BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
	)	R2023-018(A)
AMENDMENTS TO 35 ILL. ADM. CODE	)	(Rulemaking – Air)
PARTS 201, 202, AND 212	)	

NOTICE OF FILING

TO: Mr. Don A. Brown,
Clerk of the Board
Illinois Pollution Control Board
100 West Randolph Street,
Suite 11-500
Chicago, Illinois 60601

Timothy Fox
Chloe Salk
Hearing Officers
Illinois Pollution Control Board
60 East Van Buren Street, Suite 630
Chicago, Illinois 60605

(VIA ELECTRONIC MAIL)

(SEE PERSONS ON ATTACHED SERVICE LIST)

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Illinois Pollution Control Board, the **PROPOSAL FOR REGULATIONS OF GENERAL APPLICABILLITY** on behalf the Illinois Environmental Regulatory Group, copies of which are hereby served upon you.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
REGULATORY GROUP,

By:/s/ *Melissa S. Brown*

Dated: August 7, 2023

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CERTIFICATE OF SERVICE

I, the undersigned, on oath state the following: That I have served the attached **PROPOSAL FOR REGULATIONS GENERAL APPICABILLITY,** via electronic mail upon:

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That my email address is Melissa.Brown@heplerbroom.com

That the number of pages in the email transmission is 69.

That the email transmission took place before 5:00 p.m. on August 7, 2023.

Date: August 7, 2023

/s/ *Melissa S. Brown*
Melissa S. Brown

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	**)**	
	)	
AMENDMENTS TO 35 ILL. ADM. CODE	**)**	**R 23-18(A)**
PARTS 201, 202, AND 212	**)**	**(Rulemaking – Air)**

TABLE OF CONTENTS

1. Notice of Filing
2. Certificate of Service
3. Table of Contents
4. Certificate of Origination
5. Motion for Waiver of Copy Requirements
6. Statement of Reasons
7. Proposed Rule Language – Amendments to 35 Ill. Adm. Code Part 216
8. Incorporations by Reference[1]:

   40 CFR Part 63, Subpart DDDDD (2022)*
9. Technical Support Document

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
REGULATORY GROUP,

Dated: August 7, 2023

By: /s/ Melissa S. Brown
One of Its Attorneys

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[1] Copies of documents with an asterisk beside them have not been provided.

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	**)**	
	)	
AMENDMENTS TO 35 ILL. ADM. CODE	**)**	**R 23-18(A)**
PARTS 201, 202, AND 212	**)**	**(Rulemaking – Air)**

CERTIFICATE OF ORIGINATION

The Illinois Environmental Regulatory Group certifies in accordance with 35 Ill. Adm. Code 102.202(i) that its Proposal for Regulations of General Applicability, which proposes to amend 35 Ill. Adm. Code Part 216, amends the most recent version of the rules as published on the Illinois Pollution Control Board's website.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
REGULATORY GROUP,

Dated: August 7, 2023

By: /s/ Melissa S. Brown
One of Its Attorneys

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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
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AMENDMENTS TO 35 ILL. ADM. CODE	)	**R 23-18(A)**
PARTS 201, 202, AND 212	)	**(Rulemaking – Air)**

MOTION FOR WAIVER OF COPY REQUIREMENTS

The Illinois Environmental Regulatory Group ("IERG"), by and through its attorneys, HEPLERBROOM, LLC, hereby moves that the Illinois Pollution Control Board ("Board"), pursuant to 35 Ill. Adm. Code 101.500, 102.202, and 102.402, waive the requirement that IERG provide copies of documents incorporated by reference in its proposal for regulations of general applicability. In support of this motion, IERG states as follows:

1. The Board's procedural rules at 35 Ill. Adm. Code 102.202 require that a proposal for a regulation of general applicability include "any material to be incorporated by reference within the proposed rule pursuant to Section 5-75 of the [Illinois Administrative Procedure Act]." 35 Ill. Adm. Code 102.202(d). Section 27(a) of the Illinois Environmental Protection Act ("Act") also requires that a petitioner provide information supporting a regulatory proposal. 415 ILCS 5/27(a).

2. IERG's proposal incorporates by reference the following set of regulations: 40 CFR Part 63, Subpart DDDDD (2022).

3. The document listed above is part of the Code of Federal Regulations, is readily accessible to or are within the possession of the Board, and is publicly available online on the Government Publishing Office's website at https://www.ecfr.gov/cgi-bin/ECFR?page=browse.

WHEREFORE, for the above and foregoing reasons, the Illinois Environmental Regulatory Group hereby respectfully requests the Illinois Pollution Control Board waive the requirement to provide copies of the aforementioned document.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
REGULATORY GROUP,

Dated: August 7, 2023

By: /s/ Melissa S. Brown
One of Its Attorneys

Melissa S. Brown
HEPLERBROOM, LLC
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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	**)**	
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AMENDMENTS TO 35 ILL. ADM. CODE	**)**	**R 23-18(A)**
PARTS 201, 202, AND 212	**)**	**(Rulemaking – Air)**

THE ILLINOIS ENVIRONMENTAL REGULATORY GROUP'S
PROPOSAL FOR REGULATIONS OF GENERAL APPLICABILITY

STATEMENT OF REASONS

I. INTRODUCTION

The Illinois Environmental Regulatory Group ("IERG"), by and through its attorneys HEPLERBROOM, LLC, submits this Proposal for Regulations of General Applicability ("Proposal") to the Illinois Pollution Control Board ("Board") pursuant to Sections 27 and 28 of the Illinois Environmental Protection Act ("Act"), 415 ILCS 5/27 and 28, and 35 Ill. Adm. Code 102.200 and 102.202. This Statement of Reasons is submitted in support of amending 35 Ill. Adm. Code Part 216, Carbon Monoxide Emissions, specifically amending Section 216.103 (Definitions), Section 216.104 (Incorporations by Reference), and Section 216.121 (Fuel Combustion Emission Sources).

IERG is an Illinois non-profit corporation affiliated with the Illinois Chamber of Commerce and is comprised of 51 member companies that are regulated by government agencies that promulgate, enforce, or administer environmental laws, rules, regulations, or other policies. IERG was founded in 1985 and is a frequent participant in regulatory development and rulemakings that have the potential to impact businesses in Illinois. IERG participated in PCB R 23-18, including opposing the Illinois Environmental Protection Agency's ("Agency" or "Illinois EPA") proposal and proposing IERG's own alternative emission limitation proposals.

On December 7, 2022, Illinois EPA proposed amendments to the startup, malfunction, and breakdown ("SMB") regulations in PCB R 23-18, including removing SMB provisions in 35 Ill. Adm. Code Parts 201, 202, and 212. Illinois EPA Proposal, PCB R 23-18 (Dec. 7, 2022). On July 20, 2023, the Board adopted Illinois EPA's proposal. Opinion and Order, PCB R 23-18 (July 20, 2023). Because IERG's Members include facilities with emission units that have SMB events, and because a number of IERG's Members include facilities with SMB provisions in their permits, the amendments directly impact IERG Members.

IERG submits this Proposal to amend the Board's carbon monoxide ("CO") standard applicable to fuel combustion emission sources in Part 216 as a result of the Board's removal of the SMB provisions in Part 201 in PCB R 23-18. As explained in this Proposal, the Board's removal of the SMB provisions will greatly impact fuel combustion emission sources because the units will be unable to comply with the CO standard in Section 216.121 during periods of startup and shutdown. IERG proposes to amend Section 216.121 by incorporating by reference select provisions of the National Emission Standards for Hazardous Air Pollutants ("NESHAP") for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters at 40 CFR Part 63, Subpart DDDDD. In promulgating NESHAP Subpart DDDDD, the United States Environmental Protection Agency ("USEPA") recognized the unique and important operating conditions that fuel combustion emission sources must follow during startup and shutdown to ensure operations and minimize emissions. IERG respectfully requests that the Board adopt IERG's Proposal.

II. STATEMENT OF FACTS

A. Background on SMB Regulations

The majority of the SMB provisions that were the subject of PCB R 23-18 were originally adopted by the Board in 1972. *See* Opinion and Order of the Board, *In the Matter of: Emission Standards*, R71-23 (Apr. 13, 1972) (adopting Section 201.149 (then Rule 105(a)), Section 201.157 (then Rule 103(b)(3), Sections 201.261 – 201.265 (then Rules 105(b) – (f), Section 201.301 (then Rule 107(a)), and Section 212.124 (then Rule 202(c)). The SMB provisions were adopted in a large rulemaking for new regulations for emission control of sulfur dioxide, nitrogen oxides, CO, hydrocarbons, and particulate matter. Final Order and Opinion, PCB R 71-23, at 1 (April 13. 1972). The emission standards adopted in PCB R 71-23 included emission limits for sulfur dioxide and sulfuric acid from industrial processes, control requirements for the emission of CO from stationary sources, and tightened emission limits for particulate matter from certain operations. *Id*. When addressing the compliance program provisions, the Board recognized that sources were unable to meet many of the emission limitations and standards being adopted, explaining:

> Many of the substantive limitations adopted today impose stringent new requirements which cannot be met immediately without closing down large numbers of existing facilities. While it is important that the new standards be met as soon as is practicable, we have no wish to obtain clean air at the cost of closing down society.

Id. at 8.

