

CALIFORNIA GOOD NEIGHBOR
STATE IMPLEMENTATION PLAN
APPENDIX A

Facilities Targeted by the Interstate Transport Federal Implementation Plan

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Introduction

The following documentation is provided to address the facilities and requirements of the Federal Implementation Plan (FIP). This addresses the facilities/units identified by U.S. EPA, additional facilities/units identified by CARB and districts, current controls on existing units covered by the FIP, and regulations surrounding PSD and NSR for new sources in the State.

Most of the sources identified by the FIP have been found to be controlled at or above the level required by the FIP. As such, the reductions identified by U.S. EPA are not anticipated to result in the reductions in significant contribution necessary to address California's obligation to linked receptors. This determination is the reason why CARB is depending entirely on the mobile source control measure described in the main report for addressing its transport obligation.

Categories Targeted by FIP

The FIP's primary focus was on stationary sources to attain the requisite NO_x emissions reductions necessary to ensure the impact on downwind transport sites would drop below the one percent threshold. Detail is provided below on the facilities/units identified not only by U.S. EPA, but also those located by CARB and local air districts to ensure a comprehensive analysis of all potential facilities/units affected by the FIP.

The U.S. EPA, in its FIP, set forth which unit types (Table 1) would be covered by the FIP in the listed industries, the emission limits by unit type (Table 2), and the control technologies that could be utilized to reach those emissions limits (Table 3). The following tables are from the "Memo to Docket Non-EGU Applicability Requirements and Estimate Emissions Reductions and Costs;" Table 1 from Memo Table 2, Table 2 from Memo Table 3, and Table 3 from Memo Table 4. Further, Figure 1, below, documents the location of the sources identified in the FIP and the 0.70 ppm 8-hour ozone nonattainment areas in California. Figure 1 shows that most of these sources are located in an ozone nonattainment area.

Table 1: List of Unit Types Covered by the FIP

Industry	Emissions Unit Type	Applicability Requirements
Pipeline Transportation of Natural Gas	Reciprocating Internal Combustion Engines	Nameplate rating of ≥ 1000 braking horsepower (bhp)
Cement and Concrete Product Manufacturing	Kilns	Directly emits or has the potential to emit 100 tpy or more of NOX
Glass and Glass Product Manufacturing	Furnaces	Directly emits or has the potential to emit 100 tons per year (tpy) or more of NOX
Pulp, Paper, and Paperboard Mills	Boilers	Design Capacity of ≥ 100 mmBtu/hr
Solid Waste Combustors and Incinerators	Combustors or Incinerators	Design capacity ≥ 250 tons of waste/day

Table 2: List of Emission Limits by Unit Type Covered by the FIP

Industry	Emissions Unit Type	Form of Final Emissions Limits	Final Emissions Limits
Pipeline Transportation of Natural Gas	Reciprocating Internal Combustion Engines	Grams per horsepower per hours (g/hp-hr)	Four Stroke Rich Burn: 1.0 g/hp-hr Four Stroke Lean Burn: 1.5 g/hp-hr Two Stroke Lean Burn: 3.0 g/hp-hr
Cement and Concrete Product Manufacturing	Kilns	Pounds per ton (lbs/ton) of clinker	Long Wet: 4.0 lb/ton Long Dry: 3.0 lb/ton Preheater: 3.8 lb/ton Precalciner: 2.3 lb/ton Preheater/Precalciner: 2.8 lb/ton
Glass and Glass Product Manufacturing	Furnaces	lbs/ton glass produced	Container Glass Furnace: 4.0 lb/ton Pressed/Blown Glass Furnace: 4.0 lb/ton Fiberglass Furnace: 4.0 lb/ton Flat Glass Furnace: 7.0 lb/ton
Solid Waste Combustors and Incinerators	Combustors or Incinerators	ppmvd on a 24-hour averaging period and ppmvd on a 30-day averaging period	110 ppmvd on a 24-hour averaging period 105 ppmvd on a 30-day averaging period

Table 3: List of Control Technologies Assumed by the FIP

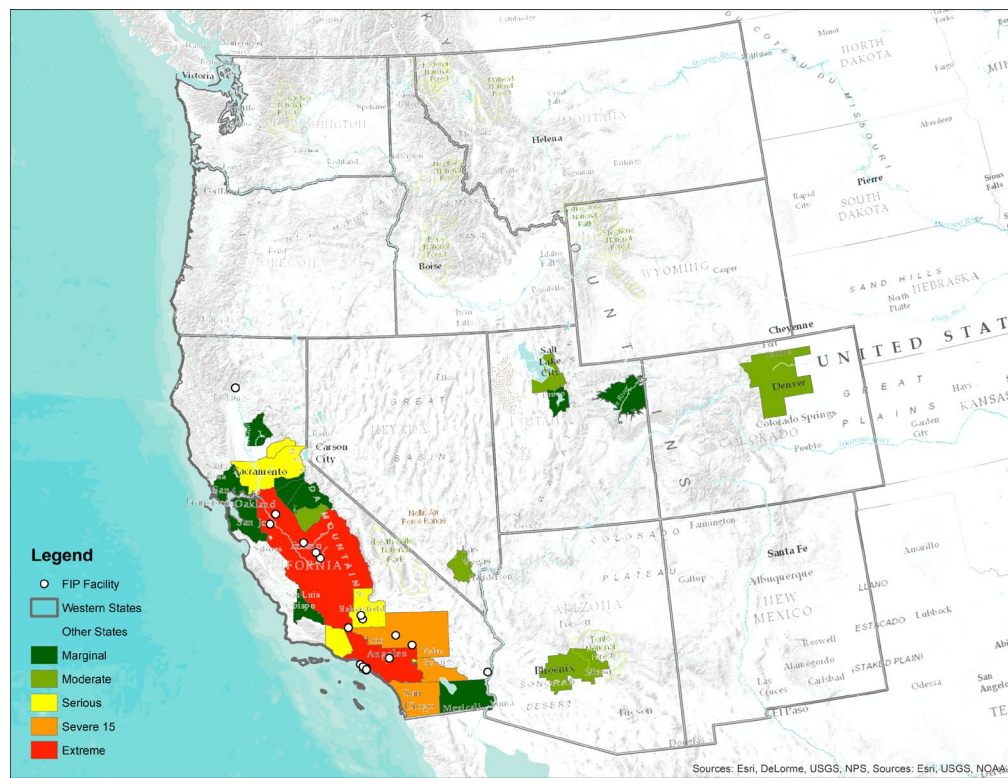
Industry	Emissions Unit Type	Assumed Control Technologies that Meet Final Emissions Limits
Pipeline Transportation of Natural Gas	Reciprocating Internal Combustion Engines	Layered Combustion (2-cycle Lean Burn) ^a SCR (4-cycle Lean Burn) NSCR (4-cycle Rich Burn)
Cement and Concrete Product Manufacturing	Kilns	SNCR
Glass and Glass Product Manufacturing	Furnaces	LNB
Pulp, Paper, and Paperboard Mills	Boiler	LNB + FGR
Solid Waste Combustors and Incinerators	Combustors or Incinerators	ANSCR ^b LN tm and SNCR ^{b,c}

