

Boiler MACT Proposed Reconsideration Rule Summary

Introduction

On December 1, 2014, the Environmental Protection Agency (EPA) announced reconsideration of and proposed amendments to the rule “National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.” The EPA is only requesting public comment on three issues raised in the petitions for reconsideration: startup and shutdown, 130 ppm CO limits for fossil fuel units, and PM CPMS requirements. The amendments also include technical corrections to clarify implementation and compliance issues.

Summary of Major Changes

- Clarified some exemptions, including that natural gas fired EGUs are not subject.
- Clarified that EGUs that become subject to the rule after 1/31/16 have 180 days to comply.
- If you make a change or fuel switch that causes a different subcategory to apply, you must be in compliance on the date of the change and you must demonstrate compliance within 60 days unless you demonstrated compliance with that subcategory within the last 12 months.
- Clarified use of output based limits.
- Changed effective date of rule to April 1, 2013 instead of January 31, 2013.
- Removed affirmative defense provisions.
- If you are subject to emission limits, you must develop and implement a startup and shutdown plan.
- Clarified fuel sampling requirements and fuel analysis compliance requirements.
- Added an option for the mercury specification for other Gas 1 fuels (stack measurement instead of fuel sampling).
- Fuel sampling plan for other Gas 1 fuels not required to be submitted to EPA.
- Added option for using CO₂ as diluent instead of O₂ for CEMS.
- Deleted requirement to “certify” PM CPMS.
- Can operate SO₂ CEMS per Part 60 requirements instead of Part 75. SO₂ CEMS operating limit is highest hourly SO₂ rate during test, not lowest.
- Edits to certification statements required in NOCS.
- Corrected dates for semi-annual compliance report period.
- Updates to information required in reports.
- Clarifications to electronic report submittal requirements.
- New definitions of startup and shutdown, additional work practice and recordkeeping requirements. New definition of useful thermal energy. Additions to list of clean fuels (other gas 1, fuels that meet HCl, Hg, TSM limits by fuel analysis).

- Moved the requirements to maintain records of date, time, duration, and fuels fired for startup and shutdown so these requirements only apply to units with emission limits (not Gas 1 units).
- Added to definition of load fraction.
- Edited O2 trim system definition.
- Added process heater to definition of temporary boiler.
- Updated existing biomass hybrid suspension grate unit CO limit to 3500 ppm.
- Added ENERGY STAR to energy management program exempted from energy assessment requirement.
- Clarified operating load parameter is 30-day rolling average.
- Various reference corrections.

Startup Definition and Work Practices

Startup is defined as one of the following:

(1) Either the first-ever firing of fuel in a boiler or process heater for the purpose of supplying steam or heat for heating and/or producing electricity, or for any other purpose, or the firing of fuel in a boiler after a shutdown event for any purpose. Startup ends when any of the steam or heat from the boiler or process heater is supplied for heating, and/or producing electricity, or for any other purpose, or

(2) The period in which operation of a boiler or process heater is initiated for any purpose. Startup begins with either the first-ever firing of fuel in a boiler or process heater for the purpose of supplying useful thermal energy (such as steam or heat) for heating, cooling or process purposes, or producing electricity, or the firing of fuel in a boiler or process heater for any purpose after a shutdown event. Startup ends four hours after when the boiler or process heater makes useful thermal energy (such as heat or steam) for heating, cooling, or process purposes, or generates electricity, whichever is earlier.

The work practice standard for startup periods in Table 3 of the rule was modified and the list of clean fuels was expanded, as indicated below:

- a. You must operate all CMS during startup.
- b. For startup of a boiler or process heater, you must use one or a combination of the following clean fuels: natural gas, synthetic natural gas, propane, other Gas 1 fuels, distillate oil, syngas, ultra-low sulfur diesel, fuel oil-soaked rags, kerosene, hydrogen, paper, cardboard, refinery gas, liquefied petroleum gas, and any fuels meeting the appropriate HCl, mercury and TSM emission standards by fuel analysis.
- c. You have the option of complying using either of the following work practice standards.