As to adopting the SMB provisions in Sections 201.261-201.265 (then Rules 105(b)-(f)), the Board's explanation of the rules was as follows:

> Rule 105: Malfunctions, Breakdowns, and Startups. No machine works perfectly all the time. Further, startup conditions may result in less than optimum emission control. The policy of this Rule is that insofar as is practicable, efforts shall be made to reduce the incidence and duration of startups and excessive emissions

> during startup periods; and that, except in special cases, equipment whose pollution controls are out of order should not be operated, just as an automobile should not be operated when its brakes are out of commission. Clearly the latter principle cannot be absolute, for it may not be worth blacking out the entire Midwest to prevent emissions from a partly malfunctioning boiler precipitator. We cannot resolve the myriad of individual variations in a single rule. The Agency's admirable proposal, which we have adopted, places case-by-case discretion in the Agency under its permit powers, providing that if special conditions warrant permission to operate during a malfunction, or if irreducible startup emissions will somewhat exceed the general standards, EPA may grant permission for such emissions upon application and proof.

Opinion and Order of the Board, PCB R 71-23 at 9.

As evidenced in the Board's 1972 decision, the SMB relief provisions were a foundational part of the development of the general emission standards. The Board recognized in 1972 that sources may be unable to comply with applicable emission limitations or standards during startup because "startup conditions may result in less than optimum emission control." *Id*. The Board also recognized that unavoidable malfunctions and breakdowns do occur and that, in certain circumstances, continued operation is required even though emission may be in excess of the generally applicable standard. *Id*. Until the Board's removal of the SMB provisions, the SMB provisions adopted in PCB R 71-23 remained unchanged except for minor, non-substantive revisions. Testimony of Rory Davis, Illinois EPA, Transcript of January 19, 2023 Hearing, PCB R 23-18, at 13:6-15 (Jan. 19, 2023). The principle recognized by the Board 50 years ago remains just as applicable today. Despite tremendous advances in pollution control technologies and air quality, there remain periods of time during SMB conditions where compliance with generally applicable regulatory standards is infeasible.

B. SSM SIP Call and Guidance for Alternative Emission Limitations

On June 12, 2015, USEPA published in the Federal Register a final rule clarifying, restating, and updating USEPA's national policy regarding startup, shutdown, and malfunction

("SSM") provisions in State Implementation Plans ("SIP"). *State Implementation Plans: Response to Petition for Rulemaking; Restatement and Update of EPA's SSM Policy Applicable to SIPs; Findings of Substantial Inadequacy; and SIP Calls to Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown, and Malfunction*, 80 Fed. Reg. 33840 (June 12, 2015). A Notice of Proposed Rulemaking was first published in the Federal Register for these revisions on February 22, 2013. *See id*. at 33842. The revisions were USEPA's response to a 2011 Petition for Rulemaking filed by Sierra Club. *Id*.

USEPA announced in the 2015 final rule its SSM policy, stating that broad SSM exemption provisions and affirmative defense SIP provisions are generally viewed as inconsistent with the requirements of the Clean Air Act ("CAA"). *Id*. at 33851. Specifically, USEPA granted Sierra Club's Petition "on the request to rescind its SSM Policy element that interpreted the [Clean Air Act] to allow states to elect to create affirmative defense provisions in SIPs." *Id*. However, USEPA also recognized that there are approaches to address emissions during SSM events that are consistent with the requirements of the CAA. *Id*. at 33844. USEPA explained:

> The EPA emphasizes that there are other approaches that would be consistent with CAA requirements for SIP provisions that states can use to address emissions during SSM events. While automatic exemptions and director's discretion exemptions from otherwise applicable emission limitations are not consistent with the CAA, SIPs may include criteria and procedures for the use of enforcement discretion by air agency personnel. Similarly, SIPs may, rather than exempt emissions during SSM events, include emission limitations that subject those emissions to alternative numerical limitations or other technological control requirements or work practice requirements during startup and shutdown events, so long as those components of the emission limitations meet applicable CAA requirements . . . . The EPA acknowledges that for some states, this rulemaking entailed the EPA's evaluation of SIP provisions that may date back several decades. Aware of that fact, the EPA is committed to working closely with each of the affected states to develop approvable SIP submissions consistent with the guidance articulated in the updated SSM Policy in this final action.

Id. (emphasis added).

USEPA also offered additional explanation as to USEPA's recommended criteria for developing alternative emission limitations ("AELs") that would be applicable during periods of SSM:

> In addition, the EPA is providing in this document some additional explanation and clarifications to its recommended criteria for developing alternative emission limitations applicable during startup and shutdown. The EPA continues to recommend that, in order to be approvable (i.e., meet CAA requirements), alternative requirements applicable to the source during startup and shutdown should be narrowly tailored and take into account considerations such as the technological limitations of the specific source category and the control technology that is feasible during startup and shutdown. Accordingly, the EPA continues to recommend the seven specific criteria enumerated in section III.A of the Attachment to the 1999 SSM Guidance as appropriate considerations for SIP provisions that establish alternative emission limitations that apply to startup and shutdown. . . .
>
> ***
>
> The EPA seeks to make clear in this document that the recommended criteria are intended as guidance to states developing SIP provisions that include emission limitations with alternative emission limitations applicable to specifically defined modes of source operation such as startup and shutdown. A state may choose to consider these criteria in developing such a SIP provision. The EPA will use these criteria when evaluating whether a particular alternative emission limitation component of an emission limitation meets CAA requirements for SIP provisions. Any SIP revision establishing an alternative emission limitation that applies during startup and shutdown would be subject to the same procedural and substantive review requirements as any other SIP submission.

Id. at 33913.[1]

USEPA then restated the seven criteria for developing AELs, which are as follows:

> (1) The revision is limited to specific, narrowly defined source categories using specific control strategies (e.g., cogeneration facilities burning natural gas and using selective catalytic reduction);

[1] USEPA defined an "alternative emission limitation" as "an emission limitation in a SIP that applies to a source during some but not all periods of normal operation (e.g., applies only during a specifically defined mode of operation such as startup or shutdown). An alternative emission limitation is a component of a continuously applicable SIP emission limitation, and it may take the form of a control measure such as a design, equipment, work practice or operational standard (whether or not numerical). This definition of the term is independent of the statutory use of the term 'alternative means of emission limitation' in sections 111(h)(3) and 112(h)(3), which pertain to the conditions under which the EPA may pursuant to sections 111 and 112 promulgate emission limitations, or components of emission limitations, that are not necessarily in numeric format." 80 Fed. Reg 33842.

> (2) Use of the control strategy for this source category is technically infeasible during startup or shutdown periods;
>
> (3) The alternative emission limitation requires that the frequency and duration of operation in startup or shutdown mode are minimized to the greatest extent practicable;
>
> (4) As part of its justification of the SIP revision, the state analyzes the potential worst-case emissions that could occur during startup and shutdown based on the applicable alternative emission limitation;
>
> (5) The alternative emission limitation requires that all possible steps are taken to minimize the impact of emissions during startup and shutdown on ambient air quality;
>
> (6) The alternative emission limitation requires that, at all times, the facility is operated in a manner consistent with good practice for minimizing emissions and the source uses best efforts regarding planning, design, and operating procedures; and
>
> (7) The alternative emission limitation requires that the owner or operator's actions during startup and shutdown periods are documented by properly signed, contemporaneous operating logs or other relevant evidence.

Id. at 33914. USEPA also recognized that it may be appropriate to establish AELs for modes of source operation other than startup and shutdown, but the same criteria should be utilized. *Id*.

In the 2015 final rule, USEPA issued findings of substantial inadequacy for SIP provisions applying to excess emissions during SSM periods for 36 states/air agencies, including Illinois, and issued a SIP Call to each of those states/air agencies, requiring them to adopt and submit revisions to USEPA to correct identified SSM-related deficiencies by November 22, 2016. *Id*. at 33840, 33848, and 33930. The 2015 SIP final action was then subject to legal challenges. *See Environ. Comm. Fl. Elec. Power v. EPA, et al*., No. 15-1239 (D.C. Cir.) (consolidated cases). In October 2020, USEPA issued a Memorandum establishing a new SSM policy, which permitted the inclusion of SSM provisions related to exemptions and affirmative defenses. "Inclusion of

Provisions Governing Periods of Startup, Shutdown, and Malfunctions in State Implementation Plans," USEPA Memorandum (October 9, 2020).[2] In September 2021, USEPA issued a Memorandum withdrawing the 2020 Memorandum and announcing USEPA's intent to return to the 2015 SSM policy. "Withdrawal of the October 9, 2020, Memorandum Addressing Startup, Shutdown, and Malfunctions in State Implementation Plans and Implementation of the Prior Policy," USEPA Memorandum (Sep. 30, 2021).[3]

On January 12, 2022, USEPA published in the Federal Register a final rule finding that 12 states or local air pollution control districts, including Illinois, failed to submit SIP revisions required by the Clean Air Act in a timely manner to address USEPA's 2015 findings of substantial inadequacy and SIP Call. *Findings of Failure to Submit State Implementation Plan Revisions in Response to the 2015 Findings of Substantial Inadequacy and SIP Calls to Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown, and Malfunction*, 87 Fed. Reg. 1680 (Jan. 12, 2022). The 2022 final action became effective on February 11, 2022 and requires the impacted states to submit SIP revisions addressing the findings of inadequacy relating to SSM within 18 months from the effective date (i.e., by August 11, 2023). *Id*. at 1682.

C. Illinois EPA's Proposal and Board's Adopted Rules

In PCB R 23-18, Illinois EPA proposed to "amend the Illinois Administrative Code to remove provisions that allow sources to request, and the [Agency] to grant, advance permission to continue operating during a malfunction, or to violate emission limitations during startup." Illinois EPA, Statement of Reasons, PCB R 23-18, at 1 (Dec. 7, 2022). According to the Agency, removing the provisions at issue in Parts 201, 202, and 212 was necessary to comply with

[2] The 2020 USEPA Memorandum is publicly available on USEPA's website at https://www.epa.gov/system/files/documents/2021-09/2020-ssm-in-sips-guidance-memo.pdf.
[3] The 2021 USEPA Memorandum is publicly available on USEPA's website at https://www.epa.gov/system/files/documents/2021-09/oar-21-000-6324.pdf.

