engines used exclusively for firefighting or flood control; Laboratory engines used in research & testing; Engines operated for performance verification & testing; Portable engines not operated at the same site for > 1 year.

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
		Rich-burn	reduced by 90% across exhaust gas control device or 50 ppmvd @ 15% O_2	Engines ≥ 250 bkhp after 1/1/97			
		Lean-burn Lean burn engines controlled exclusively by combustion modifications	reduced by 80% across exhaust gas control device or 125 ppmvd @ 15% O_2 2.0 g/bkhp output or 125 ppmvd @ 15% O_2				
		Diesel	reduced by 30% across exhaust gas control device or 600 ppmvd @ 15% O_2				
Adopted 4/19/93	Residential Water heaters	after 11/1/93 all natural gas-fired residential water heaters	40 ng (as NO_2)/Joule (70 lbs/1,000 MMBTU heat output)	Any person selling, offering for sale, or installing			Water heaters rated heat input > 75,000 BTU/hr; Water heaters in recreation vehicles; Water heaters installed in mobile homes.
San Diego County APCD							
Adopted 9/20/94	Fuel-Burning Equipment	gaseous liquid or solid	125 ppmvd @ 3% O_2 or 240 mg/m^3@20°C 225 ppmvd @ 3% O_2 or 430 mg/m^3@20°C	Non-vehicular, fuel-burning equipment rated ≥ 50 MMBTU/hr	Consecutive 60 minute average		Equipment used exclusively for testing of turbine engines or their components; Exclusively processing & combustion of municipal solid waste (must meet LAER); Start-up, shut-down, & fuel change; Diesel fired internal combustion engines at nuclear generating stations; Boiler-steam turbine generators installed prior 1/1/66 & rated ≤ 2,200 MMBTU/hr during startup, fuel change, low load, or pre- or post-overhaul tests.
Adopted 9/27/94	Industrial and Commercial Boilers,Process heaters, and Steam generators	gaseous fuel liquid fuel combination	30 ppmvd @ 3% O_2 40 ppmvd @ 3% O_2 weight averaged	rating ≤ 50 MMBTU/hr & input of ≥ 220,000 therms or rating > 50 MMBTU/hr & annual capacity factor ≥ 10%	15 consecutive minutes		Electricity-generating steam boilers rated > 100 MMBTU/hr; Waste heat recovery boilers; Furnaces, kilns, & other where material heated is in direct contact with products of combustion; Thermal oxidizers and associated waste heat recovery equipment; Units used in a structure designed and used exclusively as dwelling for ≤ 4 families; Agricultural operations; Natural gas curtailment (not to exceed 168 hrs/yr).
			tune unit once/year or maintain stack-gas O_2 ≤ 3.00% by volume (dry basis)	rating < 50 MMBTU/hr & input < 220,000 therms or rating > 50 MMBTU/hr & annual capacity factor < 10%			

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
Adopted 9/27/94	Stationary Gas Turbine Engines	gaseous fuel liquid fuel	42 ppmvd @ 15% O_2 65 ppmvd @ 15% O_2	Existing engines > 1.0 MW and new engines ≥ 0.3 MW	Thirty consecutive minutes	Once/year	Engines operated exclusively for research, development, testing of gas turbine engines or their components; Portable gas turbines located at a stationary source < 180 days/yr; New engines rated at ≤ 0.4 MW used in military tactical deployable equipment (limit 1000 hrs/yr); Emergency unit (limit 80 hrs/year).
Adopted 9/27/94	Stationary Reciprocating Internal Combustion Engines	rich burn engines using exclusively fossil derived gaseous fuel or gasoline	50 ppmvd @ 15% O_2 or 90% reduction	Brake hp output rating ≥ 50 at a major (pte > 50 tpy) NO_x source	At least 30 minutes not more than 60 minutes		Engines exclusively for dwelling structure for ≤ 4 families; Agricultural operations; Engines operating < 200 hrs/yr; Emergency standby engines (not to exceed 500 hrs/yr); Emergency standby engines at nuclear generating station (not to exceed 500 hrs/yr); engines in military tactical deployable equipment (not to exceed 1000 hrs/yr).
		lean burn engines using exclusively fossil derived gaseous fuel; or Engines using waste derived gaseous fuel	125 ppmvd @ 15% O_2 or 80% reduction				
		Engines using diesel or kerosene fuel	700 ppmvd @ 15% O_2 or 25% reduction				
Santa Barabara County							
Adopted 3/10/92	Boilers, Steam Generators, and Process heaters	gaseous fuel liquid fuel combinations	30 ppmvd @ 3% O_2 or 0.036 lb/MMBTU 40 ppmvd @3% O_2 or 0.052 lb/MMBTU heat-input weighted average	Rated ≥ 5 MMBTU/hr & permitted heat input ≥ 9,000 BTU/yr		Once every 2 years	Boilers used by public utilities to generate electricity; Process heaters, kilns, and furnaces where products of combustion come in direct contact with heated material; Waste heat recovery boilers on exhaust of combustion turbines or reciprocating internal combustion engines; Natural gas curtailment (limit 168 hrs).
		all units	maintain stack-gas O_2 @<3.00% by volume on a dry basis or tuned once/year	Rated ≥ 5 MMBTU/hr & permitted heat input < 9,000 BTU/yr			
Adopted 12/03/91, revised 12/10/91	Reciprocating Internal Combustion Engines	Noncyclic rich burn engines	50 ppmv @15%O_2 or 152 ppmv @3%O_2 or 90% NO_x reduction	Engines rated ≥ 50 brake horsepower fueled by natural gas, field gas, liquefied petroleum gas, diesel fuel, gasoline or any other liquid fuel.		Source test performed biennially to demonstrate compliance	Engines operating on fuel ≥ 75% (by volume) landfill gas; Engines operating < 200 hrs/yr.
		Noncyclic lean burn engines	125 ppmv @15%O_2 or 380 ppmv @3%O_2 or 80% NO_x reduction				
		Cyclic engines On or before 3/2/92	Maintain exhaust stream O_2 ≥ 6.5% by volume & 50 ppmv @ 15% O_2 or 152 ppmv @ 3% O_2 or 90% NO_x reduction				
		Diesel engines	8.4 g/bkhp-hr or 797 ppmv @ 15% O_2 or 2,400 ppmv @ 3% O_2				
South Coast							