(1) If you start firing coal/solid fossil fuel, biomass/bio-based solids, heavy liquid fuel, or gas 2 (other) gases, you must vent emissions to the main stack(s) and

engage all of the applicable control devices except limestone injection in fluidized bed combustion (FBC) boilers, dry scrubber, fabric filter, selective non-catalytic reduction (SNCR), and selective catalytic reduction (SCR). You must start your limestone injection in FBC boilers, dry scrubber, fabric filter, SNCR, and SCR systems as expeditiously as possible. Startup ends when steam or heat is supplied for any purpose, OR

(2) If you choose to comply using definition (2) of “startup” in §63.7575, once you start firing (i.e., feeding) coal/solid fossil fuel, biomass/bio-based solids, heavy liquid fuel, or gas 2 (other) gases, you must vent emissions to the main stack(s) and engage all of the applicable control devices so as to comply with the emission limits within 4 hours of start of supplying useful thermal energy. You must effect PM control within one hour of first firing coal/solid fossil fuel, biomass/bio-based solids, heavy liquid fuel, or gas 2 (other) gases¹. You must start all applicable control devices as expeditiously as possible, but, in any case, when necessary to comply with other standards applicable to the source by a permit limit or a rule other than this subpart that require operation of the control devices.

d. You must comply with all applicable emission limits at all times except during startup and shutdown periods at which time you must meet this work practice. You must collect monitoring data during periods of startup, as specified in § 63.7535(b). You must keep records during periods of startup. You must provide reports concerning activities and periods of startup, as specified in § 63.7555.

A new definition of useful thermal energy was added:

Useful thermal energy means energy (i.e., steam, hot water, or process heat) that meets the minimum operating temperature and/or pressure required by any energy use system that uses energy provided by the affected boiler or process heater.

Shutdown Definition and Work Practices

EPA defines shutdown as:

Shutdown means the period in which cessation of operation of a boiler or process heater is initiated for any purpose. Shutdown begins when the boiler or process heater no longer makes useful thermal energy (such as heat or steam) for heating, cooling, or process purposes and/or generates electricity or when no fuel is being fed to the boiler or process heater, whichever is earlier. Shutdown ends when the boiler or process heater no longer makes useful thermal energy (such as steam or heat) for heating, cooling, or process purposes and/or

¹ The source may request a variance with the PM controls requirement. The source must provide evidence that (1) meeting the “fuel firing + 1 hour” requirement violates manufacturer’s recommended operation and/or safety requirements, and (2) the PM control device is appropriately designed and sized to meet the filterable PM emission limit.

generates electricity, and no fuel is being combusted in the boiler or process heater.

Shutdown work practice requirements:

- You must operate all CMS during shutdown.
- While firing coal/solid fossil fuel, biomass/bio-based solids, heavy liquid fuel, or gas 2 (other) gases during shutdown, you must vent emissions to the main stack(s) and operate all applicable control devices, except limestone injection in FBC boilers, dry scrubber, fabric filter, SNCR, and SCR but, in any case, when necessary to comply with other standards applicable to the source that require operation of the control device.
- If, in addition to the fuel used prior to initiation of shutdown, another fuel must be used to support the shutdown process, that additional fuel must be one or a combination of the following clean fuels: Natural gas, synthetic natural gas, propane, other Gas 1 fuels, distillate oil, syngas, ultralow sulfur diesel, refinery gas, and liquefied petroleum gas.
- You must comply with all applicable emissions limits at all times except for startup or shutdown periods conforming with this work practice. You must collect monitoring data during periods of shutdown, as specified in § 63.7535(b). You must keep records during periods of shutdown. You must provide reports concerning activities and periods of shutdown, as specified in § 63.7555.

New Requirement for Startup and Shutdown Plan

If you have an applicable emission limit, you must develop and implement a written startup and shutdown plan (SSP) according to the requirements in Table 3. The SSP must be maintained onsite and available upon request for public inspection.

Startup and Shutdown Recordkeeping for Units Subject to Emission Limits

- You must maintain records of the calendar date, time, occurrence and duration of each startup and shutdown.
- You must maintain records of the type(s) and amount(s) of fuels used during each startup and shutdown.
- For each startup, you must maintain records of the time when firing (i.e., feeding) start for coal/solid fossil fuel, biomass/bio-based solids, heavy liquid fuel, or gas 2 (other) gases; the time when useful thermal energy is first supplied; and the time when the PM controls are engaged.
- For each startup, you must maintain records of the hourly steam temperature, hourly steam pressure, flue gas temperature, and all hourly average CMS data (e.g., CEMS, PM CPMS, COMS, ESP total secondary electric power input, scrubber pressure drop, scrubber liquid flow rate) collected during each startup period to confirm that the control devices are engaged.

Addition to Definition of Load Fraction

This change addresses the concern about having to add too much sorbent when firing gas.