USEPA's SIP Call and Finding of Failure. Under the Fast Track rulemaking procedures, two hearings were held in the main rulemaking – one on January 19, 2023 in Springfield, Illinois and one on February 16, 2023 in Chicago, Illinois. Pursuant to Illinois EPA's request, the third hearing scheduled was cancelled. Proposed AELs were submitted via pre-filed testimony for the second hearing and were discussed during the second hearing. Pre-Filed Testimony of Kelly Thompson and David Wall, PCB R 23-18 (Feb. 6, 2023); Pre-Filed Testimony of Sharene Shealey, PCB R 23-18 (Feb. 6, 2023); Pre-filed Testimony of Cynthia Vodopivec, PCB R 23-18 (Feb. 6, 2023); *see* Second Hearing Transcript, PCB R 23-18 (Feb. 16, 2023). In PCB R 23-18, IERG filed a proposed AEL for fuel combustion emission sources and a proposed AEL for fluid catalytic cracking units. Pre-filed Testimony of Kelly Thompson and David Wall, PCB R 23-18 (Feb. 6, 2023). Post-hearing comments were submitted by the rulemaking participants on March 7, 2023. Several comments by industrial associations and environmental organizations were submitted throughout the rulemaking. On April 6, 2023, the Board entered its Second Notice Opinion and Order and, within that Order, the Board directed the Clerk to open a sub-docket to consider any proposed AELs. Second Notice Opinion and Order, PCB R 23-18 (Apr. 6, 2023). On July 6, 2023, in this sub-docket rulemaking, the Board established a filing deadline of August 7, 2023 to file any proposed AEL language in this sub-docket. Board Order, PCB R 23-18(A) (July 6, 2023).

On July 20, 2023, over an objection by the Joint Committee on Administrative Rules ("JCAR"), the Board adopted the amendments proposed by Illinois EPA. Final Opinion and Order, PCB R 23-18 (July 20, 2023). The effective date of the adopted amendments is July 25, 2023. Notice of Adopted Rules Submitted to Secretary of State on July 25, 2023, PCB R 23-18

(July 26, 2023).[4] The amendments remove and/or amend the SMB provisions from Parts 201, 202, and 212 that relate to establishing a prima facie defense for exceedances during SMB events and that effectively established permit-based exemptions for periods of SMB. The adopted amendments do not include any AELs, or alternative SMB provisions, as the Board declined to adopt the AELs proposed by industry. Final Opinion and Order, PCB R 23-18 (July 20, 2023).

Throughout the rulemaking, Illinois EPA maintained that the amendments were technically and economically reasonable because the amendments did not impose any new or additional obligations on affected sources. *See, e.g.,* Illinois EPA Statement of Reasons, PCB R 23-18, at 15 (Dec. 7, 2022). Illinois EPA argued that the provisions at issue only created an affirmative defense for violations of applicable standards during SMB events. IERG does not agree with this position. Prior to the Board's July 20, 2023 amendments, Section 201.149 stated:

> No person shall cause or allow the continued operation of an emission source during malfunction or breakdown of the emission source or related air pollution control equipment if such operation would cause a violation of the standards or limitations set forth in Subchapter c of this Chapter unless the current operating permit granted by the Agency provides for operation during a malfunction or breakdown. No person shall cause or allow violation of the standards or limitations set forth in that Subchapter during startup unless the current operating permit granted by the Agency provides for violation of such standards or limitations during startup.

35 Ill. Adm. Code 201.149. Section 201.149 previously provided Illinois EPA the authority to issue permits with provisions that allow violation of standards or limitations during startup and allow for the continued operation of an emission source during malfunction or breakdown in violation of limits or standards. There is no reference to only establishing a prima facie defense in that provision.

[4] As of the date of this filing, the final amendments adopted in PCB R 23-18 have not yet been published in the Illinois Register.

Furthermore, in the proposal for the 2015 SIP Call, USEPA characterized Illinois' SMB provisions as allowing or granting permission for excess emissions during SSM events, explaining:

> The Petitioner objected to three generally applicable provisions in the Illinois SIP which together have the effect of providing discretionary exemptions from otherwise applicable SIP emission limitations, and such exemptions are impermissible under the CAA because the statute and the EPA's interpretation of the CAA in the SSM Policy require that all such excess emissions be treated as violations.
>
> ***
>
> The Petitioner noted that Illinois has claimed that its SIP provisions do not provide for advance permission to violate emission limitations but that its SIP provisions instead authorize ''case- by-case claims of exemption.'' The Petitioner argued that despite this explanation, the language in the SIP is not clear and appears to grant advance permission for violations during malfunction and startup events. Furthermore, the Petitioner objected because the effect of granting that permission would be to provide the source with an absolute defense to any later enforcement action, that is, ''a defense [would] attach[] at the state's discretion.'' The Petitioner argued that this approach would violate the fundamental requirement that all excess emissions be considered violations.
>
> ***
>
> b. The EPA's Evaluation
>
> The EPA agrees that the CAA does not allow for discretionary exemptions from otherwise applicable SIP emission limitations. In accordance with the requirements of CAA section 110(a)(2)(A), SIPs must contain emission limitations and, in accordance with the definition of ''emission limitations'' in CAA section 302(k), such emission limitations must be continuous. Thus, any excess emissions above the level of the applicable emission limitation must be considered violations, whether or not the state elects to exercise its enforcement discretion. The EPA agrees that together Ill. Admin. Code tit. 35 § 201.261, Ill. Admin. Code tit. 35 § 201.262, and Ill. Admin. Code tit. 35 § 201.265148 can be read to create exemptions by authorizing a state official to determine in the permitting process that the excess emissions during startup and malfunction will not be considered violations of the applicable emission limitations. <u>The language of the SIP on its face appears to permit the state official to grant advance permission to ''continue to operate during a malfunction or breakdown'' or ''to violate the standards or limitations * * * during startup''</u> (Ill. Admin. Code tit. 35 § 201.261(a)).
>
> The EPA notes that the Petitioner's characterization of Illinois's interpretation of its SIP is not accurate. . . . Thus, the state claimed that under its SIP provisions,

> any excess emissions during periods of startup or malfunction would still constitute a ''violation'' and that the only effect of the permission granted by the state official in the permit would be to allow a source to assert a ''prima facie defense'' in an enforcement action. Even in light of this explanation, the EPA agrees that the plain language of the SIP provisions do not make explicit this limitation on the state official's authorization to grant exemptions. Indeed, by expressly granting ''permission,'' the provisions are ambiguous and could be read as allowing the state official to be the unilateral arbiter of whether the excess emissions in a given malfunction, breakdown, or startup event constitute a violation. By deciding that an exceedance of the emission limitation was not a ''violation,'' exercise of this discretion could preclude enforcement by the EPA or through a citizen suit. Most importantly, however, the grant of permission would authorize the state official to create an exemption from the otherwise applicable SIP emission limitation, and such an exemption is impermissible in the first instance. Such a director's discretion provision undermines the emission limitations and the emission reductions they are intended to achieve and renders them less enforceable by the EPA or through a citizen suit. The EPA believes that the inclusion of director's discretion provisions in Ill. Admin. Code tit. 35 § 201.261, Ill. Admin. Code tit. 35 § 201.262, and Ill. Admin. Code tit. 35 § 201.265 is thus a substantial inadequacy and renders these specific SIP provisions impermissible for this reason.

State Implementation Plans; Response to Petition for Rulemaking; Findings of Substantial Inadequacy; and SIP Calls to Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown, and Malfunction, 78 Fed. Reg. 12514-15 (Feb. 22, 2013) (internal citations removed) (emphasis added).[5,6] USEPA recognized that the SMB provisions in Part 201 are at best ambiguous and could be read as providing an exemption from otherwise applicable emission limitations. Illinois EPA has historically used Section 201.149 as a basis to include broad SMB conditions in construction and operating permits. *See* Pre-filed Testimony of Kelly Thompson and David Wall, PCB R 23-18, at 7-9, 53-54 (Feb. 6, 2023).

[5] USEPA then goes on to explain that, even if the Illinois SIP provisions cited *intended* to provide only an affirmative defense to enforcement, the prima facie mechanism is not an acceptable affirmative defense provision. *Id*. at 12515 (emphasis added).

[6] All of the Federal Registers cited in this filing are publicly available on the U.S. Government's "GovInfo" website at https://www.govinfo.gov/app/collection/FR/.

Removal of the SMB provisions in Part 201 and related permit conditions will have a detrimental effect on entities' ability to comply during periods of SMB, especially during startup and shutdown for facilities with fuel combustion emission sources. Without the adoption of alternative standards, the Board's amendments in PCB R 23-18 will leave sources with likely noncompliance during startup and shutdown events. Industry has relied upon its past understanding of the SMB provisions and permit conditions. The amendments adopted by the Board do not provide a workable path for compliance for these entities during SMB periods. As to facilities with fuel combustion emission sources, these facilities will likely face noncompliance with the CO standard in Section 216.121 during startup and shutdown. As such, an AEL is necessary for these entities to maintain continuous compliance.

III. IERG's REGULATORY PROPOSAL

IERG is proposing to amend 35 Ill. Adm. Code 216.103, 216.104, and 216.121. IERG's proposed amendments were drafted in accordance with 1 Ill. Adm. Code 100, Subpart C as required by 35 Ill. Adm. Code 102.202(a). A full copy of the proposed redlines to Part 216 is attached to this Proposal.