a Several emissions units, or engines, in the 2019 inventory had Source Classification Codes (SCC) indicating that the units were reciprocating without specifying the type of engine. We assumed NSCR or layered combustion as the control for these emissions units.

B Municipal Waste Combustor Workgroup Report, prepared by the Ozone Transport Commission Stationary and Area Sources Committee, Revised April 2022.

C Covanta has developed a proprietary low Nox combustion system (LNTM) that involves staging of combustion air. The system is a trademarked system and Covanta has received a patent for the technology.

Figure 1: California Ozone Nonattainment Areas and FIP



A. Stationary Sources - EGUs

For stationary controls, it is common practice throughout the nation to target the large stationary sources, particularly EGUs, for NO_x control analyses and strategies. EGUs have often been targeted for further control strategies, given their historic potential to produce large, cost-effective emission reductions and were identified in the FIP for potential controls. Therefore, it is desirable to review California EGUs and their NO_x emission controls. Previous analysis and the U.S. EPA's findings have concluded that EGUs are adequately controlled in California and thus look to non-EGUs for additional reductions.

As stated above, and in 87 FR 31459¹, "...the EPA finds based on its own analysis that additional emissions reductions are not required from EGUs to address California's good neighbor obligations for the 2015 ozone NAAQS."

B. Stationary Sources - Non-EGUs

In the FIP, the U.S. EPA had identified California's non-EGU sources as the sole unit types with which controls are cost-effective and would provide for the emissions reductions necessary to fully eliminate California's significant contribution and interference with maintenance at linked sites for the 2015 0.070 ppm 8-hour ozone NAAQS.

Non-EGU sources are subject to stringent rules that limit NO_x emissions and have been approved into the California SIP. Per the 2012 CARB Emission Inventory, non-EGU stationary sources emitted 6.4 times more NO_x (80,431 tpy) than EGUs (12,649 tpy) in California, and yet despite this, still only represent under 13 percent of the total 2012 NO_x inventory for California.

In light of the control of such sources, there are a small number of large, non-EGU sources identified by the U.S. EPA that don't already have NO_x controls commensurate with the controls outline in the FIP. There are also a handful of sources which either should have been accounted for in the FIP, but do not appear to have been included or have rules which hadn't been adopted/updated so as to be reflected in the U.S. EPA's updated modeling. The process for identifying and evaluating these additional facilities and units is outlined below.

However, even accounting for this, further emission controls focusing on these non-EGU sources would be unlikely to reduce any potential impact on downwind states' air quality because such sources represent such a small fraction of the NO_x emitted by stationary sources in California and as stated, are controlled to the level or further of what the FIP requires. Therefore, despite emitting more NO_x than EGUs, non-EGUs not accounted for in the modeling do not emit sufficient NO_x to impact air quality in other states. As such, other

¹ Air Plan Disapproval; California; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards, 87 FR 31459 (May 24, 2023)

sources of NO_x reductions were necessary to meet the “significant contribution” threshold amount of NO_x determined by U.S. EPA.

C. Assessment of Facilities Subject to the FIP

As part of the FIP, the U.S. EPA published a list of facilities based on their data which have units which may need to be controlled to meet the reductions. However, the U.S. EPA acknowledged that the list may not be comprehensive depending on the accuracy of their database. As a result, CARB analyzed the latest inventory and produced a supplementary list of any facility which reported more than 100 tpy of NO_x emissions and proceeded to contact the relevant districts to ensure that all facilities either did not have units covered by the FIP, ensure that FIP covered units were adequately controlled, or ensure that FIP covered units which did not meet the level of reduction required by the FIP that efforts were underway to ensure relevant regulations were passed to ensure they would meet the limits if practicable. A detailed accounting of all relevant units, the status of relevant units, relevant regulations related to the FIP, and current disposition of said regulations and units is located in this appendix.

1. Bay Area Air Quality Management District (BAAQMD)

Reciprocating Internal Combustion Engines in Pipeline Transportation of Natural Gas

In BAAQMD’s jurisdiction, PG&E has a natural gas compressor engine at its Natural Gas Storage facility in Concord, CA. The engine is a 4,000 bhp, 2 stroke spark ignition, turbo charged, lean burn, prime engine. The engine identified as S-1, meets the FIP limits for Pipeline Transportation of Natural Gas of 3 g/hp-hr. The engine is limited to 65 ppmv of NO_x at 15% O₂ which equates to 27.6 tpy or 0.715 g/hp-hr.

Per Regulation 9, Rule 8² “9-8-206 Lean-Burn Engine: Any spark or compression ignited internal combustion engine that is designed to be operated with an exhaust stream oxygen concentration of 4%, by volume, or greater. The exhaust gas oxygen content shall be determined from the uncontrolled exhaust stream.”

Per Regulation 9-9-301 Emission Limits-Spark-Ignited Engines Powered by Fossil Derived Fuels, “Regulation 9-8-301.2 Lean Burn Engines: Effective January 1,2012, NO_x emissions shall not exceed 65 ppmv as corrected to 15% oxygen, dry basis.”