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
Adopted 8/4/89 amended 7/19/91	Electric Power Generating Systems	Southern California Edison	starts at 1.10 lb NO_x/MW-hr ends at 0.15 lb NO_x/MW-hr (13,400 lb-NO_x/day)	Sliding scale from 12/31/89 to 12/31/99		Each boiler, replacement unit, & approved alternative equipped with CEM	Liquid petroleum fuel used exclusively on days of force majeure natural gas curtailment shall not exceed 2 times the applicable unit-specific NO_x limit. Additional unit and company specific exemptions.
		Los Angeles Department of Water and Power	starts at 1.60 lb NO_x/MW-hr ends at 0.15 lb NO_x/MW-hr (7,400 lb-NO_x/day)	Sliding scale from 12/31/89 to 12/31/09			
		City of Burbank	starts at 2.47 lb NO_x/MW-hr (3,870 lb-NO_x/day) ends at 0.20 lb NO_x/MW-hr (580 lb-NO_x/day)	Sliding scale from 12/31/89 to 12/31/99			
		City of Glendale	starts at 2.52 lb NO_x/MW-hr (2,940 lb-NO_x/day) ends at 0.20 lb NO_x/MW-hr (390 lb-NO_x/day)	Sliding scale from 12/31/89 to 12/31/99			
		City of Pasadena	starts at 3.05 lb NO_x/MW-hr (5,230 lb-NO_x/day) ends at 0.20 lb NO_x/MW-hr (900 lb-NO_x/day)	Sliding scale from 12/31/89 to 12/31/99			
		All electric generating systems boilers, replacement units & alternative units Southern California Edison LA Dept. of Water & Power City of Burbank City of Glendale City of Pasadena	1,640 tpy 960 tpy 56 tpy 35 tpy 80 tpy	After year 2000			
Adopted 9/9/88 amended 5/13/94	Industrial Institutional, and Commercial boilers, Steam Generators, and Process heaters	Gaseous, liquid, or solid fossil fuels	40 ppmvd @ 3% O_2 (0.05 lb/MMBTU)	Rated ≥ 5 MMBTU/hr & input > 90,000 therms/yr	15 consecutive minutes	Units rated ≥ 40 MMBTU/hr & input > 200,000 MMBTU/yr to install CEMs	Boilers used by electric utilities to generate electricity; Boilers & process heaters rated > 40 MMBTU/hr used in petroleum refineries; Sulfur reaction plant reaction boilers.
		Gaseous, liquid, or solid fossil fuels	30 ppmvd @ 3% O_2	Rated ≥ 40 MMBTU/hr & input > 25% annual capacity factor			
		Gaseous, liquid, or solid fossil fuels	40 ppmvd @ 3% O_2	Rated ≥ 40 MMBTU/hr & input ≤ 25% annual capacity factor & > 90,000 therms/yr			
		Gaseous, liquid, or solid fossil fuels	maintain stack-gas O_2 ≤3% on a dry basis or tuned twice/yr	Rated ≥ 5 MMBTU/hr & heat input < 9,000 BTU/yr			
	Small Industrial Institutional, and Commercial boilers, Steam Generators, and Process heaters		30 ppmvd @ 3% O_2 or 0.037 lb/MMBTU input	Rated > 2 MMBTU/hr & < 5 MMBTU/hr	15 consecutive minutes		Units with annual heat input ≤ 18,000 therms/yr.
			Maintain stack-gas O_2 @ ≤ 3% on a dry basis or be tuned twice/yr	Rated > 2 MMBTU/hr & < 5 MMBTU/hr & input ≤ 18,000 therms/yr			

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
Adopted 8/3/90, amended 9/7/90	Gaseous- and Liquid-Fueled Internal Combustion Engines	Any engine	36 ppmvd @15%O_2	All stationary engines > 50 bkhp and all portable engines > 100 bkhp	ppmvd averaged over 15 minutes	Source test once/yr	During officially declared disaster or state of emergency; Directly and exclusively for growing of cops of raising of fowl or animals; Emergency standby engines (limit 200 hours/yr); Firefighting & flood control; Laboratory engines used in research & testing; Engines operating for performance verification & testing; Engines outside nonattainment planning area; Auxiliary engines to power other engines or turbines during start-ups; Supplemental engines for manufacture of snow &/or operation of ski lifts (limit 700 hours/yr).
		Electric generating; portable; landfill-gas- or sewage-digester-gas-fired; engine used to drive a water supply or conveyance pump except for aeration facilities; oil field-produced-gas-fired; integral engine-compressor (limit 4000 hrs/yr); LPG-fueled	Reference limit x EFF/25%; where, reference limit for 50 - 500 bkhp = 45 ppmvd @15%O_2 and for > 500 bkhp = 36 ppmvd @15%O_2	All stationary engines > 50 bkhp and all portable engines > 100 bkhp			
Adopted 8/4/89	Stationary Gas Turbines ≥ 0.3 MW as of 8/4/89		25 ppmvd @ 15% O_2	Rated 0.3 to < 2.9 MW	Averaged over 15 minutes	Continuous in-stack NO_x monitoring system; units emitting > 25 tpy annual tests all over within 90 days after 8,400 hrs of operation.	Laboratory units used in research & testing; Fire fighting and flood control; Chemical processing gas turbine units; Emergency standby units (limit 200 hrs/yr); Peaking units (limit 200 hrs/yr)
			9 ppmvd @ 15% O_2	Rated 2.9 to < 10.0 MW			
		no SCR	15 ppmvd @ 15% O_2	Rated 2.9 to < 10.0 MW			
			9 ppmvd @ 15% O_2	Rated ≥ 10.0 MW			
		no SCR	12 ppmvd @15% O_2	Rated ≥ 10.0 MW			
		Over combined cycle no SCR	15 ppmvd @15% O_2	≥ 60 MW			
		Over combined cycle	9 ppmvd @15% O_2	≥ 60 MW			
Adopted 3/12/84 amended 8/5/88	Boilers and Process Heaters in Petroleum Refineries	All boilers and process heaters Gaseous fuel Liquid fuel Combinations of fuel	0.14 0.308 weighted average	1/1/88 until 12/31/92		Each unit shall have a continuous in-stack NO_x monitor	Rated capacities ≤ 40 MMBTU/hr; Sulfur plant reaction boilers; Upon approval units operated during 1 year @<10% rated capacity.
		Boilers & process heaters comprising 36% total heat input	0.03 lb/MMBTU when firing at maximum rated capacity	12/31/92 until 12/31/95			
		All boilers and process heaters	0.03 lb/MMBTU when firing at maximum rated capacity	After 12/31/95			
Sacramento Metropolitan AQMD							

Summary of California NO_x RACT Rules (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging time	Testing	Exemptions
Adopted 2/2/95	Boiler NO_x	RACT - gaseous fuel firing RACT - nongaseous fuel firing RACT - biomass fuel firing	70 ppmvd @ 3% O_2 115 ppmvd @ 3% O_2 100 ppmvd @ 12% CO_2	Rated ≥ 5 MMBTU/hr & input ≥ 90,000 therms/yr	15 consecutive minutes for gaseous and nongaseous Rolling three hour average for biomass firing		Equipment rating < 5 MMBTU/hr; Boilers used by electric utilities to generate electricity; Process heaters, kilns, & furnaces where products of combustion come in direct contact with heated material; Waste heat recovery boilers on exhaust of combustion turbines or reciprocating internal combustion engines; Units taken out of service before 5/31/97; Low fuel usage (using < 90,000 therms/yr).
		BARCT - gaseous fuel firing BARCT - nongaseous fuel firing	30 ppmvd @ 3% O_2 40 ppmvd @ 3% O_2 70 ppmvd @ 12% CO_2	Rated ≥ 5 MMBTU/hr & input ≥ 90,000 therms/yr			
		Emergency standby units firing nongaseous fuel	150 ppmvd @ 3% O_2	Rated ≥ 5 MMBTU/hr & input ≥ 90,000 therms/yr			
		Low fuel usage or units which will be removed from service by 5/31/97	maintain stack-gas O_2 @ ≤ 3.00% by volume or tune once/year	Rated ≥ 5 MMBTU/hr & input < 90,000 therms/yr			
Adopted 6/1/95	Stationary Internal combustion engines located at major (pte > 25 tpy) stationary source of NO_x	RACT - spark ignited rich burn RACT - spark ignited lean burn RACT - compression ignited	50 ppmvd @ 15% O_2 125 ppmvd @ 15% O_2 700 ppmvd @ 15% O_2	After 7/1/95		Source testing every 8,760 hours of operation or 5 years whichever is shorter	Emergency standby; Agricultural operations; Mounted on test stands used for evaluating engine performance; Used exclusively for research, design & evaluation of emission control devices; nonroad internal combustion engines; Motor vehicle engines; Internal combustion engines used as support for flight line operations.
		BARCT - spark ignited rich burn BARCT - spark ignited lean burn BARCT - compression ignition engine	25 ppmvd @ 15% O_2 65 ppmvd @ 15% O_2 80 ppmvd @ 15% O_2 or 90% NO_x reduction by volume	Sliding scale of size versus hours of operation for exemption rich burn and compression ignition			
Adopted 4/6/95	Stationary gas turbines	Gas turbines - gaseous fuel " - liquid fuel	42.0 ppmvd @ 15% O_2 65.0 ppmvd @ 15% O_2	≥ 0.3 MW or ≥ 0.3 and < 2.9 MW or ≥ 2.9 and operated < 877 hrs/yr	Average of 3 runs each at 15 minutes	Annual testing	Emergency standby units; Units removed from service prior to 5/31/97; Laboratory units used in research & testing for the advancement of gas turbine technology; Start-up & shutdown;
		Gas turbines - gaseous fuel " - liquid fuel	25.0 ppmvd @ 15% O_2 65.0 ppmvd @ 15% O_2	Rated ≥ 2.9 & < 10 MW and operated ≥ 877 hrs/yr			
		Gas turbines w/o SCR - gas " - liquid	15.0 ppmvd @ 15% O_2 42.0 ppmvd @ 15% O_2	Rated ≥ 10.0 MW & operated ≥ 877 hrs/yr			
		Gas turbines with SCR - gas " liquid	9.0 ppmvd @ 15% O_2 25.0 ppmvd @ 15% O_2	Rated ≥ 10.0 MW & operated ≥ 877 hrs/yr			
		Gaseous fuel Liquid fuel	42 ppmvd @ 15% O_2 65 ppmvd @ 15% O_2	Rated ≥ 4.0 MW Operating < 877 hours/yr			