It is IERG's understanding that, if IERG's Proposal is adopted by the Board, Illinois EPA will submit the adopted AEL to USEPA for approval as a revision to the Illinois SIP. The proposed amendments in IERG's Proposal have been developed in order to satisfy USEPA's criteria for developing AELs, which is discussed in more detail in the Technical Support Document attached as Exhibit 1.

A. Amendments to 35 Ill. Adm. Code 216.121

1. Overview

IERG proposes amendments to Section 216.121 of the Board's rules governing CO emissions, particularly CO emissions from fuel combustion emission sources. The CO standards under Part 216 are organized by categories of sources: fuel combustion emission sources, incinerators, petroleum refining and chemical manufacture, and primary and fabricated metal products. 35 Ill. Adm. Code 216, Subparts B, C, N, and O. The provisions in Part 216 only contain CO standards – they do not contain requirements for monitoring, testing, recordkeeping or reporting. *See id*. The federal NESHAP standards for Industrial, Commercial, and Institutional Boilers and Process Heaters at 40 CFR 63, Subpart DDDDD ("Boiler MACT") are more comprehensive. The NESHAP Subpart DDDDD standards are standards based on maximum achievable control technology ("MACT") and provide requirements for continuous monitoring, testing, recordkeeping and reporting. 40 CFR Part 63, Subpart DDDDD.

Section 216.121 of the Board's rules prohibits causing or allowing the emission of CO into the atmosphere from any fuel combustion emission source with actual heat input greater than 2.9 MW (10 mmbtu/hr) to exceed 200 ppm, corrected to 50 percent excess air. 35 Ill. Adm. Code 216.121. The CO standard in Section 216.121 for fuel combustion emission sources is likely unachievable for numerous entities in Illinois during periods of startup and shutdown. IERG proposes to incorporate by reference NESHAP Subpart DDDDD provisions that contain work practice standards applicable during periods of startup and shutdown.

2. Proposed Rule Language

IERG proposes to amend 35 Ill. Adm. Code 216.121 to include alternative standards for fuel combustion emission sources that would apply during periods of startup and shutdown. IERG proposes the following amendment to Section 216.121:

Section 216.121 Fuel Combustion Emission Sources

a) No person shall cause or allow the emission of carbon monoxide (CO) into the atmosphere from any fuel combustion emission source with actual heat input greater than 2.9 MW (10 mmbtu/hr) to exceed 200 ppm, corrected to 50 percent excess air.

b) Notwithstanding subsection (a), during periods of startup and shutdown, any new or existing fuel combustion emission source can elect to comply with subsection (a) or the alternate standards for these operating modes in 40 CFR 63, Subpart DDDDD, Table 3 Items 5 and 6, 40 CFR 63.7500(a)(3) and (f), 40 CFR 63.7505(e), 40 CFR 63.7535(b), and 40 CFR 63.7555(d)(9)-(12).

IERG is proposing to amend Section 216.121, which provides the CO standard for fuel combustion emission sources with actual heat input greater than 2.9 MW (10 mmbtu/hr). The proposed new subsection (b) states that, notwithstanding the generally applicable CO standard in subsection (a), a facility with a fuel combustion emission source can elect to comply with the alternative standard during periods of startup and shutdown. The alternative standards proposed for periods of startup and shutdown are from NESHAP Subpart DDDDD, also known as Boiler MACT. As proposed by IERG, the 200 ppm CO standard in current Section 216.121 would continue to be the CO standard applicable during normal, stead-state operation of fuel combustion emission sources. Facilities would then have the option for periods of startup and shutdown to either comply with the 200 ppm CO standard or comply with the incorporated Boiler MACT work practice standards.

The Boiler MACT provisions that IERG is proposing to incorporate into Section 216.121 are addressed in the following subsections.

i. 40 CFR 63.7500(f)

40 CFR 63.7500 provides the requirements for emission limitations, work practice standards, and operating limits for boilers and process heaters at major sources. Section 63.7500(f) provides which standards are applicable during periods of startup and shutdown. Section 63.7500(f) states:

> § 63.7500 What emission limitations, work practice standards, and operating limits must I meet?
>
> ***
>
> (f) These standards apply at all times the affected unit is operating, except during periods of startup and shutdown during which time you must comply only with items 5 and 6 of Table 3 to this subpart.

Section 63.7500(f) states that the generally applicable standards under Boiler MACT do not apply during periods of startup and shutdown. Pursuant to Section 63.7500(f), only the requirements in NESHAP Subpart DDDDD, Table 3, Items 5 and 6 are applicable during periods of startup and shutdown. In proposing to incorporate this provision, it is IERG's intention that facilities with fuel combustion emission sources will have the option to comply with the requirements of NESHAP Subpart DDDDD, Table 3, Items 5 and 6 during periods of startup and shutdown in lieu of the CO standard in 35 Ill. Adm. Code 216.121.

ii. 40 CFR 63.7500(a)(3)

40 CFR 63.7500 provides the requirements for emission limitations, work practice standards, and operating limits for boilers and process heaters at major sources. Section 63.7500(a)(3) states:

> § 63.7500 What emission limitations, work practice standards, and operating limits must I meet?

> (a) You must meet the requirements in paragraphs (a)(1) through (3) of this section, except as provided in paragraphs (b) through (e) of this section. You must meet these requirements at all times the affected unit is operating, except as provided in paragraph (f) of this section.
>
> ***
>
> (3) At all times, you must operate and maintain any affected source (as defined in § 63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

Under this provision, facilities that choose to comply with the AEL will be required to operate and maintain their fuel combustion emission sources during startup and shutdown in a manner consistent with safety and good air pollution control practices for minimizing emissions. IERG proposes to incorporate this provision in order to mirror the SMB permit conditions concerning the duty to minimize emissions during SMB periods. Additionally, USEPA's criteria for developing AELs requires that the AEL include a requirement that the frequency and duration of operation in startup or shutdown mode are minimized to the greatest extent practicable, and that the facility is operated in a manner consistent with good practice for minimizing emissions. Incorporating this provision is intended to satisfy those criteria.

For boilers and process heaters that burn only clean fuel, do not have CMS installed, and use the "startup" definition (1) for compliance, the only applicable requirements under IERG's Proposal would be to operate during startup and shutdown in accordance with the requirements of 40 CFR 63.7500(a)(3).

iii. 40 CFR Part 63, Subpart DDDDD, Table 3, Rows 5 and 6

Table 3 of NESHAP Subpart DDDDD provides the work practice standards applicable to boilers and process heaters at major sources. Rows 5 and 6 of Table 3 states:

If your unit is . . .	**You must meet the following . . .**
5. An existing or new boiler or process heater subject to emission limits in Table 1 or 2 or 11 through 15 to this subpart during startup	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, clean dry biomass, 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 choose to comply using paragraph (1) of the definition of "startup" in § 63.7575, once you start firing fuels that are not clean fuels 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, and selective catalytic reduction (SCR). You must start your limestone injection in FBC boilers, dry scrubber, fabric filter, 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 paragraph (2) of the definition of "startup" in § 63.7575, once you start to feed fuels that are not clean fuels, 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 engage and operate PM control within one hour of first feeding fuels that are not clean fuels. 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. You must develop and implement a written startup and shutdown plan, as specified in § 63.7505(e).

	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.
6. An existing or new boiler or process heater subject to emission limits in Table 1 or 2 or Tables 11 through 15 to this subpart during shutdown	You must operate all CMS during shutdown. While firing fuels that are not clean fuels 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, 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, ultra-low 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.

Row 5 of Table 3 requires fuel combustion emission sources, during periods of startup, to comply with the following requirements:

- Operate all continuous monitoring systems ("CMS") during startup
- 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, clean dry biomass, and any fuels meeting the appropriate HCl, mercury and TSM emission standards by fuel analysis.
- Comply with either of the following work practice standards:

- If you choose to comply using paragraph (1) of the definition of "startup" in § 63.7575, once you start firing fuels that are not clean fuels 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, and selective catalytic reduction (SCR). You must start your limestone injection in FBC boilers, dry scrubber, fabric filter, and SCR systems as expeditiously as possible. Startup ends when steam or heat is supplied for any purpose,

- If you choose to comply using paragraph (2) of the definition of "startup" in § 63.7575, once you start to feed fuels that are not clean fuels, 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 engage and operate PM control within one hour of first feeding fuels that are not clean fuels. 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. You must develop and implement a written startup and shutdown plan, as specified in § 63.7505(e).

- Collect monitoring data during periods of startup

- Keep records during periods of startup and provide reports concerning activities and periods of startup, as specified in 40 CFR 63.7555

Row 6 of Table 3 requires fuel combustion emission sources, during periods of shutdown, to comply with the following requirements:

- Operate all continuous monitoring systems ("CMS") during startup

- While firing fuels that are not clean fuels during shutdown, vent emissions to the main stack(s) and operate all applicable control devices, except limestone injection in FBC boilers, dry scrubber, fabric filter, 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, ultra-low sulfur diesel, refinery gas, and liquefied petroleum gas.

- Collect monitoring data during periods of startup

- Keep records during periods of startup and provide reports concerning activities and periods of startup, as specified in 40 CFR 63.7555

As to operating CMS and collecting monitoring data, it is not IERG's intention in incorporating this table to require installation of CMS on fuel combustion emission devices that do not currently have CMS. By incorporating this table, it is IERG's intention that facilities with existing fuel combustion emission sources that currently have CMS will be required to operate the CMS during startup and shutdown of the fuel combustion emission source.

