

For Discussion Purposes Only

(Adopted November 5, 2021)

PROPOSED RULE 429.1 STARTUP AND SHUTDOWN PROVISIONS AT PETROLEUM REFINERIES AND RELATED OPERATIONS

(a) Purpose

The purpose of this rule is to limit emissions of oxides of nitrogen (NO_x) and carbon monoxide (CO) during periods of startup and shutdown from units at petroleum refineries and facilities with related operations to petroleum refineries.

(b) Applicability

The provisions of this rule shall apply to units at former RECLAIM petroleum refineries and new petroleum refineries.

(c) Definitions

For the purpose of this rule, the following definitions shall apply:

- (1) FACILITY WITH RELATED OPERATIONS TO PETROLEUM REFINERIES as defined in Rule 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations.
- (2) FORMER RECLAIM PETROLUUM REFINERY means a petroleum refinery or a facility with related operations to petroleum refineries, or any of its successors, that was in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX – Regional Clean Air Incentives Market (RECLAIM), that has received a final determination notification, and is no longer in the RECLAIM program.
- (3) NEW PETROLEUM REFINERY means a petroleum refinery or a facility with related operations to a refinery that begins operation after *[Date of Adoption]*.
- (4) OXIDES OF NITROGEN (NO_x) EMISSIONS means the sum of nitric oxide and nitrogen dioxide emitted in the flue gas, calculated, and expressed as nitrogen dioxide.
- (5) PETROLEUM REFINERY as defined in Rule 1109.1.
- (6) REFRACTORY DRYOUT means the initial application of heat under controlled rates to safely remove water from a newly installed refractory lining as part of the curing process prior to placing the unit in service.

- (7) SCHEDULED STARTUP means a planned startup that is specified by January 1 each year.
 - (8) SHUTDOWN means the time period that begins when an operator reduces the load or heat input, and flue gas temperatures fall below the minimum operating temperature of the emission control equipment, and which ends in a period of zero fuel flow or zero feedstock, or when combustion/circulation air flow ends if the unit does not use fuel for combustion, unless otherwise defined in the South Coast AQMD permit to operate.
 - (9) STARTUP means the time period that begins when a NO_x emitting unit combusts fuel, after a period of zero fuel flow or zero feedstock, or when combustion/circulation air is introduced if the unit does not use fuel for combustion, and ends when the flue gas temperature reaches the minimal operating temperature of the emission control equipment.
 - (10) UNIT means, for the purpose of this rule, equipment that is subject to Rule 1109.1 which includes boilers, flares, fluid catalytic cracking units (FCCU), gas turbines, petroleum coke calciners, process heaters, steam methane reformer heaters, sulfuric acid furnaces, sulfur recovery units and tail gas incinerators (SRU/TG incinerators), and vapor incinerators, as defined in Rule 1109.1, requiring a South Coast AQMD permit and not specifically required to comply with a NO_x emission limit by other South Coast AQMD Regulation XI rules.
- (d) Requirements
- (1) An owner or operator of a unit that exceeds the applicable NO_x or CO emission limits in Rule 1109.1 is exempt from the emission limits in Rule 1109.1 during startup or shutdown and shall not exceed the duration limits specified in Table 1.

TABLE 1: STARTUP AND SHUTDOWN DURATION LIMITS

Unit Type	Not to Exceed per Startup or Shutdown Event (hours)
Boilers and Process Heaters without NO _x Post-Combustion Control Equipment, Gas Turbines, Flares, Vapor Incinerators	2
Boilers and Process Heaters with NO _x Post-Combustion Control Equipment, Steam Methane Reformer Heaters, Sulfuric Acid Furnace	48
Steam Methane Reformer with Gas Turbine	60