Summary of Connecticut Rule (Adopted May 1994?)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
All counties							
Prior to May 31, 1995	Turbines	Turbine engine (gas or oil)	0.9	Reciprocating engine mrc > 3 MMBtu/hr or other fuel burning (including process heating) equipment mrc > 5 MMBtu/hr or waste combustor with design capacity > 2000 lbs/hr waste or sources in serious area with pte > 274 lbs/day or in severe area with pte > 137 lbs/day from 5/1 - 9/30			Sources with actual emissions < 25 tpy in severe area; or < 50 tpy in serious area; Emergency generators
	Cyclone furnaces	Cyclone furnace (gas, oil, or coal)	0.9				
	Boilers	Fast-response double-burner Naval boiler (gas and oil) " (coal)	0.5 0.9				
		Other boiler mrc>250 (Gas, coal) " (oil)	0.9 0.3				
		Other boiler <250 (gas) " (oil) " (coal)	0.2 0.3 0.9				

Summary of Connecticut Rule (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
After May 31, 1995	Turbines	Turbine engine >100 mrc " (gas) " (resid oil) " (other oil)	 55 ppmvd N/A 75 ppmvd	Reciprocating engine mrc > 3 MMBtu/hr or other fuel burning (including process heating) equipment mrc > 5 MMBtu/hr or waste combustor with design capacity > 2000 lbs/hr waste or sources in serious area with pte > 274 lbs/day or in severe area with pte > 137 lbs/day from 5/1 - 9/30	24 hour including startup, shutdown, and malfunction	Initial compliance test. CEM or emission test once every 5 years	Sources with actual emissions < 25 tpy in severe area; < 50 tpy in serious area; Emergency generators
		Turbine engine <100 mrc " (gas, other oil) " (resid oil)	 0.9 N/A				
	Cyclone furnaces	Cyclone furnace (gas, oil, or coal)	0.43				
	Boilers	Fast Response double-burner Naval boiler (gas) " (other fuel)	 0.20 0.30				
		Other boiler (gas, other oil) " (resid oil) " (coal)	 0.20 0.25 0.38				
	Fluidized bed combustor	Fluidized bed combustor (coal)	0.29				
	Reciprocating engines	Reciprocating engine (gas) " (non-resid oil)	2.5 g/bkhp-hr 8 g/bkhp-hr				

Summary of District of Columbia NO_x RACT Rule

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging Time	Testing	Exemptions
District of Columbia							
May 31, 1995	Steam Generating Units (Fossil-Fuel-Fired)	Tangential or Face Fired (oil)	0.30	MRC ≥ 50 but < 100 MMBtu/hr		CEM	Major stationary source with actual emissions < 50 tpy of NO_x in any year (before the installation of controls); Emergency standby engines (< 500 hrs/yr); Stationary combustion turbine with energy input of ≥ 100,000,000 Btu/hr operated < 500 hrs/yr.
		Tangential or Face Fired: dry bottom coal oil or oil/gas gas only	 0.43 0.25 0.20	MRC ≥ 100 MMBtu/hr			
		Stoker Fired: dry bottom coal	 0.43				
	Turbines	Simple Cycle (oil)	75 ppmvd @ 15% O_2				
	Asphalt Concrete Plant	Asphalt Concrete Plant	150 ppmvd @ 7% O_2	PTE 50 tpy			

Summary of Florida NO_x RACT Rule (Federal Register Notice approves on 1/11/95)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging Time	Testing	Exemptions
South Florida (Tampa/St. Pete is marginal and Jacksonville is transitional) Broward, Palm Beach, Dade counties							
March 13, 1995	Furnaces	Rear wall fired, forced circ., 16 burner, compact furnace: Natural gas Oil	 0.20 0.36		units with CEM 30-day rolling average		
		Front wall fired, natural circ., 18-burner, compact furnace Natural gas Oil	 0.40 0.53				
		Front wall fired, natural circ., 24 burner, compact furnace Natural gas Oil	 0.50 0.62				
		Tangentially fired, low heat release, large furnace - Natural gas	0.20				
	Turbines	Gas turbine - natural gas " - oil	0.50 0.90				
		Carbonaceous fuel other than waste-to-energy Waste-to-energy	5.0 0.9				
	Generators	Oil-fired diesel generator	4.75				
	Cement Plants		2.0				
	Other	Any other combustion source	0.50				

Summary of Georgia NO_x RACT Rule and Permits (Rule adopted ?)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Georgia Power - Yates plant Coweta county							
11/15/94	Source 4 comprised of unit 7	a low NO_x concentric firing system with separated overfire air on Unit 7	0.39 (average of 0.49 for all 4 sources -7 units)	Source Specific	30 day rolling average	CEM	
Georgia Proteins Company Forsyth county							
11/15/94	Feather dryer and boilers	6 boilers rated capacity of 30,000 to 75,000 lbs/hr steam and a 30 MMBTU/hr heat input boiler or dryer	0.1 shall not fire oil during May through September except to tune burners and air to fuel ratios	Source Specific			
Lockheed-Georgia Cobb county							
11/15/94	Boilers	1) B-7 boilers 2) annual tune-sups for combustion sources > 20 MMBTU/hr 3) fire only natural gas from May through September	0.15	Source Specific			
Owens-Brockway Glass Container Fulton county							
11/15/94	4 glass melting furnaces	1) glass melting furnaces 2) natural gas and/or propane exclusively	5.50 lbs NO_x/ton of glass produced	Source Specific			
Owens-Corning Fiberglass Corporation City of Fairburn							
11/15/94	Fiberglass insulation manufacturing facility	1) electric glass melting furnaces 2) natural gas and/or propane to fire all burners	13.5 lbs/ton glass pulled	Source Specific			