The references to collecting monitoring data and keeping records in the above provision are addressed in more detail in the following subsections. Note that Table 3 references providing "reports concerning activities and periods of [startup/shutdown], as specified in 63.7555." However, Section 63.7555 contains requirements for recordkeeping and does not contain requirements specific to reporting.[7]

iv. 40 CFR 63.7505(e)

40 CFR 63.7505 provides the general requirements for complying with NESHAP Subpart DDDDD. Section 63.7505(e) requires the development and implementation of a written startup and shutdown plan. Section 63.7505(e) states:

> (e) If you have an applicable emission limit, and you choose to comply using definition (2) of "startup" in § 63.7575, you must develop and implement a written startup and shutdown plan (SSP) according to the requirements in Table 3 to this subpart. The SSP must be maintained onsite and available upon request for public inspection.

[7] 40 CFR 63.7550 contains the reporting requirements for Boiler MACT. Section 63.7550 requires the submittal of compliance reports. Among numerous other information, a compliance report must include, for each instance of startup or shutdown, the information required to be monitored, collected, or recorded according to Section 63.7555(d). 40 CFR 63.7550(c)(xviii). Additionally, the compliance report must include, for each deviation from the work practice standards for periods of startup and shutdown, the description of the deviation; and information on the number, duration, and cause of the deviations and corrective action taken. 40 CFR 63.7550(d). IERG does not intend to incorporate the compliance report requirements from Section 63.7550 as the compliance report requirements are structured for semi-annual submittals and structured to include numerous non-startup and non-shutdown related information.

This provision requires facilities with boilers and process heaters to develop a startup and shutdown plan if the facility is complying using the definition (2) of "startup."

v. 40 CFR 63.7535(b)

40 CFR 63.7535 provides the minimum amount of monitoring data that sources are required to obtain under NESHAP Subpart DDDDD. Section 63.7535(b) states:

> (b) You must operate the monitoring system and collect data at all required intervals at all times that each boiler or process heater is operating and compliance is required, except for periods of monitoring system malfunctions or out of control periods (see § 63.8(c)(7) of this part), and required monitoring system quality assurance or control activities, including, as applicable, calibration checks, required zero and span adjustments, and scheduled CMS maintenance as defined in your site-specific monitoring plan. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. You are required to complete monitoring system repairs in response to monitoring system malfunctions or out-of-control periods and to return the monitoring system to operation as expeditiously as practicable.

As to operating CMS and collecting monitoring data, it is not IERG's intention in incorporating this provision to require installation of CMS on fuel combustion emission devices that do not currently have CMS. By incorporating this provision, it is IERG's intention that facilities with existing fuel combustion emission sources that currently have CMS will be required to operate the CMS during startup and shutdown of the fuel combustion emission source.

vi. 40 CFR 63.7555(d)(9)-(12)

40 CFR 63.7555 provides the recordkeeping requirements under NESHAP Subpart DDDDD. Sections 63.7555(d)(9)-(12) state:

> (d) For each boiler or process heater subject to an emission limit in Table 1 or 2 or Tables 11 through 15 to this subpart, you must also keep the applicable records in paragraphs (d)(1) through (11) of this section.

***

(9) You must maintain records of the calendar date, time, occurrence and duration of each startup and shutdown.

(10) You must maintain records of the type(s) and amount(s) of fuels used during each startup and shutdown.

(11) For each startup period, for units selecting paragraph (2) of the definition of "startup" in § 63.7575 you must maintain records of the time that clean fuel combustion begins; the time when you start feeding fuels that are not clean fuels; the time when useful thermal energy is first supplied; and the time when the PM controls are engaged.

(12) If you choose to rely on paragraph (2) of the definition of "startup" in § 63.7575, for each startup period, you must maintain records of the hourly steam temperature, hourly steam pressure, hourly steam flow, hourly 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. In addition, if compliance with the PM emission limit is demonstrated using a PM control device, you must maintain records as specified in paragraphs (d)(12)(i) through (iii) of this section.

(i) For a boiler or process heater with an electrostatic precipitator, record the number of fields in service, as well as each field's secondary voltage and secondary current during each hour of startup.

(ii) For a boiler or process heater with a fabric filter, record the number of compartments in service, as well as the differential pressure across the baghouse during each hour of startup.

(iii) For a boiler or process heater with a wet scrubber needed for filterable PM control, record the scrubber's liquid flow rate and the pressure drop during each hour of startup.

In proposing to incorporate these provisions, IERG intends for facilities with fuel combustion emission sources to be required to maintain records of the date, time, occurrence, and duration of each startup and shutdown period, as well as type and amount of fuel used in each startup and shutdown period, if the facility has chosen to comply with the AEL in lieu of

the existing 200 ppm CO standard in Section 216.121. Additionally, if the facility chooses to comply with the AEL in lieu of the 200 ppm CO standard, the facility would be required to keep the records detailed in 40 CFR 63.7555(d)(11)-(12) depending on which definition of "startup" the facility chooses to comply with.

B. Amendments to 35 Ill. Adm. Code 216.103 and 216.104

In conjunction with the proposed amendments to Section 216.121, IERG proposes amendments to Sections 216.103 and Section 216.104, governing definitions and incorporations by reference respectively. Specifically, IERG proposes to amend Section 216.103 and 216.104 as follows:

> Section 216.103 Definitions
>
> The definitions contained in 35 Ill. Adm. Code 201 and 211 apply to this Part. The definitions of "startup" and "shutdown" in 40 CFR 63.7575 apply to Section 216.121(b) of this Part.
>
> Section 216.104 Incorporations by Reference
>
> The following materials are incorporated by reference: non-dispersive infrared method, 40 CFR 60, Appendix A, Method 10 (1982); 40 CFR 63, Subpart DDDDD (2022).

IERG is proposing to incorporate provisions of NESHAP Subpart DDDDD into Section 216.121, as discussed above. The Boiler MACT provisions proposed to be incorporated include the terms "startup" and "shutdown." "Shutdown" is not defined in Part 201 or Part 211 of the Board's regulations. Part 211 does include a definition of "start-up," but it is defined differently than the definition of "startup" in Boiler MACT. *See* 35 Ill. Adm. Code 211.6310. Therefore, IERG proposes to define the term consistent with the Boiler MACT provisions that IERG proposes to incorporate. "Startup" and "shutdown" are defined in 40 CFR 63.7575 as follows:

> *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 supplies 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 supplies useful thermal energy (such as steam or heat) for heating, cooling, or process purposes and/or generates electricity, and no fuel is being combusted in the boiler or process heater.
>
> *Startup* means:
>
> > (1) Either the first-ever firing of fuel in a boiler or process heater for the purpose of supplying useful thermal energy 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 useful thermal energy 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 supplies useful thermal energy (such as heat or steam) for heating, cooling, or process purposes, or generates electricity, whichever is earlier.

40 CFR 63.7575.

IERG also proposes to amend Section 216.104 to incorporate by reference NESHAP Subpart DDDDD because it is referenced in IERG's proposed amendments to Sections 216.121.

IV. JUSTIFICATION FOR PROPOSED AMENDMENTS

A. Technical Justification

It is technically infeasible for fuel combustion emission sources with actual heat input above 10 mmBtu/hr to comply with the CO standard in Section 216.121 during startup. Compliance with Section 216.121 is also an issue for fuel combustion emission sources during periods of shutdown, especially for fuel combustion emission sources that are coal-fired or solid fuel-fired. CO is emitted from boilers and process heaters as a product of incomplete

combustion. Factors that influence complete combustion include time, temperature, and turbulence.[8] CO emissions can be minimized when boilers operate at sufficiently high combustion temperature and with sufficient time and turbulence (mixing) in the firebox to allow for more complete combustion to occur. These factors are not technically feasible to sufficiently achieve during startup conditions.

It can take significant time during a boiler startup to reach sufficient operating temperature for good combustion, particularly when startup occurs after a longer period of shutdown. The length of a startup can vary, depending on the shutdown that necessitated the startup. The various types of startups can result in startup durations varying between several minutes to more than a day. After a longer shutdown, the combustion temperatures must be raised slowly so as to not damage the boiler equipment including the refractory. Heating the boiler up too fast can result in refractory damage, with hot spots then forming in the boiler, degrading boiler performance. The Technical Support Document includes additional discussion regarding the technical infeasibility for boilers and process heaters to meet the Section 216.121 CO standard during startup. Exhibit 1, Technical Support Document.

IERG is not aware of a way technical means to control the excess CO emissions during these startup periods, other than to follow standard startup procedures to achieve normal

[8] "Combustion Efficiency Optimization Manual for Operators of Oil- and Gas-Fired Boilers," USEPA (EPA-340/1-83-023), publicly available on USEPA's website at https://nepis.epa.gov/Exe/ZyNET.exe/50000KGB.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1981+Thru+1985&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C81thru85%5CTxt%5C00000001%5C50000KGB.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL.

operating conditions as quickly as possible while minimizing potential damage to the combustion device (i.e., minimizing the duration of startup while maintaining safe operation).

Excess CO emissions during boiler or process heater shutdown are primarily limited to coal-fired and solid fuel-fired boilers and process heaters. Generally, excess CO emissions may not be as much of an issue during shutdowns for natural gas-fired boilers and process heaters.[9] A boiler or process heater shutdown is typically just a matter of ceasing fuel flow/feed to the boiler or process heater, which can be conducted rapidly for natural gas-fired units. For natural gas-fired boilers and process heaters, combustion ceases once the natural gas is stopped. However, coal-fired and solid fuel-fired boilers and process heaters may have a longer residence time for fuel remaining in the combustor after fuel delivery is stopped. As a result, there can be a brief period of incomplete combustion as the fuel stops burning and bed temperature cools off, resulting in elevated CO emissions.

The Technical Support Document, attached as Exhibit 1, includes additional technical justification for IERG's Proposal.