² Regulation 9 Inorganic Gaseous Pollutants, Rule 8 Nitrogen Oxides And Carbon Monoxide From Stationary Internal Combustion Engines (Adopted July 25, 2007), <https://www.baaqmd.gov/~media/dotgov/files/rules/reg-9-rule-8-nitrogen-oxides-and-carbon-monoxide-from-stationary-internal-combustion-engines/documents/rg0908.pdf> , last accessed: December 1, 2023

2. Eastern Kern Air Pollution Control District (APCD)

Cement and Concrete Product Manufacturing

Eastern Kern has three cement kiln facilities (Cement and Concrete Product Manufacturing) and meets the FIP limits. Current rule 425.3³ is applicable to preheater/precalciner and limits NOx emissions to 2.8 lb/ton of clinker produced. All three of the cement plants in Eastern Kern are using SNCR to have NOx emissions (1.5 ton/clinker) well below the limits of District Rule 425.3. The FIP limit is 2.8 lb/ton for preheater/precalciners. The same rule is also applicable to a facility whose preheater/precalciner system has NOx emissions of 2.5 lb/ton of clinker. The FIP limit is also 2.8 lb/ton.

Per rule 425-3, "V. Requirements

A. Emissions Limits: Effective March 8, 2018, No person shall operate a Portland cement manufacturing facility unless 30-operating day rolling average of NOx emissions from the kiln do not exceed:

1. 2.8 lb/ton of clinker produced; or
2. 3.4 lb/ton of clinker produced if low-NOx burner or low-NOx precalciner was installed and made operational by January 1, 2007."

3. Mojave Desert AQMD

Cement and Concrete Product Manufacturing

Mojave Desert has three cement manufacturing facilities with four kilns that fall under Cement and Concrete Product Manufacturing and meet the FIP limits. Current district Rule 1161⁴ is applicable to preheater/precalciner and limited to 2.8 lb NOx/ton of clinker, which matches the FIP limit for preheater/precalciners. No change is required or proposed to district Rule 1161 to meet the FIP emission limits.

³ EKAPCD 1 425.3

RULE 425.3 Portland Cement Kilns (Oxides of Nitrogen),
[http://www.kernair.org/Rule%20Book/4%20Prohibitions/425-3_Portland_Cement_Kilns_\(NOx\).pdf](http://www.kernair.org/Rule%20Book/4%20Prohibitions/425-3_Portland_Cement_Kilns_(NOx).pdf) , last accessed: December 1, 2023

⁴ Rule 1161 Portland Cement Kilns (Amended: 01/22/18, SIP approved July 3, 2023 88 FR 36249),
<https://www.mdaqmd.ca.gov/home/showpublisheddocument/4700/636522319978570000> , last accessed: December 1, 2023

From Rule 1161, page 2, "

(2) NO_x RACT Emission Limits – All periods except Start-up and Shut-down

- (a) Any Owner or Operator of a Kiln subject to this Rule shall not exceed the following NO_x Emission limits, calculated pursuant to Section (E)(1)(b), during periods of Operation other than Start-up and Shut-down:

MDAQMD Rule 1161
Portland Cement Kilns

-
- (i) For Preheater-Precalciner Kilns: 2.8 lb/ton of Clinker produced when averaged over any 30 consecutive day period; or,
- (ii) For a Portland Cement Kiln operating with over fifteen (15) percent of Heat Input from any combination of Low-Carbon Fuels: 3.4 lb/ton of Clinker produced when averaged over any 30 consecutive day period.

"

Reciprocating Internal Combustion Engines in Pipeline Transportation of Natural Gas

Mojave Desert has six facilities with 133,650 horsepower of compressors that fall under pipeline transportation of natural gas and are subject to the FIP limits. Two pipeline transportation of natural gas facilities are subject to existing district Rule 1160 with limits similar to the FIP limits; four other similar facilities are not subject to existing district Rule 1160.

Current Rule 1160⁵ is applicable to NO_x emissions from internal combustion engines used in natural gas pipeline transportation, but differs from the FIP emission limits and requirements. The FIP limits are 1.0 g/hp-hr for 4-stroke rich burn, 1.5 g/hp-hr for 4-stroke lean burn, and 3.0 g/hp-hr for 2-stroke lean burn. The district has proposed to adopt a new rule (Rule 1160.2) that will apply to all six pipeline transportation of natural gas facilities and all 133,650 horsepower of compressors in the Mojave Desert, and apply these FIP emission limits, along with testing, monitoring, recordkeeping, and reporting requirements as specified in 40 CFR 52.41, not later than March 2024.

⁵ Rule 1160 Internal Combustion Engines (Amended: 01/23/23, proposed SIP approval April 7, 2023 88 FR 20788), <https://www.mdaqmd.ca.gov/home/showpublisheddocument/9649/638102639817430000>, last accessed: December 1, 2023

From Rule 1160, page 1, "This rule applies to any stationary Internal Combustion Engine rated at 50 or more brake horsepower (bhp), when located within the Federal Ozone Nonattainment Area"

Page 3, "

- (i) Internal Combustion Engines subject to this rule shall not exceed the following emission limits in Table 1, unless the Internal Combustion Engine is subject to (C)(1)(a)(ii).
- (ii) Internal Combustion Engines K-2, K-5, K-6, K-8 and K-9 located at the Pacific Gas & Electric Facility Hinkley Compressor Station in Hinkley, California (or its successor) shall not be in operation for more than a total of 2600 engine-hours per calendar year in aggregate, verified by engine hour meters and use records. Operation in excess of this limit will subject all these engines to (C)(1)(a)(i) and require a demonstration of compliance with that section within 180 days.

Table 1 NO_x Emission Limits for Internal Combustion Engines (ppmv limitations shall be referenced at 15 percent volume stack gas oxygen measured on a dry basis and averaged over 15 consecutive minutes)	
Engine Type	NO _x Limit
Spark-Ignited Internal Combustion Engine, Rich Burn	50 ppmv
Spark-Ignited Internal Combustion Engine, Lean Burn	125 ppmv
Compression-Ignited Internal Combustion Engine	80 ppmv

4. San Joaquin Valley Unified APCD

Glass and Glass Product Manufacturing

San Joaquin Valley has six glass making facilities, all of which fall under San Joaquin Valley Unified APCD Rule 4354⁶. Rule 4354 sets NO_x emissions limits effective on January 1, 2024 for flatglass to 2.8 lbs NO_x/ton of glass produced during a block 24-hour average or, alternatively, 2.5 lbs NO_x/ton of glass produced during a 30-day rolling average. The FIP limit is 9.2 lbs NO_x/ton of glass produced, which is less stringent than the district rule. Additionally, District Rule 4354 restricts NO_x emissions from the production of container glass to 1.1 lbs of NO_x/ton of glass produced during a 30-day rolling average which is more restrictive than the FIP limit of 4.0 lbs of NO_x/ton of glass produced.