Summary of Georgia NO_x RACT Rule and Permits (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Transcontinental Gas Pipe Line Corporation Henry county							
11/15/94	Natural gas compressor station with fifteen gas-fired reciprocating engines and one gas-fired turbine	1) electronic ignition controllers 2) parametric emissions monitoring system (PEMS) for reciprocating compressor engines		Source Specific			
Atlanta Gas Light Company Clayton county							
5/31/95	Natural gas and propane liquefaction/ vaporization/ distribution facility	LNG Plant: 1) generators 2) boil-off compressors Propane-Air Plant 1) Regenerative compressors	139 ppmvd @ 15% O_2	Source Specific			
Austell Box Boacrd Corp. Cobb county							
5/31/95	Coal fired boiler 313 MMBTU/hr with spray dryer SO_2 control and baghouse particulate control	1) Coal fired boiler Mill 1 2) 36 MMBTU/hr boiler 3) 31 MMBTU/hr boiler 4) 23 MMBTU/hr boiler Mill 2 5) 78 MMBTU/hr boiler Sweetwater Mill 6) 92 MMBTU/hr boiler	Plant to submit proposal 3 year tune-ups; Valve stop on direct fired heater to restrain to 16 MMBTU/hr;	Source Specific		Timer on diesel fired emergency firewater pump motor for cumulative hours of operation	

Summary of Georgia NO_x RACT Rule and Permits (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Georgia Power Company - McDonough Plant Cobb county							
11/15/94	Fossil fuel-fired steam electric generating plant	Source 1 (Units 1&2) Four natural gas and distillate fuel oil fired turbines sources 5,6,7, and 8	0.45 Low NO_x burners with close coupled overfire air; Fire natural gas exclusively (May - September); Limit 2,000 hrs/yr; Maintenance requirements	Source Specific	30 day rolling average	CEM	
Georgia Power Company - Atkinson Plant Cobb county							
11/15/94	Steam electric generating plant	Unit 1,2,3, & 4 (natural gas or #2 fuel oil fired boilers) Sources 6,7,8, & 9 (natural gas and distillate fuel oil fired combustion turbines)	Fire natural gas exclusively (May - September); Limit 4 units in O_3 season to 3600 hrs; Limit combustion turbines to 2000 hrs.	Source Specific			
General Motors Corporation - Doraville Plant DeKalb county							
11/15/94	NO_x emitting fuel burning equipment	All NO_x emitting fuel burning sources	Burn only low NO_x emitting fuels-natural gas and propane-air mixture; Annual tune-ups for >20 MMBtu/hr sources	Source Specific			

Summary of Georgia NO_x RACT Rule and Permits (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Emory University DeKalb county							
11/15/94		Boiler 7 & 8	0.20 preferentially use 7 & 8	Source Specific			
		Boiler No. 5 or 6	Conduct performance test on 5 or 6 and if > 0.20, tune the boiler to reduce NO_x	Source Specific			

Summary of Kentucky NO_x RACT Rule Option 1 [Adopted 1993 (11/11/93 draft)]

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Jefferson county							
effective 1994	Boilers	Gas fired boiler	0.25	Stationary sources > 100 tpy NO_x, > 100 MMBtu/hr coal, oil or gas > 10 MMBtu/hr single burner gas	Utilities 30 day rolling average; Non-utility 3 hr average for gas and oil, 24 hour average for coal		
		Tangentially fired utility boilers	0.20				
		Wall-fired gas	0.2				
		Wall fired gas/oil	0.3				
		Wall fired coal	0.5				
		Stoker coal	0.35				
		Non-utility gas	0.20				
		Non-utility residual oil	0.30				
		Non-utility distillate	0.40				
		Non-utility coal	0.40				
		Non-utility other, gas	0.25				
	Engines	Gas fired internal combustion	14 g/bkhp-hr				
		Diesel fired internal combustion	10 g/bkhp-hr				
	Turbines	Gas turbine	75 ppmvd@ 15% O_2				

Summary of Massachusetts NO_x RACT Rule

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Massachusetts							
May 31, 1995	Large Boilers	Dry Bottom Boilers (coal): Tangential fired Face fired	 0.38 0.45	MRC ≥ 100 MMBtu/hr	One-hour average, unless CEMS used, then calendar day average	Annual stack test or CEMS	Facility has not emitted ≥ 50 tpy after 1989 and obtained permit; Facility does not operate 5/1-9/30 and pte < 50 tpy
		Stoker fired (other fuels)	0.33				
		Tangential fired: oil gas	 0.25 0.20	MRC ≥ 250 MMBtu/hr		CEMS	
		Oil or oil/gas: HRR ≤ 70,000 Btu/hr-ft^3 HRR > 70,000 Btu/hr-ft^3	 0.30 0.40	100 ≤ mrc < 250 MMBtu/hr		Annual stack test or CEMS	Boiler w/ mrc < 20 MMBtu/hr, pte < 50 tpy
		Gas fired only	0.20				
	Medium-size Boilers	Tangential, Face, or Stoker (solid fuels)	0.43	50 ≤ mrc < 100 MMBtu/hr	One-hour (CEMS - calendar day)	Annual stack test or CEMS	
		Tangential or Face: gas only distillate oil or oil/gas residual oil or oil/gas	 0.1 0.12 0.3				
	Small Boilers	Small Boiler	Annual tune-up	20 ≤ mrc < 50; mrc < 20 pte > 50 tpy			
	Stationary Combustion Turbines	Combined cycle: gas oil	 42 ppmvd@ 15% O_2 65 ppmvd@ 15% O_2	MRC ≥ 25 MMBtu/hr	Calendar day average	MRC (MMBtu/hr): ≥ 100 CEMS; <100 Stack or CEMS	Stationary combustion turbines w/ MRC < 25 MMBtu/hr
		Simple cycle: gas oil	 65 ppmvd@ 15% O_2 100 ppmvd@ 15% O_2			Annual stack test	
	Stationary Reciprocating Internal Combustion Engine	Rich burn gas	 1.5 g/bkhp-hr	MRC ≥ 3 MMBtu/hr	Calendar day average	MRC (MMBtu/hr): ≥ 30 CEMS; <30 initial Stack	Stationary RICE MRC < 3 MMBtu/hr
		Lean burn gas oil or dual fired	 3.0 g/bkhp-hr 9.0 g/bkhp-hr				
	Glass Melting Furnaces	Glass Melting Furnace	5.3 lbs/ton glass	Maximum prod. rate of 14 tons glass/day	Calendar day average	Annual stack test or CEM	Max. Prod. rate < 14 tons glass/day
	Miscellaneous			Any emissions unit w/ pte ≥ 25 tpy at a facility w/ pte ≥ 50 tpy (before controls)			Any furnace, kiln, dryer, oven w/ pte < 25 tpy; Any incinerator w/ pte < 25 tpy