B. Incorporating Boiler MACT

The AEL proposed by IERG incorporates provisions from the NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters under 40 CFR 63, Subpart DDDDD, also known as Boiler MACT. Boiler MACT contains limits and standards based on MACT. Boiler MACT was first adopted by USEPA in 2004. *NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters*, 69 Fed. Reg. 55218 (Sep. 13, 2004).

[9] Similarly, a boiler or process heater malfunction or breakdown in many cases may just lead to a shutdown in order to address the cause of the malfunction. In some instances, if there is a rapid change in process operating conditions due to an upset or malfunction, this could cause a rapid change in boiler or process heater demand which could result in temperature differentials within the firebox that could result in excess CO emissions; however this is not typically the case.

Boiler MACT was revised in 2011. *NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters*, 76 Fed. Reg. 15608 (Mar. 21, 2011). The Boiler MACT startup and shutdown provisions were revised in 2013, defining "startup" and "shutdown" and revising the work practice standards to better reflect the MACT during those periods. *NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters*, 78 Fed. Reg. 7138 (Jan. 31, 2013).

Boiler MACT was revised again in November 2015. *NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters*, 80 Fed. Reg. 72790 (Nov. 20, 2015). The revisions included, among other things, revisions to the definitions of "startup" and "shutdown" and work practices that apply during periods of startup and shutdown. *Id*. USEPA explained as follows:

> The EPA is adopting work practices that apply during the periods of startup and shutdown which reflect the emissions performance achieved by the best performing units. These work practices include use of clean fuels during startup and shutdown. In addition, under the alternate work practice, sources must engage all applicable control devices so that the emissions standards are met no later than four hours after the start of supplying useful thermal energy and must engage PM controls within one hour of first feeding non-clean fuels.

Id. at 72793. Notably, these revisions were finalized after the June 12, 2015 SSM SIP Call. Boiler MACT was revised again in 2022, which included revisions to several numeric emission limits. *NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters*, 87 Fed. Reg. 60816 (Oct. 6, 2022). Additional discussion of the regulatory history of Boiler MACT is included in the Technical Support Document, attached as Exhibit 1.

C. USEPA's Seven AEL Criteria

In the June 12, 2015 SSM final action, USEPA recognized that there are approaches to address emissions during SSM events that are consistent with the requirements of the Clean Air Act. 80 Fed. Reg. 33840, 33844 (June 12, 2015). USEPA explained that, "SIPs may, rather than

exempt emissions during SSM events, include emission limitations that subject those emissions to alternative numerical limitations or other technological control requirements or work practice requirements during startup and shutdown events, so long as those components of the emission limitations meet applicable CAA requirements." *Id*. USEPA reiterated that alternative requirements applicable during periods of SSM must be "narrowly tailored and take into account considerations such as the technological limitations of the specific source category and the control technology that is feasible during startup and shutdown" in order to be approvable. *Id*. at 33913. The Technical Support Document addresses each of the seven AEL criteria in relation to IERG's proposed amendments to Part 216. Exhibit 1, Technical Support Document.

V. PURPOSE AND EFFECT OF PROPOSAL

The purpose of this Proposal is to amend Sections 216.121 to include an AEL to address CO emissions during startup and shutdown of fuel combustion emission sources. The CO standard in Section 216.121 is infeasible for entities with fuel combustion emission sources to comply with during startup and shutdown. The Board's removal of SMB provisions in Part 201 will leave affected entities in Illinois with no feasible option for compliance with Section 216.121 during periods of startup. Fuel combustion emission sources that are coal-fired and/or solid fuel-fired also do not have feasible options for compliance with Section 216.121 during shutdown.

The effect of this Proposal is to provide alternative standards for CO that apply during periods of startup and shutdown so that entities with fuel combustion emission sources can operate in continuous compliance with the Board's regulations during all modes of operation. As explained above, the proposed alternative standards for CO are based on the federal MACT standards in NESHAP Subpart DDDDD. To IERG's knowledge, many of the entities in Illinois

with fuel combustion emission sources are already subject to either NESHAP Subpart DDDDD, which applies to major sources, or to NESHAP Subpart JJJJJJ, which applies to area sources and has similar requirements to those in Boiler MACT. *See* NESHAP for Industrial Commercial, and Institutional Boilers Area Sources, 40 CFR Part 63, Subpart JJJJJJ. Because IERG is proposing to incorporate federal work practice standards that many fuel combustion emission sources in the State are already subject to, this Proposal will not result in any adverse harm to the environment or human health. Additional discussion on the effect and environmental impacts of this Proposal are included in the Technical Support Document, attached as Exhibit 1.

VI. GEOGRAPHIC REGIONS AND SOURCES AFFECTED

IERG's proposed amendments to Part 216 would impact facilities in Illinois with fuel combustion emission sources, such as boilers or process heaters, with actual heat input greater than 2.9 MW (10 mmbtu/hr) where such units cannot comply with the CO standard in Section 216.121 during periods of startup or shutdown.[10] As has been noted above, startups in particular face inherent conflicts, i.e., complying with the CO numeric standard while raising the firebox temperature to a temperature approaching the CO autoignition temperature, at a rate that also protects the integrity of the firebox and refractory. Shutdowns for coal-fired or solid fuel-fired fuel combustion emission sources is also an issue due to the length of time it takes for those units to cut the fuel feed and stop combustion.

[10] While Section 216.121 is applicable to a large number of sources, the sources subject to Section 216.121 most likely to be impacted are sources that are also equipped with continuous monitoring systems ("CMS") for CO. Such sources are those that have CO CMS requirements imposed by either other applicable regulations or by construction permit requirements. Additionally, some facilities also may voluntarily install a CO CMS outside of a permit requirement, and then would also be impacted. Sources with a CO CMS for their boiler or process heater have available CO emissions data that shows whether or not the boiler's or process heater's CO emissions are exceeding the Section 216.121 standard during startup and shutdown periods. However, sources subject to Section 216.121 that do not have an existing CO CEMS can still be impacted if Illinois EPA requires installation of a CO CEMS in the future or the source voluntarily installs a CO CEMS in the future.

IERG submitted a Freedom of Information Request to Illinois EPA requesting a list of boilers and process heaters with actual heat input greater than 2.9 MW (10 mmbtu/hr) in the State. Illinois EPA provided that list on July 18, 2023. Provided below is a summary table, created by IERG, that summarizes relevant data from that list:

	No. of Facilities	No. of Combustion Units	No. of industry types		Type of Permit				Combustion units/facility			Combustion Unit size (MMBtu/hr)		
			(by SIC)	(by NAICS)	ROSS	STATE	FESOP	TITLE V	Min	Max	Avg	Min	Max	Avg
Facilities on IEPA's list	2,919	9,961	434	405	449	1219	567	649	1	195	3	10.1	15,754.2	151.9
Facilities w/ active combustion units	1,545	3,944	309	294	323	404	383	421	1	96	27	10.1	8,232.0	164.1

IERG acknowledges that its proposal has the potential to affect a large number of facilities and sources within the State. Per Illinois EPA's list of boilers and process heaters, these facilities include a variety of industry types, including both privately-owned facilities as well as State-owned facilities. However, IERG's Proposal does not impose additional requirements on these sources. IERG's Proposal only provides these facilities with the option to comply with the proposed AEL in lieu of the CO standard in Section 216.121 during periods of startup and shutdown.

VII. TECHNICAL FEASIBILITY AND ECONOMIC REASONABLENESS

The alternative emission limitations and standards proposed herein are from NESHAP Subpart DDDDD. These Boiler MACT provisions were promulgated by USEPA in 2013 and revised in 2015. In those rulemakings, USEPA found that the SSM provisions were technically feasible. Many of the fuel combustion emission sources in the State are already subject to the provisions proposed to be incorporated, or subject to similar provisions in the area source Boiler MACT. As to economic reasonableness, USEPA found the MACT provisions to be economically justified. Per USEPA, the estimated average national price increases for industrial sectors were less than 0.01%. *NESHAP for Industrial, Commercial, and Institutional Boilers and Process*

Heaters, 78 Fed. Reg. 7138, 7156 (Jan. 31, 2013); *see also NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters*, 80 Fed. Reg. 72806 (Nov. 20, 2015). As for the economic impact on Illinois sources, to IERG's knowledge, the fuel combustion emission units impacted by Illinois EPA's proposal are likely already subject to Boiler MACT, either for major sources or area sources, and already utilize the alternate standards referenced in IERG's proposed amendments. Lastly, IERG is not proposing to require any sources to comply with the proposed AEL. Instead, IERG's proposal is to provide facilities the option to choose between compliance with the existing CO standard in Section 216.121 or with IERG's proposal AEL during periods of startup and shutdown. Therefore, IERG's proposed amendment to Section 216.121 should not have any additional economic impact.

VIII. OUTREACH

USEPA first proposed findings of inadequacy of SSM SIP provisions, and proposed issuing a SIP Call, on February 22, 2013. 78 Fed. Reg. 12,460 (Feb. 22, 2013). IERG submitted comments on the proposal, opposing the finding of inadequacy and SIP Call as to Illinois. On June 12, 2015, USEPA issued its final findings of inadequacy and SIP Call. 80 Fed. Reg. 33,840 (June 12, 2015). On April 13, 2016, IERG met with Illinois EPA to discuss a variety of pending air-related issues, including the 2015 SIP Call. IERG questioned and discussed with Illinois EPA the possibility for adopting alternative work practice standards as discussed in the 2015 SIP.