⁶ Rule 4354 Glass Melting Furnaces (Adopted September 14, 1994;...Amended December 16, 2021), <http://www.sjvapcd.dst.ca.us/media/xulli52j/04-r4354-rule-clean-version.pdf>, last accessed: November 28, 2023

From Rule 4354, "Table 2 - Proposed NOx Emission Limits in pounds NOx per ton glass produced

Type of Glass Produced	Phase I NOx limit (by no later than 12/31/2023)	Phase II NOx limit (by no later than 12/31/2029)
Container Glass	1.1 ^B	0.75 ^B
Fiberglass	1.3 ^{A, C} 3.0 ^{A, D}	1.3 ^{A, C} 3.0 ^{A, D}
Flat Glass (Standard)	2.8 ^A 2.5 ^B	1.7 ^A 1.5 ^B

^A Block 24-hour average

^B Rolling 30-day average

^C Not subject to California Public Resources Code Section 19511

^D Subject to California Public Resources Code Section 19511

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Solid Waste Combustors and Incinerators

San Joaquin Valley also has one Municipal Solid Waste Facility covered by Rule 4352⁷. Rule 4352 limits are 110 ppmv @ 12% CO₂ on a 24--hour averaging period and 90 ppmv @ 12% CO₂ on a 12-month averaging period. Using site specific permit details, the site is currently subject to a limit of 110 ppmv when corrected to 7% O₂ on a 24-hour averaging period and 90 ppmv on a 12-month averaging period. The FIP limits are 110 ppmvd on a 24-hour averaging period and 105 ppmvd on a 30-day averaging period.

From Rule 4352, "Table 2 - Proposed Rule 4352 NOx, CO, PM10, and SOx Emission Limits

Fuel Type	Proposed Emission Limits effective on and after January 1, 2024			
	NOx Limit	CO Limit	PM10 Limit	SOx Limit
Municipal Solid Waste	110 ppmv corrected to 12% CO ₂ ^A 90 ppmv corrected to 12% CO ₂ ^C	400 ppmv corrected to 3% O ₂ ^A	0.04 lbs/MMBtu or 0.02 gr/dscf @ 12% CO ₂	0.03 lbs/MMBtu ^C or 12 ppmv @ 12% CO ₂ ^C 0.064 lbs/MMBtu ^A or 25 ppmv @ 12% CO ₂ ^A
Biomass	65 ppmv corrected to 3% O ₂ ^A		0.03 lbs/MMBtu	0.02 lbs/MMBtu ^B 0.035 lbs/MMBtu ^A
All Others	65 ppmv corrected to 3% O ₂ ^A		0.03 lbs/MMBtu	0.02 lbs/MMBtu ^B 0.035 lbs/MMBtu ^A

^A Block 24-hour average

^B Rolling 30-day average

^C Rolling 12-month average

"

⁷ Rule 4352 Solid Fuel Fired Boilers, Steam Generators and Process Heaters (Adopted September 14, 1994...Amended December 16, 2021), <https://ww2.valleyair.org/media/yfspwk0k/rule-4352.pdf>, last accessed: December 1, 2023

Reciprocating Internal Combustion Engines in Pipeline Transportation of Natural Gas

San Joaquin Valley also has a natural gas transmission facility covered by rule 4702⁸. Rule 4702 has a limit for Lean Burn of 40 ppmv@15% O₂, or 0.56 g/hp-hr. The FIP limits for lean burn are 1.5 g/hp-hr for 4-stroke and 3.0 g/hp-hr for 2-stroke.

From Rule 4702, "

Rule 4702 Table 3 - Emission Limits for a Spark-Ignited Internal Combustion Engine Rated at >50 bhp Used Exclusively in Non-AO			
Engine Type	NOx Limit (ppmv)	CO Limit (ppmv)	VOC Limit (ppmv)
1. Rich-Burn			
a. Waste Gas Fueled ($\geq 50\%$ total monthly heat input from waste gas based on hhv)	11	2000	90
b. Cyclic Loaded, Field Gas Fueled	11	2000	90
c. Limited Use	11	2000	90
d. Rich-Burn Engine, not listed above	11	2000	90
2. Lean-Burn Engines			
a. Limited Use	11	2000	90

Rule 4702 Table 3 - Emission Limits for a Spark-Ignited Internal Combustion Engine Rated at >50 bhp Used Exclusively in Non-AO			
Engine Type	NOx Limit (ppmv)	CO Limit (ppmv)	VOC Limit (ppmv)
1. Rich-Burn			
a. Waste Gas Fueled ($\geq 50\%$ total monthly heat input from waste gas based on hhv)	11	2000	90
b. Cyclic Loaded, Field Gas Fueled	11	2000	90
c. Limited Use	11	2000	90
d. Rich-Burn Engine, not listed above	11	2000	90
2. Lean-Burn Engines			
a. Limited Use	11	2000	90
b. Lean-Burn Engine used for gas compression	40	2000	90
c. Waste Gas Fueled ($\geq 50\%$ total monthly heat input from waste gas based on hhv)	40	2000	90
d. Lean-Burn Engine, not listed above	11	2000	90

"

⁸ Rule 4702 Internal Combustion Engines (Adopted August 21, 2003...Amended...August 19, 2021), <https://ww2.valleyair.org/media/hr4b14r4/r4702.pdf> , last accessed: December 1, 2023

Rule 4702 added language to reference control requirements for both agriculture operations (AO) and Non-AO spark-ignited engines, and associated compliance timelines. The compliance schedule for non-AO spark-ignited engines would take place over 2.5 years, with full compliance with emissions limits required by December 31, 2023. Operators of AO spark-ignited rich-burn engines had until December 31, 2023, to bring their engines into full compliance with proposed emissions limits. Operators with AO lean-burn engines would have to be in full compliance with the adopted new emissions limits by December 31, 2029, or 12 years after installation of the unit, whichever comes later, to allow for the full useful life of the equipment to be met. In order to allow time for the few operators that complied with the rule through this provision to retrofit or replace their equipment to meet the proposed limits, this compliance option sunsets at the end of 2023.