Summary of Maryland NO_x RACT Rule

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging Time	Testing	Exemptions
A. Baltimore City, Counties: Anne Arundel, Baltimore, Carroll, Cecil, Harford, Howard B. Counties: Calvert, Charles, Frederick, Montgomery, Prince George's C. Counties: Allegany, Caroline, Dorchester, Garrett, Kent, Queen Anne's, St. Mary's, Somerset, Talbot, Washington, Wicomico, Worcester							
May 31, 1995	Furnaces	Tangential-Fired: gas only gas/oil coal (dry bottom) coal (wet bottom)	 0.20 0.25 0.38 1.00	Refer to areas listed above Facilities with pte... >25 tpy in "A List" areas >50 tpy in "B List" areas >100 tpy in "C List" areas	24 hour average		
		Wall-Fired: gas only gas/oil coal (dry bottom) coal (wet bottom)	 0.20 0.25 0.38 1.00				
		Cyclone: gas only gas/oil coal (dry bottom) coal (wet bottom)	 NA 0.43 NA 0.55				

Summary of Maine Rule (Adopted ?)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Moderate areas: Know and Lincoln Cos., Lewistown-Auburn, Portland, Androscoggin, Kennebec, Cumberland, Sagadahoc, York							
August 3, 1994	Large Boilers	Oil and multiple fuel fired	0.30	MRC > 1500 MMBtu/hr	24-hour block average	CEM (req. change from 5/31/95 to 5/31/97)	NO_x emitting equipment with PTE < 10 tpy; Emergency standby engines operating < 500 hours during consecutive 12 month period
	Mid-size boilers	Oil, biomass, biomass and oil, biomass and fuels other than coal fired	0.30	MRC > 50 and < 1500 MMBtu/hr	One-hour average (CEM: 24-hour)	CEM for mrc > 200 MMBTU/hr	
		Biomass and coal fired	0.38				
	Kraft recovery boiler	Kraft recovery boiler	120 ppmvw @ 8% O_2 or 12% CO_2	Kraft recovery boilers	24-hour block average	CEM	
	MgO recovery boiler	MgO recovery boiler: during acidification:	250 ppmvw @ 4% O_2 1200 ppmvw @ 12% O_2	MgO recovery boilers	24-hour block average	CEM	
	Lime kiln	Lime kiln	120 ppmvw @ 10% O_2	Lime Kilns	One-hour average	Stack tests	
	RDF MSW incinerators	Refuse derived fuel municipal solid waste incinerators	180 ppmvw @ 7% O_2	RDF MSW incinerators	24-hour block average	CEM	
	Mass burn MSW incinerators	Mass burn municipal solid waste incinerator	200 ppmvw @ 7% O_2	Mass burn MSW incinerators	24-hour block average	CEM	
				Any existing stationary source with PTE > 100 tpy			

Summary of North Carolina NO_x RACT Rule (Adopted ?)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Charlotte, Greensboro, Raleigh Counties: Mecklenburg, Gaston, Davidson, Forsyth, Guilford, Davie, Durham, Wake, Granville (4/1-10/1)							
April 1, 1995	Utility boiler	Tangential firing dry bottom coal	0.45		24-hour rolling average (4/1-10/1); 30 day rolling average other times	CEM	Sources exempt from permits; Incinerators, thermal or catalytic oxidizers used for control of air pollution; Emergency generators; Emergency use internal combustion engines; Stationary combustion turbines built before 1/1/79 used < 16 hrs/yr; Facilities with PTE < 100 tpy or 560 lbs/calendar day from 4/1 to 10/31
		Wall firing dry bottom coal	0.50				
		Tangential - oil and/or gas	0.20				
		Wall firing - oil and/or gas	0.30				
	Non-utility boilers and process heaters		annual tune-ups	MRC ≤ 50 MMBtu/hr			
	Non-utility boilers and process heaters	Tangential or Wall wet bottom - coal	1.0	MRC > 250 MMBtu/hr	24-hour rolling average (4/1-10/1); 30 day rolling average other times	CEM	
		Tangential dry bottom - coal	0.45				
		Wall dry bottom - coal	0.50				
		Stoker or other dry bottom - coal	0.40				
		Wall firing, wood, refuse, oil and/or gas	0.20				
		Tangential firing, wood or refuse, oil and/or gas	0.30				
	Non-utility boilers and process heaters		Install combustion modification technology & annual tune-ups or above	MRC > 50 and ≤250 MMBtu/hr		Annual source testing	
April 1, 1995	Stationary gas turbines	Gas-fired Oil fired	75 ppmv @ 15% O_2 95 ppmv @ 15% O_2	MRC > 100 MMBtu/hr	For CEM: 24-hour rolling average (4/1-10/1); 30 day rolling average other times	CEM for mrc > 250 MMBtu/hr; Annual source testing for mrc ≤ 250 MMBtu/hr	Sources exempt from permits; Incinerators, thermal or catalytic oxidizers used for control of air pollution; Emergency generators; Emergency use internal combustion engines; Stationary combustion turbines built before 1/1/79 used < 16 hrs/yr; Facilities with PTE < 100 tpy or 560 lbs/calendar day from 4/1 to 10/31
	Stationary internal combustion engine > 650 horsepower	Rich or lean burn gaseous fuel Compression ignition - liquid fuel	2.5 g/hp-hr 8.0 g/hp-hr	MRC > 650 hp		Annual source testing	

Summary of New Hampshire NO_x RACT Rule (Adopted 5/20/94)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
All counties							
5/31/95	Utility boilers, Steam Electric boilers	Wet-bottom boilers firing coal tangential or face fired cyclone-fired < 320 MW cyclone-fired > 320 MW	 1.0 0.92 1.4 or SNCR or equiv.	MRC: Utility boilers > 50 MMBtu/hr; Steam Electric boilers > 50 MMBtu/hr and < 100 MMBtu/hr	24-hr calendar day average	CEM	
		Dry-bottom boilers coal or oil tangential-fired face-fired stoker-fired	 0.38 0.50 0.30				
		Boilers firing oil, oil/gas tangential or face-fired oil face-fired gas, gas/oil tangential gas, gas/oil	 0.35 0.25 0.25				
		Boilers firing gas	0.20				
		Boilers firing wood traveling, shaker, vibrating stationary grate	 0.33 0.25				
		Wet-botton, cyclone fired boiler between May 31, 1995 through May 31, 1999 From June 1 through May 31	Shall not exceed 35.4 tons/24-hour calendar day. Shall not exceed 12,921 tons.	MRC: Utility boiler > 320 MW; Steam electric boilers > 100 MMBtu/hr			

Summary of New Hampshire NO_x RACT Rule (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
5/31/95	Industrial boilers	Dry-bottom boilers (coal) tangential-fired face-fired stoker-fired	 0.38 0.50 0.30	MRC > 50 MMBtu/hr	24-hr calendar day average	CEM	
		Tangential or face-fired (oil) No. 2 fuel oil Nos. 4, 5, or 6	 0.12 0.30, LNB or equivalent	MRC > 50 but < 100 MMBtu/hr			
		Boilers firing exclusively gas	0.10, LNB or equivalent	MRC > 50 MMBtu/hr			
		Tangential or face fired (oil/gas) Gas & No. 2 fuel oil Gas & Nos. 4, 5, or 6 oil	 0.12 0.30, LNB, or equivalent	MRC > 50 but < 100 MMBtu/hr			
		Boilers firing wood, wood/oil traveling, shaker, vibrating stationary	 0.33 0.25	MRC > 50 MMBtu/hr			
		Wet-bottom firing coal tangential or face-fired cyclone-fired	 1.0 0.92	MRC > 100 MMBTU/hr			
		Tangential or face-fired oil gas or oil/gas	 0.30, LNB, or equivalent 0.25	MRC > 100 MMBtu/hr			