On January 12, 2022, USEPA issued a Finding of Inadequacy and required states to submit SIP revisions correcting the deficiencies within 18 months of the February 11, 2022 effective date. 87 Fed. Reg. 1,680 (Jan. 12, 2022). After the January 2022 Finding of Inadequacy, IERG has had numerous discussions with Illinois EPA about SMB. For example, IERG staff and members met with Director John Kim on June 7, 2022. At that virtual meeting,

IERG conveyed its opposition to removal of the SMB provisions and its support for adopting alternative work practice standards. IERG subsequently contacted Illinois EPA on numerous occasions, inquiring about the status of Illinois EPA's proposed SMB approach. In each instance, IERG has conveyed its opposition to the approach now proposed by Illinois EPA and has offered to assist Illinois EPA with drafting language for an alternative approach. During each of those conversations, Illinois EPA indicated that it had not yet settled on what approach it would propose and gave no indication as to which approach Illinois EPA was considering.

Illinois EPA circulated its proposed revisions to stakeholders, for the first time, on November 17, 2022. IERG submitted a comment to Illinois EPA during this pre-proposal outreach period. In its comment, IERG opposed the Agency's proposal and advocated for the adoption of AELS. Comment of IERG, PCB R 23-18 (Dec. 30, 2022). Illinois EPA filed its rulemaking proposal with the Board on December 7, 2022. Illinois EPA Proposal, PCB R 23-18 (Dec. 7, 2022). Throughout the rulemaking, Illinois EPA made clear that Illinois EPA's intent of the rulemaking was to remove the SMB provisions at issue and not include any AELs. During the first JCAR meeting during the Second Notice period, Illinois EPA stated that it would be convening meetings to discuss potential AEL proposals. On July 6, 2023, IERG met virtually with Illinois EPA to discuss IERG's fuel combustion emission source AEL proposal. During that meeting, Illinois EPA gave initial feedback on the AEL proposal, which is addressed herein. In July 2023, IERG requested a meeting with USEPA Region V to discuss IERG's AEL Proposal. However, IERG did not receive a response from USEPA prior to this filing.

Throughout development of this Proposal during the main rulemaking in PCB R 23-18, as well as the development of this Proposal for filing in this sub-docket, IERG discussed the

Proposal with IERG's Members. The IERG Members impacted by this Proposal provided feedback on the Proposal, which is incorporated throughout.

IX. SIGNATURE REQUIREMENT

Section 28(a) of the Act and Section 102.202(g) of the Board's procedural regulations requires that a rulemaking of general applicability include a petition signed by at least 200 persons. 415 ILCS 5/28(a); 35 Ill. Adm. Code 102.202(g). In the Board's July 6, 2023 Order in this sub-docket, the Board waived the 200-person signature requirement. Board Order, PCB R 23-18(A), slip op. at 4 (July 6, 2023).

X. HEARING

In the Board's July 6, 2023, Order in this sub-docket, the Board stated that "each rulemaking proposal for alternative standards during SMB must include a statement of whether the proponent requests that one or more public hearings be held on its proposal, along with a statement addressing whether the Act requires one or more hearings to be held on the proposal, including whether any hearing already held in the main docket would satisfy all or part of that requirement, as well as public notice requirements under the Act and the Clean Air Act." Board Order, PCB R 23-18(A), slip. op. at 4-5 (July 6, 2023). In this Section, IERG addresses those requirements.

A. No Request for Hearing

IERG does not request a hearing on its proposal in this sub-docket. As explained below, the hearing and public notice requirements as to IERG's Proposal have already been satisfied and an additional hearing(s) or public notice is not required.

B. Hearing Requirement

Pursuant to Section 28(a) of the Act, "[n]o substantive regulation shall be adopted, amended, or repealed until after a public hearing within the area of the State concerned. In the case of state-wide regulations hearings shall be held in at least two areas." 415 ILCS 5/28(a). Because IERG's proposal is a rulemaking proposal of general applicability, a public hearing is required and the hearings must be held in at least two areas because it is a proposal of state-wide applicability.

However, the hearings held in the main rulemaking satisfy this requirement as to IERG's Proposal. After Illinois EPA filed its proposal in the main rulemaking on December 7, 2022, the Board scheduled three hearings pursuant to the Fast Track regulations. Per the December 16, 2022 Hearing Officer Order, the first hearing "shall be confined to testimony by and questions of the Agency's witnesses concerning the scope, applicability, and basis of the rule." Hearing Officer Order, PCB R 23-18, slip. op. at 1 (Dec. 16, 2023). The first hearing took place on January 19, 2023 in Springfield. Illinois EPA's witness was questioned by several industrial stakeholders, including IERG and Dynegy, and the Illinois Attorney General's Office. The majority of IERG's and Dynegy's questions concerned proposing AELs. *See, e.g.,* First Hearing Transcript, PCB R 23-18, 25:18-21; 26:1-3 and 19-21, 35:11-13 and 19-23, 44:7-15, 45:14-19, 47:7-9, 48:3-7, 52:15-20, 59:6-13, 60:11-14, 63:19-22, 77:8-13, 79:7-13, 89:19-22, 94: 8-11 (Jan. 19, 2023.

Per the December 16, 2022 Hearing Officer Order, the second hearing "shall be devoted to presentation of testimony, documents, and comments by affected entities and all other interested parties." *Id*. Hearing Officer Order, PCB R 23-18, slip. op. at 1 (Dec. 16, 2023). The second hearing was held on February 16, 2023 in Chicago. In IERG's Pre-filed Testimony, filed on February 6, 2023 and submitted for the second hearing, IERG set forth complete proposals to

amend several sections of Part 216. IERG's Pre-filed Testimony first set forth its fuel combustion emission source AEL proposal. Pre-Filed Testimony of Kelly Thompson and David Wall, PCB R 23-18 (Feb. 6, 2023). IERG's fuel combustion emission source AEL proposal satisfied all the substantive requirements for a general rulemaking. IERG's Pre-filed Testimony in the main rulemaking, while not styled as "Statement of Reasons" and "Technical Support Document,"[11] included all of the substantive information required for a rulemaking proposal. This included background information on the proposed rule, proposed amendment language and explanations of such amendments, discussions on effect of the proposal, discussions on regulatory, technical, and economic justifications for the proposed rule, and discussions on outreach conduction and sources affected. The amended regulatory language proposed here by IERG is substantively unchanged from IERG's filing in PCB R 23-18. Additionally, the information provided herein in justification of the proposal is the same as the information provided by IERG in PCB R 23-18, with the addition of additional support to supplement the justification for the Proposal.

Therefore, a complete fuel combustion emission source AEL proposal was filed for consideration during the second hearing in PCB R 23-18. At the second hearing, IERG presented its witnesses in support of the fuel combustion emission source AEL proposal. The Board and Illinois Attorney General's Office asked questions for IERG's witnesses during the hearing, including questions specifically concerning the fuel combustion emission source proposal. *See, e.g.,* Second Hearing Transcript, PCB R 23-18, 29:14-16, 43:10-16, 46:7-24, 47:1-4 (Feb. 16, 2023). Any other participant was afforded the opportunity to ask questions during the second hearing concerning IERG's fuel combustion emission source AEL proposal.

[11] During the February 3, 2023 pre-hearing conference, the Hearing Officer instructed participants that any proposal must be included in the Pre-filed Testimony.

Lastly, per the December 16, 2022 Hearing Officer Order, the third hearing, if necessary, "shall be devoted solely to any Agency response to the material submitted at the second hearing and to any responses by other parties. The third hearing shall be cancelled if the Agency indicates to the Board that it does not intend to introduce any additional material." Hearing Officer Order, PCB R 23-18, slip. op. at 2 (Dec. 16, 2023). During the second hearing, Illinois EPA indicated to the Board that it did not intend to introduce any additional material and requested that the third hearing be cancelled, and the Board cancelled the third hearing. Second Hearing Transcript, PCB R 23-18, 73:23-24, 74:1-14 (Feb. 16, 2023); Hearing Officer Order, PCB R 23-18, at 1 (Feb. 21, 2023).

The hearings held in PCB R 23-18 satisfy the hearing requirements for IERG's Proposal in this sub-docket rulemaking. Hearings were held in two areas of the State and participants were afforded the opportunity to question IERG's fuel combustion emission source AEL proposal at hearing. Therefore, a hearing is not required in this sub-docket on IERG's Proposal.

C. Public Notice

Similar to the above arguments, the public notice and comment requirements have been satisfied as to IERG's Proposal. Illinois EPA's proposal to remove the SMB provisions in PCB R 23-18 was published in the Illinois Register at First Notice and Second Notice. The public hearings held in PCB R 23-18 were sufficiently noticed. The Board entered a Notice of Hearing on December 16, 2022 which provided information concerning the location and time of hearings, what information would be the subject of the hearings, established deadlines for pre-filed testimony, and included information on submitting public comments. Notice of Hearing, PCB R 23-18 at 1-4 (Dec. 16, 2022). IERG's filings were uploaded to the Board's online docket, which is publicly accessible. As discussed above, IERG's fuel combustion emission source proposal

was discussed at the second hearing in PCB R 23-18. Sufficient notice and opportunity to comment was provided to the public in PCB R 23-18.

D. Synopsis of Testimony

Section 102.202 of the Board's procedural regulations requires that a proposal for regulations of general applicability include a synopsis of all testimony to be presented by the proponent at hearing. 35 Ill. Adm. Code 102.202(c). As explained above, it is IERG's position that the hearing requirements have been satisfied via the hearings conducted in PCB R 23-18. However, if the Board disagrees with this position and is inclined to hold a hearing on IERG's Proposal, then IERG anticipates calling David Wall, Principal Consultant and Regional Manager at Trinity Consultants, as a witness at hearing. Mr. Wall would testify regarding the impact of the Board's removal of the SMB provisions on facilities with fuel combustion emission sources, the need for an AEL including the technical infeasibility of complying with the CO standard in Section 216.121 during startup and shutdown, as well as the other components of this Proposal.