5. San Luis Obispo County APCD

Reciprocating Internal Combustion Engines in Pipeline Transportation of Natural Gas

Per San Luis Obispo County APCD, the Phillips 66 Santa Maria Refinery is in the process of being decommissioned. The San Luis Obispo County APCD identified a Pipeline Transportation Unit covered by the FIP. Per documentation received from the District titled "Notice of Preparation and Notice of Scoping Meeting"⁹, dated May 4, 2023, page 3, "Phillips 66 has ceased operations of the SMR (Santa Maria Refinery) in January 2023."

6. Santa Barbara County APCD

Reciprocating Internal Combustion Engines in Pipeline Transportation of Natural Gas

Santa Barbara County has one facility, SoCal Gas - La Goleta (Pipeline Transportation of Natural Gas), which complies with the District's Rule 333¹⁰. The facility has a 1,100 horsepower, 2-stroke, lean burn engine which is used in a compressor system. Rule 333 requires this type of engine to meet a NOx emission limit of 125 ppm at 15% O₂ (equivalent to 1.9 gm/hp-hr), with a biennial source test, and quarterly emissions screening. This rule emission limit is lower than the FIP limit of 3.0 gm/hp-hr.

From Rule 333:

A. Applicability

The provisions of this rule shall apply to any engine with a rated brake horsepower of 50 or greater.

⁹ Notice of Preparation and Notice of Scoping Meetings - Phillips 66 Santa Maria Refinery Demolition and Remediation Project, <https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Planning-Projects/P66-Santa-Maria-Refinery-Remediation/2023-05-04-Final-P66-SMR-NOP.pdf>, last accessed: December 1, 2023

¹⁰ Rule 333. Control of Emissions from Reciprocating Internal Combustion Engines (Adopted 12/03/1991, revised...6/19/2008), <https://www.ourair.org/wp-content/uploads/rule333.pdf>, last accessed: December 1, 2023

E. Requirements - Emission Limits

2. Lean-Burn Spark Ignition Engines

a. The emission concentrations, corrected for oxygen, from any such engine shall not exceed the following limits for any engine with a rated brake horsepower of 100 or greater:

Pollutant	Limit (<u>ppmv at 15 percent oxygen</u>)
NO _x	125
ROC	750
CO	4,500

An Engine Inspection and Maintenance Plan, as described in Section F of Rule 333, must be submitted by the owner/operator and approved by the District to demonstrate compliance with the applicable requirements. Records are also required to be kept in accordance with Section J of Rule 333.

7. Shasta County AQMD

Cement and Concrete Product Manufacturing

Shasta County has the Lehigh facility (Cement and Concrete Product Manufacturing) in Redding which is under a consent decree¹¹. That consent decree was entered by the court as of 11/19/2020 (effective date). Per table 2, page 20 of the consent decree, Redding Kiln will have combustion controls and/or SNCR by the effective date plus 24 months or 11/19/2022. The 30-day rolling average emission limit (lbs NO_x/ton of clinker) is to be 1.95 lbs or less per ton of clinker.

8. South Coast AQMD

Glass and Glass Product Manufacturing

South Coast AQMD Rule 1117 - Emissions of Oxides of Nitrogen from Glass Melting and Sodium Silicate Furnaces establishes emission limits for facilities that operate furnaces used in the production of glass and sodium silicate. After the passage of Assembly Bill 617 in 2017, Rule 1117 was amended to establish Best Available Retrofit Control Technology (BARCT) requirements for equipment at container glass and sodium silicate producing facilities as they transitioned out of the Regional Clean Air Incentives Market program.¹² Rule 1117 was amended on June 5, 2020, to enforce BARCT level emission controls for NO_x and

¹¹ USA v Lehigh Cement Company LLC Consent Decree, <https://www.epa.gov/sites/default/files/2019-12/documents/lehigh-cd.pdf>, last accessed: December 1, 2023

¹² The South Coast AQMD's RECLAIM Program, <http://www.aqmd.gov/home/programs/business/business-detail?title=reclaim>, last accessed: December 1, 2023

SOx.¹³ The amendment reduced the NOx limit from 4.0 lbs of NOx per ton of glass pulled to 0.75 lbs of NOx per ton of glass pulled for container glass furnaces, compared to the FIP limit of 4.0 lbs per ton glass pulled.

Table 4 compares NOx emission limits by furnace unit type for glass manufacturing established by the FIP and Rule 1117. Rule 1117 is compliant with the FIP NOx emission limits for container glass and pressed/blown glass furnaces. The other emission limits listed in Table 4 are not applicable as there are no fiberglass or flat glass furnaces within the South Coast AQMD. There are only two regulated entities under Rule 1117: a container glass facility and a sodium silicate manufacturing facility. The container glass facility operates two container glass melting furnaces, each rated at 68 MMBTU/hr and equipped with oxy-fueled burners. The sodium silicate facility operates one furnace rated at 56.6 MMBTU/hr and is equipped with low-NOx burners. In 2017, both facilities installed new air pollution control devices on each of their furnaces to reduce emissions.

Table 4: Summary of NOx Emission Limits by Furnace Type in Glass and Glass Product Manufacturing

Furnace Type	FIP NOx Emissions Limit (lb/ton of glass produced, 30-day rolling average)	South Coast AQMD NOx Emissions Limit (lb/ton of glass produced, 30-day rolling average)	Compliant with FIP limit?
Container Glass Manufacturing Furnace	4.0	0.75	Yes
Pressed/Blown Glass Manufacturing Furnace	4.0	0.75	Yes
Fiberglass Manufacturing Furnace	4.0	N/A	N/A
Flat Glass Manufacturing Furnace	7.0	N/A	N/A

Reciprocating Internal Combustion Engines in Pipeline Transportation of Natural Gas

The FIP applies to Reciprocating Internal Combustion Engines (RICE) greater than or equal to 1,000 horsepower used in the pipeline transportation of natural gas. South Coast AQMD located ten applicable RICE, all of which are four stroke lean burn engines. The applicable FIP NOx emission limit for these engines is 1.5 g/hp-hr. All RICE were determined to be in compliance with the FIP limit based on source test results and/or calculated maximum emission rates obtained from permit applications. In some instances, permit applications

¹³ Board Meeting Agenda, <http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2020/2020-Jun5-027.pdf?sfvrsn=6>, last accessed: December 1, 2023

were for a modification to an existing RICE and the source test results were presented in the original permit.

South Coast AQMD Rule 1110.2 requires compressor gas lean-burn engines greater than or equal to 50 horsepower used in the pipeline transportation of natural gas to meet a NO_x concentration limit of 11 ppmv @ 15% O₂ on or before December 31, 2023.