Summary of New Hampshire NO_x RACT Rule (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
2/19/94	Stationary combustion turbines	Combined and regenerative cycle gas-fired w/o oil back-up gas fired with oil back-up operating on gas operating on oil oil fired	 42 ppmvd @ 15% O_2 42 ppmvd @ 15% O_2 65 ppmvd @ 15% O_2 65 ppmvd @ 15% O_2	MRC > 25 MMBtu/hr	Hourly average	CEM	
		Simple cycle gas-fired w/o oil back-up gas fired with oil back-up operating on gas operating on oil oil fired	 55 ppmvd @ 15% O_2 55 ppmvd @ 15% O_2 75 ppmvd @ 15% O_2 75 ppmvd @ 15% O_2	MRC > 25 MMBtu/hr			
	Stationary internal combustion engines	Rich burn gas-fired units Lean burn gas-fired oil-fired	1.5 g/bkhp-hr 2.5 g/bkhp-hr 8.0 g/bkhp-hr	MRC > 4.5 MMBtu/hr	Hourly average	CEM	
	Asphalt plant dryer	Asphalt plant rotary dryers for batch type and drum mix type asphalt plants	0.12 lbs/ton asphalt produced	MRC > 26.2 MMBtu/hr	Hourly average	CEM	
	Incinerators	Incinerators (other than those combusting sewage sludge) 24-hour calendar day average	0.53	Input > 85 tons/day of waste	24-hour average	CEM	
	Wallboard manufacturing facilities	Wallboard dryers, calcining mills, calciners, and gypsum rock dryers Firing natural gas or #2 oil Firing #4, #5, or #6 oil	 0.10, LNB, or equivalent 0.30, LNB, or equivalent	PTE > 50 tpy	Hourly average	CEM	

Summary of New Hampshire NO_x RACT Rule (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
5/31/95	Emergency generators		Limited to < 500 hours operation/12 month consecutive period	PTE > 50 tpy			
		Stationary combustion turbines or internal combustion engines (operating as emergency generators after 5/31/95)	Annually tune and adjust				
	Auxiliary boilers	All fuels	0.20	PTE > 50 tpy	24-hour average	CEM	
	Load Shaving Units	Stationary combustion turbines operating as load shaving units all fuels	0.90	PTE > 50 tpy	Hourly average	CEM	

Summary of New Jersey NO_x RACT Rule

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging Time	Testing	Exemptions
New Jersey							
December 20, 1993	Utility Boiler	Tangential: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 0.20 0.20 0.38 1.00	All Utility Boilers		CEMS	Coal-fired, wet bottom utility boiler (tang. or face fired) can comply by combusting natural gas on a seasonal basis (from 5/1 to 9/30)
		Face: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 0.20 0.28 0.45 1.00				
		Cyclone: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 0.43 0.43 0.55 0.60				
	Repowered Utility Boilers	Tangential: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 0.1 0.1 0.2 0.2	All Repowered Utility Boilers		CEMS	Demonstrate that there is insufficient supply of water for NO_x emission control, and no suitable dry low NO_x combustor commercially available
		Face: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 0.1 0.1 0.2 0.2				
		Cyclone: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 NA 0.1 NA 0.2				

Summary of New Jersey NO_x RACT Rule (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging Time	Testing	Exemptions
December 20, 1993	Non-Utility Boilers	All types	Annual adjustment of combustion process	20 < mrc ≤50 MMBtu/hr			
		Tangential: natural gas #2 fuel oil other liq. fuels coal (dry bottom) coal (wet bottom)	 0.1 0.12 0.3 0.38 1.0	50<mrc ≤100 MMBtu/hr			
		Face: natural gas #2 fuel oil other liq. fuels coal (dry bottom) coal (wet bottom)	 0.1 0.12 0.3 0.43 1.0				
		Cyclone: natural gas #2 fuel oil other liq. fuels coal (dry bottom) coal (wet bottom)	 0.1 0.12 0.3 0.55 0.55				
		Tangential: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 0.20 0.20 0.38 1.0	MRC <100 MMBtu/hr		Non-Utility Boilers: mrc ≥ 250 MMBtu/hr must use CEMS	
		Face: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 0.20 0.28 0.45 1.0				
		Cyclone: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 0.43 0.43 0.55 0.60				

Summary of New Jersey NO_x RACT Rule (continued)

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging Time	Testing	Exemptions
December 20, 1993	Turbines	Simple Cycle: gas oil	 0.2 0.4	MRC ≥30 MMBtu/hr			
		Combined Cycle: gas oil	 0.15 0.35				
	Stationary Internal Combustion Engines	Rich burn: gaseous Lean burn: gaseous liquid fuel	 1.5 g/hp-hr 2.5 g/hp-hr 8.0 g/hp-hr	Capable of >500 hp			
	Glass Mftg. Furnaces	Commercial container glass: Specialty container glass: Borsilicate recipe glass:	5.5 lbs/ton glass 11 lbs/ton glass 30% reduction from baseline	Commercial, ≥14 tons glass/day and pte >10 tpy; Specialty, ≥7 tons glass/day and pte >10 tpy; Borosilicate recipe glass, ≥5 tons glass/day and pte >10 tpy			
	Asphalt Plants	Batch type or drum mix asphalt plant	200 ppmvd@ 7% O_2	PTE 25 tpy			

NOTE: Emissions averaging is permitted for an owner or operator of two or more source operations or items of equipment.

Summary of New York NO_x RACT Rule

Effective date	Source	Description	Limit (lbs/MMBTU)	Applicability	Averaging Time	Testing	Exemptions
New York City (includes Nassau, Suffolk, Westchester, and Rockland Counties), Lower Orange County, and remainder of New York State							
2/19/94	Very Large Boilers	Tangential: gas only gas/oil coal (dry bottom) coal (wet bottom)	 0.20 0.25 0.42 1.00	MRC >250 MMBtu/hr	24-hour average (from 9/16 to 4/30 a 30 day rolling average may be used)	CEMS	
		Wall: gas only gas/oil coal (dry bottom) coal (wet bottom)	 0.20 0.25 0.45 1.00				
		Stokers: gas only gas/oil coal (dry bottom) coal (wet bottom)	 NA NA 0.3 (0.33 if ≥ 25% of fuel is other solids) NA				
		Cyclone: gas only gas/oil coal (dry bottom) coal (wet bottom)	 NA 0.43 NA 0.60				
	Large Boilers:	gas only gas/oil pulverized coal coal (overfeed stoker)	0.20 0.30 0.50 0.3 (0.33 if ≥ 25% of fuel is other solids)	100<mrc ≤ 250 MMBtu/hr	One-hour average (unless CEMS is used, then 24 hour)	Stack tests or CEMS	
	Mid-Size Boilers:	gas only distillate oil residual oil	0.10 0.12 0.30	50<mrc ≤ 100 MMBtu/hr			
2/19/94	Small Boilers:	various fuels	Annual tune-up as described in paragraph 227-2.2(b)(19)	20<mrc≤50 MMBtu/hr, or 10<mrc≤50 MMBtu/hr for coal or resid. oil fired units in NYC			
	Combustion Turbines:	Simple Cycle: gas only multiple fuels	 50 ppmvd@ 15% O_2 100 ppmvd@ 15% O_2	MRC≥10 MMBtu/hr	One-hour average (unless CEMS is used, then 24 hour)	Stack or CEMS (combined cycle must use CEMS if mrc>250 MMBtu/hr)	For peaking combustion turbines that operate <500 hrs from 9/16 to 4/30, limits are only applicable from 5/1 to 9/15
		Combined Cycle: gas oil	 42 ppmvd@ 15% O_2 65 ppmvd@ 15% O_2				
		Firing primarily with fuels not listed above (e.g. landfill gas)	Case-by-case determination of emission limits and RACT will be made				
	Internal Combustion Engines:	Rich burn: Lean burn: gas only other fuel	2.0 g/bkhp-hr 3.0 g/bkhp-hr 9.0 g/bkhp-hr	≥225 hp in NY City & Orange Co.; ≥400 hp in rest of NY State	One-hour (unless CEMS is used, then 24 hour)	Stack tests or CEMS	Emergency power generating units that operate <500 hrs/yr

