

**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), while not increasing carbon monoxide (CO) emissions, 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 an owner or operator of units at petroleum refineries and facilities with related operations to petroleum refineries.

(c) Definitions

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

- (1) CASTABLE REFRACTORY means refractory that is made by curing liquid material that has been poured into a mold.
- (2) CATALYST MAINTENANCE means conditioning, repairing, or replacing the catalyst in NO_x post-combustion control equipment associated with a unit which has a bypass stack or duct that exists prior to [Date of Adoption].
- (3) CATALYST REGENERATION ACTIVITIES means the procedure where air or steam is used to remove coke from the catalyst of a unit or the conditioning of catalyst prior to the startup of a unit.
- (4) FACILITY WITH RELATED OPERATIONS TO PETROLEUM REFINERIES as defined in Rule 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations.
- (5) FORMER RECLAIM PETROLEUM 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.

- (6) MINIMUM OPERATING TEMPERATURE means the minimum operating temperature specified by the manufacturer, unless otherwise defined in the South Coast AQMD permit to operate.
- (7) NEW PETROLEUM REFINERY means a petroleum refinery or a facility with related operations to a refinery that begins operation after *[Date of Adoption]*.
- (8) NO_x POST-COMBUSTION CONTROL EQUIPMENT means air pollution control equipment which eliminates, reduces, or controls the issuance of NO_x after combustion.
- (9) OXIDES OF NITROGEN (NO_x) EMISSIONS as defined in Rule 1109.1.
- (10) PETROLEUM REFINERY as defined in Rule 1109.1.
- (11) REFRACTORY DRYOUT means the initial application of heat under controlled rates to safely remove water from refractory lining as part of the curing process prior to placing the unit in service.
- (12) SCHEDULED STARTUP means a planned startup that is specified by January 1 of each year.
- (13) 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 NO_x post-combustion control equipment, if applicable, 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.
- (14) STABLE CONDITIONS means that the fuel flow, fuel composition, or feedstock to a unit, or the combustion/circulation air if the unit does not use fuel for combustion, is consistent and allows for normal operations.
- (15) 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 minimum operating temperature of the NO_x post-combustion control equipment and reaches stable conditions, or when the time limit specified in Table 1 is reached, whichever is sooner.
- (16) UNIT means equipment that is subject to Rule 1109.1 which includes boilers, flares, fluid catalytic cracking units (FCCUs), gas turbines, petroleum coke calciners, process heaters, steam methane reformer heaters, sulfuric acid furnaces, sulfur recovery units/tail gas incinerators (SRU/TG incinerators), and vapor incinerators, as defined in Rule 1109.1, requiring a South Coast AQMD

permit and not 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 is not subject to the NO_x and CO emission limits and the applicable rolling average provisions pursuant to Rule 1109.1 during startup, shutdown, and catalyst maintenance events.
- (2) The owner or operator of a unit at a former RECLAIM petroleum refinery or a new petroleum refinery shall not exceed the time allowances specified in Table 1 when emissions from the unit exceed the NO_x or CO emission limits established in Rule 1109.1 during a startup or shutdown.

TABLE 1: STARTUP AND SHUTDOWN DURATION LIMITS

Unit Type	Time Allowance When Emissions Exceed Rule 1109.1 Emission Limits (Hours)
Boilers and Process Heaters without NO _x Post-Combustion Control Equipment, Gas Turbines, Flares, Vapor Incinerators without NO _x Post-Combustion Control Equipment or Castable Refractory	2
Vapor Incinerators with NO _x Post-Combustion Control Equipment, Vapor Incinerators with Castable Refractory	20
Boilers and Process Heaters with NO _x Post-Combustion Control Equipment, Steam Methane Reformer Heaters, Sulfuric Acid Furnaces	48
Steam Methane Reformers with Gas Turbine	60
FCCUs, Petroleum Coke Calciners, SRU/TG Incinerators	120

- (A) An owner or operator of a unit at a former RECLAIM petroleum refinery or a new petroleum refinery shall not allow a startup to last

longer than the time to reach stable conditions and to reach the minimum operating temperature of the NOx post-combustion control equipment, if applicable.