Solid Waste Combustors and Incinerators

Municipal waste combustors (MWC) include solid waste incinerators and combustors. MWCs burn garbage and other non-hazardous solid material using a variety of combustion techniques. Emissions from MWCs are typically released through tall stacks which enhances dispersion and reduces local impacts. The U.S. EPA is finalizing regulatory requirements that apply to MWCs that combust greater than or equal to 250 tons per day of municipal solid waste. There is one municipal waste combustor facility, the Long Beach SERRF, in the South Coast AQMD jurisdiction with three units subject to the FIP requirements.

The FIP NO_x emission limits for solid waste combustors or incinerators corrected to 7 % oxygen is 110 ppmvd 24-hour block average and 105 ppmvd 30-day rolling average. The 24-hour block and 30-day rolling average emission rates are adjusted to 7 % oxygen except during periods of startup and shutdown. This is because during periods of startup and shutdown, additional ambient air is introduced into the units, resulting in higher oxygen concentrations. MWCs must still comply with the 110 ppmvd 24-hour block average and the 105 ppmvd 30-day rolling average emissions limits during startup and shutdown periods, but without correction of Continuous Emissions Monitoring System (CEMS) data to 7 % oxygen. In addition, the duration of each startup and shutdown period should not exceed three hours to minimize emissions to the greatest extent practicable.¹⁴

The Long Beach Southeast Resource Recovery Facility (SERRF) has a permit condition limiting NO_x concentrations to 225 ppmv @ 3% O₂. CEMS data from the facility indicates that the facility operates at or below 110 ppmvd @ 7% O₂ on an hourly basis 98% of the time. South Coast AQMD staff is currently conducting a BARCT assessment as part of ongoing rule development activities (proposed Rule 1165) to establish rule limits equal to or more stringent than FIP NO_x Emission Limits for Solid Waste Combustors or Incinerators.

¹⁴ Technical Support Document (TSD) for the Final Rule - Final Non-EGU Sectors TSD.

<https://www.epa.gov/system/files/documents/2023-03/Final%20Non-EGU%20Sectors%20TSD.pdf>

9. Ventura County APCD

Reciprocating Internal Combustion Engines in Pipeline Transportation of Natural Gas

Ventura County has one gas facility SoCal Gas (Pipeline Transportation of Natural Gas), which complies with the District's Rule 74.9¹⁵ limit which falls below the required limit under FIP emission limits of 1.0 g/hp-hr for four-stroke rich burn, 1.5 g/hp-hr for four-stroke lean burn, and 3.0 g/hp-hr for two-stroke lean burn.

The facility is permitted to emit 21.95 tpy of NO_x. There are three units at the facility, including three 1100 BHP Natural Gas Engines categorized as Four Stroke Lean Burn. The rule requires NO_x at 45 ppm 15% O₂ or 0.68 gm/hp-hr, with a biennial source test, and quarterly emissions screening, which is lower than the FIP limit of 1.5 gm/hp-hr.

From Rule 74.9:

"A. Applicability

This rule applies to any stationary spark-ignited or diesel internal combustion engine rated at 50 or more horsepower, operated on any gaseous fuel, including liquid petroleum gas (LPG), or liquid fuel, and not subject to the provisions of Rule 74.16.

B. Requirements

1. Except as noted in Subsection B.1.a, the owner or operator of a stationary internal combustion engine to which this rule is applicable shall limit emissions from that engine to no more than the following:

Engine Type	NO _x (ppmv)	ROC (ppmv)	CO (ppmv)
Rich-burn, general	25	250	4500
Lean-burn, general	45	750	4500
Diesel	80	750	4500
Rich-burn, waste gas	50	250	4500
Lean-burn, waste gas	125	750	4500"

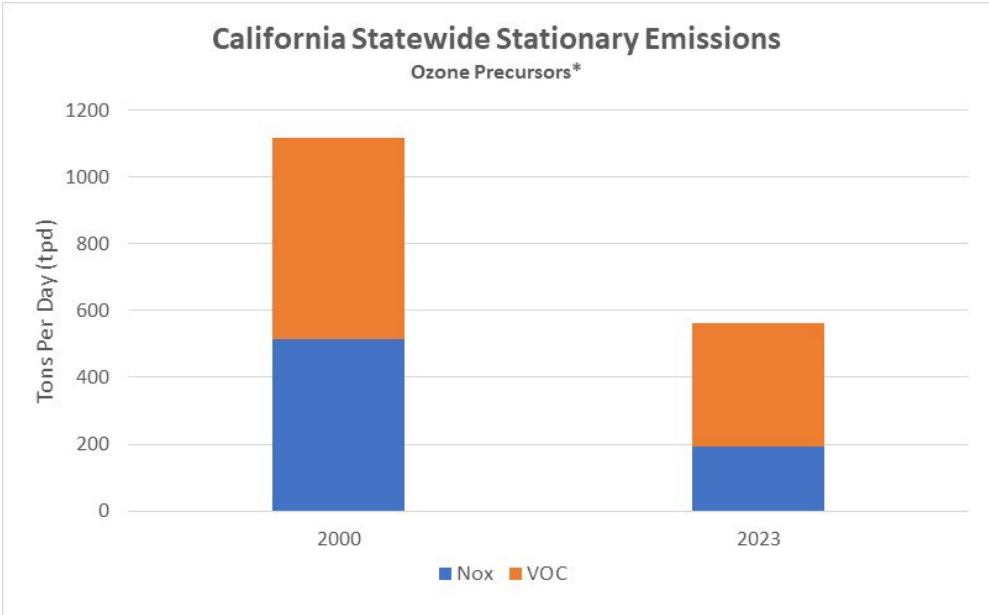
¹⁵ Rule 74.9 - Stationary Internal Combustion Engines (Adopted 7/21/81, Revised...11/8/05), <http://www.vcapcd.org/Rulebook/Reg4/RULE%2074.9.pdf>, last accessed: December 1, 2023

Reporting requirements for facilities covered by these regulations are recordkeeping of the dates and result of emissions screening. Reporting requires a summary of engine maintenance and emissions screening.