NOTE: 1. For Very Large Boilers, Large Boilers, and Mid-size Boilers which fire alternative fuels and/or with alternative boiler configurations, and for other combustion sources:
Source is to submit RACT proposal for NY approval.
2. Emissions averaging is permitted for an owner or operator of two or more source operations or items of equipment.
3. In a separate NO_x RACT rule adopted by NY, with an effective date of September 23, 1994, the following sources were affected:
General Process Emission Sources; By-Product Coke Oven Batteries; Iron and/or Steel Processes; and Portland Cement Plants

These sources are to submit a compliance plan including a NO_x RACT analysis for approval by NY.

Summary of Ohio NO_x RACT Rule

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Ashtabula, Clark, Cuyahoga, Geauga, Greene, Lake, Lorain, Lucas, Medina, Miami, Montgomery, Portage, Summit, or Wood Counties							
6/21/94	Utility Boilers	Tangential fired: dry bottom oil, gas, or oil/gas	 0.45 0.20	All Utility Boilers	One hour average; If CEM, 30 day rolling average		Any boiler w/ mrc < 100 MMBtu/hr; Any emergency standby boiler oper. < 500 hrs/consec. 12 mos., keep log; Any auxiliary boiler
		Wall fired: dry bottom wet bottom oil, gas, or oil/gas	 0.50 1.0 0.30				
		Stoker fired: spreader overfeed	 0.50 0.40				
	Large Industrial, Commercial, or Institutional Boilers	Gaseous fuel only Oil or oil/gas	0.20 0.30	All Large Industrial, Commercial, and Institutional Boilers	One hour average; If CEM, 30 day rolling average		
		Wall fired: dry bottom wet bottom	 0.50 1.0				
		Tangential fired: dry bottom	 0.45				
		Stoker fired: spreader overfeed	 0.50 0.40				
	Stationary Combustion Turbines	Gaseous fuel only Distillate oil or diesel fuel	75 ppmvd@ 15% O_2 110 ppmvd@ 15% O_2	All Stationary Combustion Turbines	One hour; 30 day CEM		Any emergency standby turbine oper. < 500 hrs/consec. 12 mos., keep log; Any turbine w/ mrc < 20 MMBtu/hr

Summary of Ohio NO_x RACT Rule (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
	Stationary Internal Combustion Engines	Rich burn - gaseous only: a. (see applicability) b.	9.5 g/hp-hr 2.5 g/hp-hr	a. 500 < hp ≤ 1000 b. hp > 1000	One hour average; If CEM, 30 day rolling average		Any emergency standby engine oper. < 500 hrs/consec. 12 mos., keep log; Any engine w/ output capacity < 500 hp
		Lean burn - gaseous only: a. b.	10.0 g/hp-hr 3.0 g/hp-hr	a. 500 < hp ≤ 1000 b. hp > 1000			
		Diesel fuel or distillate oil: a. b.	8.5 g/hp-hr 2.5 g/hp-hr	a. 500 < hp ≤ 1800 b. hp > 1800			
		Dual fuel: a. b.	6.0 g/hp-hr 2.5 g/hp-hr	a. 500 < hp ≤ 2000 b. hp > 2000			
	Other sources			Any source located at a facility w/ pte 100 tpy from all sources at that facility			Any start-up unit; Any black start unit; Any peaking unit; Any space heating unit; Any R&D source; Any jet engine test cell; Any air pollution control device; Any municipal waste combustor; Any source other than a boiler, turbine, or engine that emits < 50 tpy; Any source not in operation 4/1-10/31

Summary of Pennsylvania NOx RACT Permits

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability (see Description)	Averaging time	Testing	Exemptions
Westwood Energy Properties, Inc. (c/o CRS Sirrine, Inc.) Schuylkill County							
12/27/94 (Issued)	Electric Generation Plant: Boiler	Fluidized Bed Boiler with mrc 423 MMBtu/hr	0.30	Source Specific	30 day rolling average	Continuous recording of emissions	
Pennsylvania Power and Light Co. Montour County							
5/31/95	Utility Boilers	Pulverized bituminous coal tangentially-fired boilers, Units 1 and 2	0.50	Source Specific	30 day rolling average	Continuous Emission Monitors	
Pennsylvania Power and Light Co. Montour County							
12/27/94 (Issued)	Auxiliary Boilers	Auxiliary boilers (# 11A and 11B) with mrc 269 MMBtu/hr, No. 2 fuel oil fired (restricted to max. capacity fact. of 20% for each boiler)	0.15 (Annual emissions not to exceed 34 tpy each)	Source Specific			
PECO Energy Company Delaware County							
7/25/95	Utility and Auxiliary Boilers	Tangentially-fired Combustion Eng. coal burning units: No. 1 (mrc- 2704 MMBtu/hr) No. 2 (mrc- 2808 MMBtu/hr)	≤ 0.45 ≤ 0.45	Source Specific	30 day rolling average	CEMS	
		Auxiliary boilers (A, B, and C) each with mrc 124 MMBtu/hr (primary fuel - natural gas, back-up fuel - No. 2 oil)	≤ 0.14 (while burning primary fuel)			periodic stack testing	

Summary of Pennsylvania NO_x RACT Permits (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability (see Description)	Averaging time	Testing	Exemptions
Pennsylvania Power and Light Co. Snyder County							
5/31/95	Utility Boilers	Boilers- Foster Wheeler front wall fired, burning pulverized bituminous coal, No. 2 oil used for ignition, start up, stabilization: Unit 3 (mrc 1277 MMBtu/hr) Unit 4 (mrc 1415 MMBtu/hr)	 0.5 0.5		30 day rolling average	CEM	

Summary of Rhode Island Rule (Adopted ?)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Rhode Island							
February 1, 1994	Utility boilers	Firing: natural gas or LP gas fuel oil	 0.2 0.25	Stationary source with PTE 50 tpy	24-hour average	CEM	Sources with PTE > 50 tpy but actual emissions < 50 tpy may apply for an exemption; Emergency standby internal combustion engines operated < 500 hours during consecutive 12 month period
	Industrial-Commercial-Institutional Boilers	Firing: natural gas distillate oil or LPG LNB & flue gas recirc. (10%) (residual oil)	 0.10 0.12	MRC > 50 MMBtu/hr	One-hour average	CEM or emissions testing	
			Tune the boiler once a year	MRC > 1 and < 50 MMBtu/hr			
	Internal Combustion Engine	Rich burn engines: natural gas	1.5 g/bkhp-hr	Capable of 400 hp	One-hour average	CEM or emissions testing	
		Lean burn engines: natural gas fuel oil	 2.5 g/bkhp-hr 9.0 g/bkhp-hr				