Load fraction means the actual heat input of a boiler or process heater divided by heat input during the performance test that established the minimum sorbent injection rate or minimum activated carbon injection rate, expressed as a fraction (e.g., for 50 percent load the load fraction is 0.5). For boilers and process heaters that co-fire natural gas or refinery gas with a solid or liquid fuel, the load fraction is determined by the actual heat input of the solid or liquid fuel divided by heat input of the solid or liquid fuel fired during the performance test (e.g., if the performance test was conducted at 100 percent solid fuel firing, for 100 percent load firing 50 percent solid fuel and 50 percent natural gas the load fraction is 0.5).

New Provisions on Fuel and Subcategory Switching

If you own or operate an existing industrial, commercial, or institutional boiler or process heater and have switch fuels or made a physical change to the boiler or process heater that resulted in the applicability of a different subcategory after January 31, 2016, you must be in compliance with the applicable existing source provisions of this subpart on the effective date of the fuel switch or physical change.

If you own or operate a new industrial, commercial, or institutional boiler or process heater and have switch fuels or made a physical change to the boiler or process heater that resulted in the applicability of a different subcategory, you must be in compliance with the applicable new source provisions of this subpart on the effective date of the fuel switch or physical change.

For affected sources, as defined in § 63.7490, that switch subcategory consistent with 63.7545(h) after the initial compliance date, you must demonstrate compliance within 60 days of the effective date of the switch, unless you had previously conducted your compliance demonstration for this subcategory within the previous 12 months.

Comments Requested by EPA

The EPA granted reconsideration of the following three issues on August 5, 2013, to provide an additional opportunity for public comment:

- Definition of startup and shutdown periods and the work practices that apply during such periods;
- Revised CO limits based on a minimum CO level of 130 parts per million (ppm); and
- The use of PM CPMS, including the consequences of exceeding the operating parameter.

We request comments on (1) the startup and shutdown provisions (definitions and work practices) in the January 2013 final rule, (2) the proposed alternate definition for “startup” and the proposed alternate work practice (item 5.c.(2) of Table 3 of proposed rule) for the startup period, and (3) the recordkeeping requirements being proposed for the startup periods.

The EPA is not proposing revisions to the 130 ppm CO limits, but will consider any input that we receive in this additional public comment opportunity. The EPA is not soliciting comment on any other CO limits, or on other issues relating to establishment of CO limits, including the question of whether EPA should establish work practice standards for CO instead of numeric limits. If, after evaluating all comments and data received on this issue, the EPA determines that amendments to the CO emission limits established at the level of 130 ppm, corrected to 3-percent oxygen, may be appropriate, we will propose such amendments in a future regulatory action.

EPA is not proposing to revise the requirements in 40 CFR 63.7440(a)(18) for demonstrating continuous PM emission compliance using a PM CPMS. However, the EPA is soliciting additional comment on these requirements in today’s action. The EPA welcomes comments on these provisions, including whether the provisions are necessary or appropriate. If a commenter suggests revisions to the provisions, the commenter should provide detailed information supporting any such revision.

We are proposing several technical corrections. These amendments are being proposed to correct inadvertent errors that were promulgated in the final rule and to make the rule language consistent with provisions addressed through this reconsideration. We are soliciting comment only on whether the proposed changes provide the intended accuracy, clarity and consistency. These proposed changes are described in Table 1 of this preamble. The EPA is also proposing to amend the final rule by removing the affirmative defense provision. We request comment on all of these proposed changes.

Summary of How Comments Were Addressed

A summary of how the industry comments/suggestions were addressed is provided below.

Comment	Suggested Solution	Proposed Reconsideration Rule
Clarify operating load parameter requirement.	Specify 30-day averaging time. Tables 4 and 8 specify highest hourly load during test, Table 7 says take the average of the test runs – inconsistent.	30-day averaging time added in Table 8 but not in Table 4. Discrepancy with average versus maximum not addressed.
Energy assessment requirement is illegal	Remove it.	Facilities using ENERGY STAR management practices are exempt from the requirement.