D. Documentation of Stationary Source Control

In California, the primary authority over regulation of air pollution from stationary sources and small local businesses resides with California’s 35 air districts, who place stringent rules on these sources in order to improve air quality and meet CARB’s increasingly strict control requirements. Stationary source controls are generally implemented through a combination of prohibitory rules that set emissions limits by facility type, and facility permits that specify equipment use and other operating parameters, including accommodating industrial growth while mitigating environmental impacts. Many district rules reflect established emission control technologies, while others reflect some of the newest and state-of-the-art technologies. In combination, district rules cover a wide range of sources including refineries, manufacturing facilities, cement plants, refinishing operations, electrical generation and biomass facilities, boilers, and generators, and are among the most stringent in the nation. Figure 2 illustrates the efficacy of both State and district rules for stationary sources put into place which have resulted in drastically reduced levels of ozone precursor emissions statewide.

Figure 2: California Statewide Stationary Emissions for Ozone Precursors (2000 to 2023)¹⁶



¹⁶ CEPAM, 2022 Ozone SIP v 1.01B with Adjustments, Summer, Base Year 2018, Grown and Controlled

E. New Sources of FIP Category Units in California

1. Introduction

Regulatory authority for control of air pollution emissions from stationary sources in California is the responsibility of the State's 35 local air districts. Due to the extent of air quality challenges in California, stationary source control programs in California are among the most stringent in the country and emissions are generally much lower than equivalent sources located elsewhere in the United States. In addition to federal requirements, California has State requirements for new source review.

The California New Source Review (NSR) permit program is derived from the California Clean Air Act. NSR requirements arising from the California Clean Air Act are codified in the California Health and Safety Code at Division 26. Specific to NSR, each District is to include in its attainment plan, a stationary source control program designed to achieve no net increase in emissions of nonattainment pollutants or their precursors for all new or modified sources that exceed particular emission thresholds. In addition, most new and modified stationary sources are required to use Best Available Control Technology (BACT). In California, BACT is synonymous with the federal term Lowest Achievable Emission Rate (LAER) for nonattainment area permit requirements.

Further, federal nonattainment NSR applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is not in attainment with the National Ambient Air Quality Standards (NAAQS). Nonattainment NSR requirements are customized for the nonattainment area. All nonattainment NSR programs have to require (1) the installation of the LAER, (2) emission offsets, and (3) opportunity for public involvement. As shown in Figure 1 above, a huge portion of California is nonattainment for the 0.070 ppm 8-hour ozone standard and is subject to federal nonattainment NSR. Dependent upon the classification, the definition of major sources can range from 10 tpy in Extreme areas to 100 tpy in Marginal areas. Also, again depending on an area's classification, new major sources or major modifications need to offset their emissions by a rate of 1.1 tons for every ton of emissions in Marginal areas, and 1.5 tons for every ton of emissions in Extreme areas.

Prevention of Significant Deterioration (PSD) applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is in attainment or unclassifiable with the NAAQS and requires the installation of BACT; air quality analysis is to demonstrate that new emissions emitted from a proposed major stationary source or major modification, in conjunction with other applicable emissions increases and decreases from existing sources, will not cause or contribute to a violation of any applicable NAAQS; and public involvement.

Each of the 35 air pollution control districts in California has its own permitting program and issues its own NSR or Prevention of Significant Deterioration (PSD) permits to construct and operate. To do so, each district has adopted its own rules and regulations to comply with State and federal laws. These regulations usually incorporate both the California and federal regulations into one or more rules. Depending on the quantity of emissions of air pollutants

that will be emitted from the source and the area designation for that pollutant, the new or modified source may be required to install BACT. In addition, new and/or modified sources in California may be required, depending on the type and quantity of pollutants emitted, to mitigate or "offset" the increases in emissions that result after installation of BACT/LAER.

2. Programs for Enforcement of Control Measures [CAA Section 110(a)(2)(C)]

This section of the CAA contains three requirements. First, it requires states to enforce stationary source control measures. Second, it requires states to issue preconstruction permits to major sources and major modifications in areas designated as attainment or unclassifiable for a federal standard (Prevention of Significant Deterioration (PSD) program). Finally, it requires states to regulate new and modified minor sources and minor modifications of major sources (minor New Source Review (NSR) program).

California's compliance with all CAA requirements, including Section 110(a)(2)(C), rests with CARB and California's 35 local air districts. While CARB has primary responsibility for regulating mobile source emissions in the state, the air districts have primary responsibility for regulating station source emissions. Each district satisfies CAA Section 110(a)(2)(C) requirements by having a stationary source enforcement program and a minor-source, non-attainment NSR permitting program. CAA Section 110(a)(2)(C) also requires a state to have a SIP-approved PSD permit program.

3. Enforcement of Stationary Source Control Measures

California H&SC Section 40000 gives districts the authority to control air pollution from stationary sources. This includes authority to adopt and enforce district rules and regulations needed to achieve and maintain the federal ambient air quality standards. In addition to the above authority with respect to district rules, State law gives districts responsibility to enforce all applicable provisions of State and federal law (H&SC § 40001(a)). If a district fails to meet its responsibilities, CARB is authorized as the oversight agency to act in its stead (H&SC § 39002).

4. PSD and NSR Permitting Programs

The authority given to districts under H&SC Section 40000 extends to the adoption and enforcement of relevant PSD and minor NSR permitting programs. The type of permitting programs required for stationary source projects are determined by the attainment status of an area. PSD permits are required in areas that are designated as attainment or unclassifiable for a federal standard. In contrast, NSR permits are generally required in areas designated as nonattainment. In practice, stationary source permitting programs are quite complex, and permits can cover multiple pollutants, some of which require NSR permits and others that require PSD permits. The same source may require both types of permits, because the designation status for the different pollutants can differ within a particular area (e.g. an area can be in attainment with the NAAQS for NO₂ but non-attainment for ozone).

The CAA specifies the emission thresholds that trigger the permitting requirements. Furthermore, for major source NSR permits, the requirements can become increasingly stringent, based on an area’s classification. For example, major source NSR requirements in an extreme ozone nonattainment area can be more stringent than requirements in a moderate ozone nonattainment area.

In addition to the above requirements, stationary source projects with emissions below the trigger levels for PSD and NSR permits may be subject to a minor NSR permitting program. Like major NSR, minor NSR is intended to prevent the construction of sources that would interfere with attainment or maintenance of a federal standard in an area, or would violate the control strategy in a nonattainment area.