FCCU, Petroleum Coke Calciner, SRU/TG Incinerators	120
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- (A) An owner or operator of a unit shall not allow the startup or shutdown time period to last longer than the time that is necessary to reach minimum operating temperature of the NOx post-combustion control equipment, if applicable.
 - (B) An owner or operator of a unit shall not allow the startup and shutdown time period to last longer than is necessary to reach stable conditions.
- (2) An owner or operator of a boiler, flare, gas turbine, process heater, steam methane reformer heater, sulfuric acid furnace, or vapor incinerator shall not exceed ten scheduled startups per calendar year for each unit.
- (3) An owner or operator of a FCCU, petroleum coke calciner, or SRU/TG incinerator shall not exceed three scheduled startups per calendar year for each unit.
- (4) An owner or operator of a unit shall take all possible steps to minimize emissions during startup and shutdown events.
- (5) An owner or operator of a unit shall install and maintain a calibrated temperature gauge on all units equipped with NOx post-combustion control equipment.
- (6) An owner or operator shall operate the NOx post-combustion control equipment, if applicable, including the injection of any associated chemical reagent into the exhaust stream to control NOx, if the temperature of the gas to the inlet of the NOx post-combustion control equipment is greater than or equal to the manufacturer's minimum recommended operating temperature.
- (7) An owner or operator of a unit equipped with a NOx post-combustion control equipment which has a stack or duct that exists prior to *[Date of Adoption]* that allows for the exhaust gases to bypass the NOx post-combustion control equipment and who elects to use the bypass to condition, repair, or replace the catalyst in the NOx post-combustion control equipment shall:
 - (A) Not use a bypass if the unit is scheduled to operate continuously for less than five years between planned maintenance shutdowns of the unit;
 - (B) Not use a bypass to condition, repair, or replace the catalyst in the NOx post-combustion control equipment for more than 200 hours in a rolling three-year cycle;

- (C) Operate the unit at 25% of the rated capacity of the unit or less when the NOx post-combustion control equipment is bypassed;
 - (D) Notify the South Coast AQMD by calling 1-800-CUT-SMOG at least seven days prior to bypassing the NOx post-combustion control equipment. This notification shall contain the date, time, and duration that the NOx post-combustion control equipment will be bypassed;
 - (E) Continuously monitor NOx and CO emissions with a certified CEMS pursuant to Rule 218.2 – Continuous Emission Monitoring System: General Provisions and Rule 218.3– Continuous Emission Monitoring System: Performance Specifications or a Laboratory Approval Program (LAP) approved contractor;
 - (F) Provide emissions data collected by a certified CEMS pursuant to Rules 218.2 and 218.3 of the most recent startup and shutdown of the unit to the South Coast AQMD;
 - (G) Calculate excess emissions by subtracting the NOx and CO emissions baseline in pounds per hour established pursuant to subparagraph (d)(7)(F) from the measured NOx and CO emissions in pounds per hour pursuant to subparagraph (d)(7)(E);
 - (H) Provide the emissions data collected pursuant to subparagraph (d)(7)(E) and the calculations of excess NOx and CO emissions required pursuant to subparagraph (d)(7)(G) to the South Coast AQMD; and
 - (I) Pay an excess emission fee to the South Coast AQMD pursuant to the schedule set forth in Rule 303 Table 1 for NOx and CO emissions within 30 days after the catalyst is conditioned, repaired, or replaced if an emission calculation conducted pursuant to subparagraph (d)(7)(G) yields a positive number.
- (e) Recordkeeping
- (1) An owner or operator of a unit shall maintain the following records on-site for 5 years:
 - (A) An operating log for startup, shutdown, refractory dryout, and bypass events which contains the date, time, duration, and reason for each event;
 - (B) A list of scheduled startups;
 - (C) A list of planned maintenance shutdowns for the next 5 years for each unit equipped with a bypass stack or duct that exists prior to [Date of Adoption]; and

- (D) NO_x and CO emissions data collected pursuant to subparagraph (d)(7)(E).
 - (2) An owner or operator of a unit equipped with NO_x post-combustion control equipment shall maintain on-site documentation from the manufacturer of the minimum recommended operating temperature of the NO_x post-combustion control equipment.
- (f) Exemptions
- (1) An owner or operator of a unit is exempt from paragraphs (d)(1) and (e)(1) when fuel is burned exclusively in a pilot light.
 - (2) An owner or operator of a unit is exempt from paragraph (d)(1) during refractory dryout.