- (3) An owner or operator of a boiler, flare, gas turbine, process heater, steam methane reformer heater, sulfuric acid furnace, or vapor incinerator at a former RECLAIM petroleum refinery or a new petroleum refinery shall not exceed ten scheduled startups per calendar year for each unit.
- (4) An owner or operator of a FCCU, petroleum coke calciner, or SRU/TG incinerator at a former RECLAIM petroleum refinery or a new petroleum refinery shall not exceed three scheduled startups per calendar year for each unit.
- (5) An owner or operator of a unit at a former RECLAIM petroleum refinery or a new petroleum refinery shall take all reasonable and prudent steps to minimize emissions during startup and shutdown .
- (6) An owner or operator of a unit at a former RECLAIM petroleum refinery or a new petroleum refinery equipped with NOx post-combustion control equipment shall install and maintain an annually calibrated temperature measuring device at the inlet of the NOx post-combustion control equipment.
- (7) An owner or operator of a unit at a former RECLAIM petroleum refinery or a new petroleum refinery 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 exhaust gas to the inlet of the NOx post-combustion control equipment is greater than or equal to the minimum operating temperature.
- (8) An owner or operator of a unit equipped with a NOx post-combustion control equipment at a former RECLAIM petroleum refinery or a new petroleum refinery which has a stack or duct that exists prior to *[Date of Adoption]* that allows for the exhaust gas to bypass the NOx post-combustion control equipment and that elects to use a bypass to conduct catalyst maintenance 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 conduct catalyst maintenance for more than 200 hours in a rolling three-year cycle;
 - (C) Operate the unit at the minimum safe operating rate of the unit when the NOx post-combustion control equipment is bypassed;

- (D) Submit documentation from the manufacturer of the minimum safe operating rate for the unit being bypassed to the South Coast AQMD;
 - (E) Notify the South Coast AQMD by calling 1-800-CUT-SMOG at least 24 hours prior to bypassing the NO_x post-combustion control equipment. This notification shall contain the date and estimated time and duration that the NO_x post-combustion control equipment will be bypassed; and
 - (F) Continuously monitor NO_x and CO emissions with a certified Continuous Emissions Monitoring System (CEMS) pursuant to Rule 218.2 – Continuous Emission Monitoring System: General Provisions and Rule 218.3 – Continuous Emission Monitoring System: Performance Specifications or a contractor approved under the South Coast AQMD Laboratory Approval Program (LAP).
- (e) Notification
 - (1) An owner or operator of a unit at a former RECLAIM petroleum refinery or a new petroleum refinery shall notify the South Coast AQMD by calling 1-800-CUT-SMOG at least 24 hours prior to a scheduled startup. The notification shall contain the date and time the scheduled startup will begin.
- (f) Recordkeeping
 - (1) An owner or operator of a unit at a former RECLAIM petroleum refinery or a new petroleum refinery shall maintain the following records on-site for 5 years and make this information available to the South Coast AQMD upon request:
 - (A) An operating log for startup, shutdown, refractory dryout, catalyst maintenance, catalyst regeneration activities, initial commissioning of a unit, and initial commissioning of NO_x post-combustion control equipment, 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)(8)(F).
 - (2) An owner or operator of a unit equipped with NO_x post-combustion control equipment at a former RECLAIM petroleum refinery or a new petroleum

refinery shall maintain on-site documentation from the manufacturer of the minimum operating temperature of the NO_x post-combustion control equipment and make this information available to the South Coast AQMD upon request.

(g) Exemptions

- (1) An owner or operator of a unit at a former RECLAIM petroleum refinery or a new petroleum refinery shall be exempt from the requirements of paragraph (d)(2) during the following:
 - (A) Refractory dryout;
 - (B) Catalyst regeneration activities;
 - (C) Initial commissioning of a unit; and
 - (D) Initial commissioning of NO_x post-combustion control equipment.
- (2) An owner or operator of a unit at a former RECLAIM petroleum refinery or a new petroleum refinery with a permit condition before *[Date of Adoption]* which allows the use of a bypass to conduct maintenance shall be exempt from the requirements of paragraph (d)(8).