In California, major and minor NSR permits are issued by local districts, while PSD permits are issued either by local districts, U.S. EPA, or a combination of the two. Major NSR permit requirements are beyond the scope of the Infrastructure SIP and therefore, are not included here. They are however, included as part of an area’s nonattainment SIP.

5. PSD Permitting Programs

PSD permits are pre-construction permits required for new major sources or major modifications to existing major sources in areas designated as unclassifiable or attainment with NAAQS. All areas of California are designated as unclassifiable or in attainment with NAAQS for NO₂, SO₂, and CO; therefore, PSD applies statewide for new major sources or major modifications to existing major sources of these pollutants. PSD applies in unclassifiable or attainment areas for the remaining pollutants and their precursors: ozone, PM, PM₁₀, PM_{2.5}, and lead. A PSD permit is required for GHG emissions only when a facility is already required to obtain a PSD permit for other pollutants. Currently, facilities are not required to obtain PSD permits for GHG emissions alone.

In California, 14 districts have a SIP-approved PSD permit program satisfying the requirements of CAA Section 110(a)(2)(C). Four other districts have a limited applicability SIP-approved PSD permit program and a Federal Implementation Plan (FIP), and, therefore, do not fully satisfy the requirements of CAA Section 110(a)(2)(C) because U.S. EPA retains authority under a FIP to permit certain types of sources. Table 5 lists the districts with SIP-approved PSD rules.

Table 5: California Districts with SIP Approved PSD Programs or PSD Delegation

<i>District</i>	<i>Rule/Agreement</i>	<i>Effective Date</i>	<i>Authority</i>
Bay Area Air Quality Management District	Bay Area Agency-Wide Provisions (Rules 2-1 & 2-2)	05/21/2018	SIP
Butte County Air Quality Management District	Butte County Agency-Wide Provisions (Rule 1107)	11/12/2015	SIP

<i>District</i>	<i>Rule/Agreement</i>	<i>Effective Date</i>	<i>Authority</i>
Eastern Kern Air Pollution Control District	Kern County Agency-Wide Provisions (Rule 210.4)	02/08/2013	SIP
Feather River Air Quality Management District	Feather River Agency-Wide Provisions (Rule 10.10)	11/12/2015	SIP
Great Basin Unified Air Pollution Control District	Great Basin Agency-Wide Provisions (Rule 221)	11/12/2015	SIP
Imperial County Air Pollution Control District	Imperial County Agency-Wide Provisions (Rule 904)	02/08/2013	SIP
Mendocino County Air Quality Management District	Mendocino Agency-Wide Provisions (Rules 130, 200, 220, 230 & 240)	07/03/2017	SIP ¹⁷
Monterey Bay Air Resources District	Monterey Bay Agency-Wide Provisions (Rule 207)	03/26/2015	SIP
North Coast Unified Air Quality Management District	North Coast Agency-Wide Provisions (Rules 130, 200, 220, 230 & 240)	08/30/1985	SIP ²
North Coast Unified Air Quality Management District	Partial PSD Delegation Agreement (Stack height, NOx increment)	01/08/1993	Delegation
North Coast Unified Air Quality Management District	Partial PSD Delegation Agreement (NOx major modifications)	10/06/2015	Delegation
Northern Sonoma County Air Pollution Control District	Northern Sonoma Agency-Wide Provisions (Rules 130, 200, 220, 230 & 240)	10/06/2016	SIP ²
Placer County Air Pollution Control District	Placer County Agency-Wide Provisions (Rule 518)	02/08/2013	SIP
Sacramento Metro Air Quality Management District	Sacramento Metropolitan Agency-Wide Provisions (Rule 203)	07/20/2011	SIP
San Joaquin Valley Air Pollution Control District	San Joaquin Valley Agency-Wide Provisions (Rule 2410)	11/26/2012	SIP

¹⁷ EPA retains authority to issue permits for certain specific types of projects, such as resource recovery facilities. See 40 CFR Section 52.270 for additional details.

<i>District</i>	<i>Rule/Agreement</i>	<i>Effective Date</i>	<i>Authority</i>
San Luis Obispo Air Pollution Control District	San Luis Obispo Agency-Wide Provisions (Rule 220)	11/12/2015	SIP
Santa Barbara County Air Pollution Control District	Santa Barbara Agency-Wide Provisions (Rule 810)	11/12/2015	SIP
South Coast Air Quality Management District	South Coast PSD Delegation Agreement (Excluding GHG)	07/25/2007	Delegation
South Coast Air Quality Management District	South Coast Agency-Wide Provisions - GHG Emissions only (Rule 1710)	12/10/2012	SIP
Ventura County Air Pollution Control District	Ventura County Agency-Wide Provisions (Rule 26.13)	03/10/2017	SIP
Yolo-Solano Air Quality Management District	Yolo-Solano Agency-Wide Provisions (Rule 3.24)	02/08/2013	SIP

6. Minor Non-attainment NSR Permitting Programs

Non-attainment NSR programs are subdivided into major-source NSR and minor-source NSR. Minor NSR permitting programs are required in all areas regardless of attainment status. In contrast, major NSR applies only in nonattainment areas. U.S. EPA has determined that states do not need to address major NSR programs in their Infrastructure SIP because they are beyond the scope of the Infrastructure SIP. However, states must include information about minor NSR programs 40 CFR Sections 51.160 - 164.

The purpose of a minor NSR program is to prevent the construction of stationary sources that would interfere with attainment or maintenance of a federal standard or would violate the control strategy in a nonattainment area. In contrast to PSD programs, minor NSR programs address pollutants from stationary sources with lower emission levels than those triggering PSD.

As mentioned previously, local districts are responsible for regulating stationary sources in California (H&SC §§ 39002, 40000). This includes responsibility for adopting and enforcing rules and regulations to achieve and maintain the federal standards in all areas affected by emission sources under their jurisdiction and for enforcing all applicable provisions of federal law (H&SC § 40001(a)). This responsibility extends to implementing a minor NSR program. Each of California's 35 local districts administers its own minor NSR program. Local districts have been issuing stationary source permits since the 1970s, and local NSR programs are at least as stringent, or more stringent, than federally required. In addition,

CARB maintains a comprehensive listing of district NSR rules¹⁸. Many of these NSR rules are SIP-approved. Additional information about the approval status of district NSR rules is available from U.S. EPA.

¹⁸ <http://www.arb.ca.gov/nsr/dtvr.htm>