Summary of Tennessee NO_x RACT Rule (Adopted 8/10/93 Currently a state rule but not approved by EPA)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging time	Testing	Exemptions
Nashville Counties: Davidson, Rutherford, Sumner, Williamson, Wilson							
7/31/95	Utility Boilers	Tangentially fired utility boilers (coal)	0.45	MRC >600 MMBTU/hr	30 day rolling average		Facilities w/ PTE < 1 tpy NO_x or not operational 4/1 through 10/31
	Stationary sources			PTE > 100 tpy			

Summary of Texas NO_x RACT Rule

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging Time	Testing	Exemptions
Houston/Galveston and Beaumont/Port Arthur areas							
06/09/93	Utility Electric Generation Equipment: Utility Boilers (UB), Steam Generators (SG), Auxiliary Steam Boilers (ASB), and Stationary Gas Turbines (SGT)	UB, SG, or ASB: operating on natural gas or a combination of natural gas and waste oil	0.26	Utility boilers, steam generators, auxiliary steam boilers, and gas turbines used in an electric power generating system within the areas listed above (Hou./Galv. or Beaumont/ Port Arthur)	24 hour rolling average	CEMS	Any new units placed into service after November 15, 1992; Any UB, SG, or ASB with an annual heat input $\leq 2.2(10^{11})$ Btu/yr; SGT and Engines which are: A) used solely to power other engines or gas turbines during start-up or B) demonstrated to operate less than 850 hours per year based on a 12 month rolling average.
			0.20		30 day rolling average		
		UB or SG firing coal: Tangentially-fired Wall-fired	 0.38 0.43		24 hour rolling average		
		UB, SG, or ASB: firing fuel oil only	0.30				
		UB, SG, or ASB: firing fuel oil and natural gas mixture	Limit = [a(0.26)+b(0.30)]/(a+b) a= % nat. gas heat input b= % fuel oil heat input				
		SGT with MW rating $\geq$ 30 MW and annual electric output of $\geq$ (2500 hrs x MW rating): firing natural gas firing fuel oil	 42 ppmvd @ 15% O_2 65 ppmvd @ 15% O_2				
		SGT used for peaking, annual electric output of < (2500 hrs x MW rating): firing natural gas firing fuel oil	 0.20 0.30				

Summary of Texas NO_x RACT Rule (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging Time	Testing	Exemptions
06/23/95	Alternative System-Wide Emission Specs?: UB, SG, ASB, SGT	Gas-fired UB with a permit issued after 3/3/82 with emission limit of 0.12	0.12			CEMS	
		UB or STG: coal-fired gas-fired					
06/09/95	Boilers, gas-fired	Low Heat Release (LHR) Boilers w/no preheated air or air <200°F	0.10	Each commercial, institutional, and industrial boiler or process heater w/ mrc ≥ 100.0 MMBtu/hr of heat input	For boilers and process heaters: 1) w/CEM or PEM 30 day rolling average; 2) w/out CEM or PEM mass NO_x/hr on block one-hour average must be used.	CEMS	Any commercial, institutional, or industrial boiler or process heater with mrc <100 MMBtu/hr; Any low annual capacity factor boiler, process heater, stationary gas turbine, or stationary internal combustion engine as defined in 117.10; Boilers and industrial furnaces which are regulated as existing facilities by the USEPA at 40 CFR Part 266, Subpart H; Fluid catalytic cracking units (incl. CO boilers); Supplemental waste heat recovery units used in turbine exhaust ducts; Any lean-burn stationary RICE; and Any stationary gas turbine with a MW rating <10.0 MW
		LHR Boilers w/ preheated air: 200°F ≤T_{air}< 400°F	0.15				
		LHR Boilers w/ preheated air ≥ 400°F	0.20				
		High Heat Release (HHR) Boilers w/no preheated air or air <250°F	0.20				
		HHR Boilers w/ preheated air: 250°F ≤T_{air}< 500°F	0.24				
		HHR Boilers w/ preheated air ≥ 500°F	0.28				

Summary of Texas NO_x RACT Rule (continued)

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging Time	Testing	Exemptions
06/09/95	Process Heaters (PH), gas-fired	PH w/ preheated air <200°F	0.10	Each commercial, institutional, and industrial boiler or process heater w/ mrc ≥ 100.0 MMBtu/hr of heat input	For boilers and process heaters: 1) w/CEM or PEM 30 day rolling average; 2) w/out CEM or PEM mass NO_x/hr on block one-hour average must be used.	CEMS	Any commercial, institutional, or industrial boiler or process heater with mrc <100 MMBtu/hr; Any low annual capacity factor boiler, process heater, stationary gas turbine, or stationary internal combustion engine as defined in 117.10; Boilers and industrial furnaces which are regulated as existing facilities by the USEPA at 40 CFR Part 266, Subpart H; Fluid catalytic cracking units (incl. CO boilers); Supplemental waste heat recovery units used in turbine exhaust ducts; Any lean-burn stationary RICE; and Any stationary gas turbine with a MW rating <10.0 MW
		PH w/ preheated air: 200°F ≤T_{air}< 400°F	0.13				
		PH w/ preheated air ≥400°F	0.18				
		PH w/ firebox temp. <1400°F	0.10				
		PH w/ firebox temp: 1400°F ≤T_{fbox}< 1800°F	0.125				
		PH w/ firebox temp. ≥1800°F	0.15				
	Boilers and Process Heaters	Liquid-fueled boilers and process heaters	0.30				
		Wood-fueled boilers and process heaters	0.30				
	Stationary Gas Turbine	SGT w/ MW rating ≥10.0 MW	42 ppmvd @ 15% O_2				
	Reciprocating Internal Combustion Engine (RICE)	Gas-fired, rich-burn, stationary RICE	2.0 g/hp-hr				
06/09/93	Absorbers	Absorbers of any Adipic Acid production units	2.5 lbs/ton adipic acid produced	Each adipic or nitric acid production unit at affected facilities in the areas	24 hour rolling average	CEMS	
		Absorbers of any Nitric Acid production units	2.0 lbs/ton 100% nitric acid produced				

Summary of Virginia NO_x RACT Rule

Effective date	Source	Description	Limit (lbs/MMBtu)	Applicability	Averaging Time	Testing	Exemptions
Northern Virginia, Richmond, Hampton Roads							
January 1, 1993	Steam Generating Units and Process Heaters	Tangential and Face (Face includes wall, opposed, and vertical fired): gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 0.20 0.25 0.38 1.00	All Stationary Sources with pte ≥ 50 tpy	Must demonstrate compliance on a daily basis		Process operations with a process weight rate capacity of <100 lbs/hr; Any combustion unit using solid fuel with mrc <.35 MMBtu/hr; Any combustion unit using liquid fuel with mrc <1 MMBtu/hr; Any combustion unit using gaseous fuel with mrc <10 MMBtu/hr; Demonstration of RACT is not required for: Any steam generating unit, process heater or gas turbine with mrc < 100 MMBtu/hr; Any combustion unit with mrc < 50 MMBtu/hr; Any stationary internal combustion engine with mrc < 450 hp
		Stokers: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 NA NA 0.4 NA				
		Cyclone: gas only gas or oil or both coal (dry bottom) coal (wet bottom)	 NA 0.43 NA 0.55				
	Turbines	Simple Cycle: gas oil	 42 ppmvd@ 15% O_2 65 ppmvd@ 15% O_2 for FBN < 0.015% 77 ppmvd@ 15% O_2 for FBN ≥ 0.015%				
		Combined Cycle: gas oil	 42 ppmvd@ 15% O_2 65 ppmvd@ 15% O_2 for FBN < 0.015% 77 ppmvd@ 15% O_2 for FBN ≥ 0.015%				