Comment	Suggested Solution	Proposed Reconsideration Rule
Expand clean fuels list.	Expand list of clean fuels to include all Other Gas 1 fuels, biodiesel, fuels that meet the HCl, Hg, TSM limits through fuel analysis, and other clean fuels as determined by permitting authorities.	Expanded list of clean fuels to include all Other Gas 1 fuels, fuels that meet the HCl, Hg, TSM limits through fuel analysis. The definition of distillate oil in the rule includes biodiesel.
End of startup is not workable.	Startup ends either when the boiler or process heater has continuously maintained a steam production rate of at least 25% of maximum steam or heat output at normal operating pressure for a certain number of continuous hours after a cold startup or a certain number of continuous hours hour after a hot restart and when all control devices are in stable operation or when the boiler or process heater is operating above an alternate minimum operationally stable output flow rate and pressure for a minimum time, as specified in a site-specific start-up plan. This would also apply to units sharing a common control device that start up at separate times (separate startup period occurs for each unit).	<p>There is no load threshold in the startup definition. EPA defined the end of startup as either (1) when any steam or heat is supplied for any purpose, or (2) four hours after the unit makes useful thermal energy. Definition of useful thermal energy was added.</p> <p>Common stack provisions not changed.</p> <p>There is no option for site-specific definition/plan but can petition for an alternate to the requirement to start PM controls within 1 hour of first firing coal/solid fossil fuel, biomass/bio-based solids, heavy liquid fuel, or gas 2 (other) gases.</p>
Cannot safely engage ESPs unless certain conditions are met.	ESPs must be included in the Table 3, item 5 list of exempted air pollution controls that must be started as expeditiously as possible.	If you choose startup definition and work practice #2, you must effect PM control within one hour of first firing coal/solid fossil fuel, biomass/bio-based solids, heavy liquid fuel, or gas 2 (other) gases. You must start all applicable control devices as expeditiously as possible, but, in any case, when necessary to comply with other standards applicable to the source by a permit limit or a rule other than this subpart that require operation of the control devices. The source may request a variance with the PM controls requirement. The source must provide evidence that (1) meeting the “fuel firing + 1 hour” requirement violates manufacturer’s recommended operation and/or safety requirements, and (2) the PM control device is appropriately designed and sized to meet the filterable PM emission limit.

Comment	Suggested Solution	Proposed Reconsideration Rule
<p>Sometimes, a unit begins startup, reaches a certain minimum stable load, then there is an equipment problem that results in “failed startup.”</p>	<p>Need to be sure that this entire period is considered startup, even if you reach the minimum load threshold. If, for example, the end of startup is 25% load plus 8 hours, the unit has to be over 25% for 8 continuous hours.</p>	<p>There is no load threshold in the startup definition. There is no mechanism for allowing an extended startup period.</p>
<p>Sometimes there are problems with the equipment used to supply the solid fuel that cause loss of fuel feed.</p>	<p>The shutdown definition should accommodate the scenario where fuel feed is reinitiated before the unit ceases to supply steam. Facilities need to be able to call it a shutdown, even if fuel supply is restored. Facilities should not be forced to take the boiler down fully before reinitiating a startup – this would be uneconomical and could result in more emissions. The end of this period is a hot restart, and then the startup work practices would apply until certain load and time conditions are met. Could revise end of shutdown definition: “Shutdown ends when there is both no steam or heat being supplied and no fuel being combusted in the boiler or process heater or when startup is initiated by reintroducing fuel to the boiler or process heater after fuel feed has been halted.”</p>	<p>This scenario/solution is not specifically addressed. It can be inferred that unless a shutdown is completed, then there is no shutdown event.</p>
<p>Shutdown begins when fuel is no longer “fired.” For some designs, there is still fuel burning in the boiler after feed has stopped.</p>	<p>EPA should clarify that fuel being fired in this case means fuel being fed to the combustion unit.</p>	<p>The shutdown definition was clarified.</p>

Comment	Suggested Solution	Proposed Reconsideration Rule
<p>A unit operates for many hours in standby mode, less than 25% load, either burning clean fuels or burning solid fuels with emissions controls in service. Need to address this type of unit.</p>	<p>Where a 25% load+time threshold can't be accommodated by a standby unit, the following types of concepts could be incorporated into the permit to identify the end of startup:</p> <ul style="list-style-type: none"> • The unit is firing its primary fuel for a period of time adequate to provide stable and non-interrupted fuel flow, stable and controlled air flows, and adequate operating temperatures to allow proper fuel drying and air preheat as applicable. • Emissions controls are in service with operating parameters such as flow rates and temperatures being controlled and stable. • The unit is supplying steam to a common header system or energy user(s) at normal operating conditions including pressure and temperature, and is above the minimum operational stable output flow rate, as applicable to the unit. • For stoker units, when the grate reaches an adequate level of coverage with solid fuel based on visual observation and stability of air, fuel, and steam flow rates. 	<p>Standby mode is not addressed in the rule.</p>
<p>PM CPMS</p>	<p>Sources should not be required to certify PM CPMS. Not appropriate to consider any exceedance of PM CPMS operating limit as a violation.</p>	<p>The "certify" requirement was removed. EPA is taking comment on the PM CPMS provisions related to exceedances.</p>
<p>CO limits vs work practices</p>	<p>EPA volunteered to solicit comments on 130 ppm CO limits for fossil fuel. Some commented against CO as a surrogate. Some commented for CO work practice like MATS instead of emission limits.</p>	<p>EPA is not proposing any changes to CO limits (other than correcting the biomass hybrid suspension limit) but is requesting comment on the 130 ppm cutoff.</p>
<p>Dates</p>	<p>Use of publication date rather than effective date for calculating compliance and reporting dates was not proposed and leads to conflicts.</p>	<p>The effective date was revised to be April 1, 2013.</p>
<p>Gas 1/Gas 2</p>	<p>Should provide an allowance for liquid fuel firing in Gas 1 or Gas 2 units, not just under the gas curtailment or interruption provisions.</p>	<p>No change made.</p>

Comment	Suggested Solution	Proposed Reconsideration Rule
Gas EGU applicability	Applicability provision revised in final rule, so BMACT now covers gas-fired EGUs 25 MWe or greater	Fixed.

Technical changes suggested:

Citation	Issue	Clarification or Change Needed	Outcome
<p>63.7525(a)(7) “Operate an oxygen trim system with the oxygen level set no lower than the lowest hourly average oxygen concentration measured during the most recent CO performance test as the operating limit for oxygen according to Table 7 to this subpart.”</p>	<p>The rule states that if you are subject to a CO limit, you must follow 63.7525(a)(1) through (7). 63.7525(a)(7) appears to require an O2 trim system along with use of the CO and O2 CEMs. Other elements of the rule imply that facilities have a choice to utilize an O2 analyzer system (which MAY include an O2 trim system) or a CO/O2 CEMS. The requirement as written is overly restrictive, especially in cases where this technology cannot be effectively implemented, and we do not believe EPA intended to require use of an O2 trim system when a CO/O2 CEMS is used. Therefore, we believe that 63.7525(a)(7) should not apply where facilities are using CO/O2 CEMS or an O2 analyzer system that does not include an O2 trim system.</p>	<p>Clarify that use of O2 trim systems is one option for compliance and not a requirement for all units with a CO limit. Facilities demonstrating compliance with CO limits must EITHER use an oxygen trim system OR an oxygen analyzer system OR a CO/O2 CEMS.</p>	<p>Change was made.</p>
<p>63.7515(e) 63.7521(c)(1)(ii)</p>	<p>There is an inconsistency in the rule regarding fuel sampling requirements for facilities using the fuel analysis option. We believe that monthly sampling is sufficient, and that sampling 3 times per month is overly burdensome (and in some months it would be impossible to obtain 3 samples 10 days apart).</p>	<p>Clarify that the rule requires collection of monthly samples collected no less than 14 days apart.</p>	<p>Requirement to obtain samples 10 days apart was deleted.</p>
<p>63.7550(b)(1) and (2)</p>	<p>The dates for submitting the compliance reports specified in § 63.7550(b)(2) are the same as the end of the reporting periods specified in § 63.7550(b)(1).</p>	<p>Adjust the dates in § 63.7550(b)(2) to provide a 30-day period for report submission.</p>	<p>Dates were adjusted.</p>

Citation	Issue	Clarification or Change Needed	Outcome
63.7540(a), 63.7555(d)(1), and Table 8	63.7540(a)(2) requires facilities to keep records of the type and amount of fuels burned in each boiler or process heater during the reporting period to demonstrate that the fuel mixture would result in lower fuel input of chlorine, mercury, and TSM than that during the last performance test. We believe EPA inadvertently deleted the "fuel pollutant content" line from Table 8 in the March 2011 final rule and December 2011 proposed reconsideration rule, which clearly stated that the fuel pollutant content comparison was to be performed monthly. The deletion of this item was not explained in any responses to comments or in the preamble and since 63.7555(d)(1) requires monthly fuel use records for each boiler or process heater, it is appropriate to clarify that the fuel pollutant content comparison is to be performed monthly, otherwise a short-term operating limit might be assumed. It is beyond the capability of multi-fuel boiler operators to measure input of each fuel on a short-term basis.	EPA should reinstate the line item for fuel pollutant content in Table 8 of the 2013 rule.	This was not done.