XI. STUDIES OR REPORTS

Pursuant to 35 Ill. Adm. Code 102.202(e), a proposal for rulemaking must include a descriptive title or other description of any published study or research report used in developing the rule, as well as other related information. IERG did not utilize or depend on any published studies or research reports in developing its Proposal.

XII. ELECTRONIC COPY

Pursuant to 35 Ill. Adm. Code 102.202(j), simultaneous with the filing of this Proposal, IERG is submitting an electronic version of the proposed rule language in Microsoft Word for Windows, version 6.0 or greater.

XIII. CONCLUSION

For the foregoing reasons, the Illinois Environmental Regulatory Group hereby submits this regulatory proposal and respectfully requests that the Illinois Pollution Control Board amend these regulations consistent with the proposal above.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
REGULATORY GROUP,

Dated: August 7, 2023

By: /s/ Melissa S. Brown
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PROPOSED RULE LANGUAGE

PART 216

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE B: AIR POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD
SUBCHAPTER c: EMISSION STANDARDS AND LIMITATIONS FOR STATIONARY SOURCES

PART 216
CARBON MONOXIDE EMISSIONS

SUBPART A: GENERAL PROVISIONS

Section

216.100 Scope and Organization
216.101 Measurement Methods
216.102 Abbreviations and Conversion Factors
216.103 Definitions
216.104 Incorporations by Reference

SUBPART B: FUEL COMBUSTION EMISSION SOURCES

Section

216.121 Fuel Combustion Emission Sources
216.122 Exception, Midwest Grain Products

SUBPART C: INCINERATORS

Section

216.141 Incinerators
216.142 Exceptions

SUBPART N: PETROLEUM REFINING AND CHEMICAL MANUFACTURE

Section

216.361 Petroleum and Petrochemical Processes
216.362 Polybasic Organic Acid Partial Oxidation Manufacturing Processes

SUBPART O: PRIMARY AND FABRICATED METAL PRODUCTS

Section

216.381 Cupolas
216.382 Exception, General Motor's Ferrous Foundry in Vermilion County

Appendix A Rule into Section Table
Appendix B Section into Rule Table
Appendix C Compliance Dates

AUTHORITY: Implementing Section 10 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1991, ch. 111 1/2, pars. 1010 and 1027).

SOURCE: Adopted as Chapter 2: Air Pollution, Rule 206: Carbon Monoxide Emissions, R71-23, 4 PCB 191, April 13, 1972, filed and effective April 14, 1972; amended at 3 Ill. Reg. 47, p. 92, effective November 8, 1979; amended at 4 Ill. Reg. 24, p. 514, effective June 4, 1980; codified at 7 Ill. Reg. 13607; amended in R87-18 at 12 Ill. Reg. 20774, effective December 6, 1988; amended in R90-23 at 16 Ill. Reg. 18075, effective November 13, 1992; amended in R 23-18(A) at Ill. Reg. , effective .

SUBPART A: GENERAL PROVISIONS

Section 216.103 Definitions

The definitions contained in 35 Ill. Adm. Code 201 and 211 apply to this Part. The definitions of "startup" and "shutdown" in 40 CFR 63.7575 apply to Section 216.121(b) of this Part.

(Source: Amended at Ill. Reg. , effective)

Section 216.104 Incorporations by Reference

The following materials are incorporated by reference: non-dispersive infrared method, 40 CFR 60, Appendix A, Method 10 (1982); 40 CFR 63, Subpart DDDDD (2022).

(Source: Amended at Ill. Reg. , effective)

SUBPART B: FUEL COMBUSTION EMISSION SOURCES

Section 216.121 Fuel Combustion Emission Sources

a) No person shall cause or allow the emission of carbon monoxide (CO) into the atmosphere from any fuel combustion emission source with actual heat input greater than 2.9 MW (10 mmbtu/hr) to exceed 200 ppm, corrected to 50 percent excess air.

b) Notwithstanding subsection (a), during periods of startup and shutdown, any new or existing fuel combustion emission source can elect to comply with subsection (a) or the alternate standards for these operating modes in 40 CFR 63, Subpart DDDDD, Table 3

Items 5 and 6, 40 CFR 63.7500(a)(3) and (f), 40 CFR 63.7505(e), 40 CFR 63.7535(b), and 40 CFR 63.7555(d)(9)-(12).

(Source: Amended at Ill. Reg. , effective)

TECHNICAL SUPPORT DOCUMENT

PROPOSED RULE

In the Matter of: Amendments to
35 Ill. Adm. Code Parts 201, 202, and 212

PCB R 23-18(A)

Prepared for the Illinois Environmental Regulatory Group by:

August 7, 2023

EXHIBIT 1

TABLE OF CONTENTS

Executive Summary …….. 3

I. Introduction …….. 4

II. Background ……..…….…….. 4

A. Illinois SMB ……..……. 4

B. Boiler MACT ……. 5

III. Technical Discussion ……. 8

A. Technical Infeasibility of Complying with Section 216.121 ……... 8

B. Quantification of Excess Emissions ……. 9

C. Methods Employed to Reduce Emissions During Startup and Shutdown…...… 10

D. No Adverse Air Quality Impact …… 10

E. Anti-Backsliding ……. 11

IV. USEPA AEL Criteria ……. 11

Criterion #1 …… 11

Criterion #2 …… 12

Criterion #3 …… 14

Criterion #4 …… 14

Criterion #5 …… 15

Criterion #6 …… 16

Criterion #7 …… 16

V. Conclusion ……..17

EXECUTIVE SUMMARY

The Illinois Environmental Regulatory Group (IERG) is proposing an alternative emission limitation (AEL) applicable to fuel combustion emission sources above 10 mmBTU/hour during periods of startup and shutdown. The proposal is a result of the Illinois Pollution Control Board (Board) amending and removing the startup, malfunction, and breakdown (SMB) provisions in the Board's air regulations at 35 Ill. Adm. Code Parts 201, 202, and 212. Prior to the amendments adopted in the PCB R 23-18 rulemaking, facilities with fuel combustion emission sources that were unable to comply with carbon monoxide (CO) standard in 35 Ill. Adm. Code 216.121 were able to apply for and obtain SMB provisions in their permits. The SMB provisions, in practice, would excuse the facility from compliance with the Section 216.121 standard during SMB events.

With the removal of the SMB provisions, particularly in 35 Ill. Adm. Code Part 201, facilities with fuel combustion emission sources subject to the CO standard in Section 216.121 require an AEL to maintain compliance during startup and shutdown periods. It is infeasible for fuel combustion emission sources, such as boilers and process heaters, to comply with the 200 ppm corrected to 50% excess air standard in Section 216.121 during periods of startup and shutdown. CO is emitted from boilers and process heaters as a product of incomplete combustion. It can take significant time during a boiler or process heater startup to reach sufficient operating temperature for good combustion, particularly when startup occurs after a longer period of shutdown. Shutdown is not generally an issue for natural gas-fired boilers and process heaters because the feeding of natural gas, and thus the combustion, can be stopped rapidly. However, coal-fired and solid fuel-fired boilers and process heaters may have a longer residence time for fuel remaining in the combustor after fuel delivery is stopped. There are no technical means to control the excess CO emissions during these periods, other than to follow standard startup and shutdown procedures to achieve normal operating conditions as quickly as possible while minimizing potential damage to the combustion device.

It is technically infeasible for most fuel combustion emission sources to comply with the CO standard in Section 216.121 during startup and shutdown periods. IERG proposes an AEL that would allow facilities with fuel combustion emission sources the option to comply with work practice standards in lieu of the 200 ppm CO standard in Section 216.121 during startup and shutdown. As proposed, the AEL incorporates by reference provisions providing work practice standard applicable during startup and shutdown events from the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR Part 63, Subpart DDDDD). IERG's proposal is drafted to address and satisfy the seven AEL criteria outlined by the United States Environmental Protection Agency (USEPA) and should be approvable as a revision to Illinois' State Implementation Plan (SIP).

I. INTRODUCTION

IERG submits its Proposal to amend the Board's CO standard applicable to fuel combustion emission sources in 35 Ill. Adm. Code 216.121 as a result of the Board's removal of the SMB provisions in Part 201 in PCB R 23-18. The Board's removal of the SMB provisions will greatly impact fuel combustion emission sources because the units will likely be unable to comply with the CO standard in Section 216.121 during periods of startup and shutdown.

IERG proposes to amend Section 216.121 by incorporating by reference select provisions of the NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters at 40 CFR Part 63, Subpart DDDDD. In promulgating NESHAP Subpart DDDDD, USEPA recognized the unique and important operating conditions that fuel combustion emission sources must follow during startup and shutdown periods to ensure safe operation and minimize emissions.

IERG is proposing to amend Section 216.121 by adding a provision stating the following:

> b) Notwithstanding subsection (a), during periods of startup and shutdown, any new or existing fuel combustion emission source can elect to comply with subsection (a) or the alternate standards for these operating modes in 40 CFR 63, Subpart DDDDD, Table 3 Items 5 and 6, 40 CFR 63.7500(a)(3) and (f), 40 CFR 63.7505(e), 40 CFR 63.7535(b), and 40 CFR 63.7555(d)(9)-(12).

The provisions of NESHAP Subpart DDDDD that IERG proposes to incorporate include work practice standards applicable to boilers and process heaters during startup and shutdown periods. This includes operating and maintaining the boiler or process heater in a manner consistent with safety and good air pollution control practices for minimizing emissions, operating all continuous monitoring systems (CMS), if any, during startup and shutdown, recordkeeping requirements, and using clean fuels. IERG is also proposing to amend the definitions and incorporations by reference provisions in Sections 216.103 and 216.104 to incorporate pertinent definitions from NESHAP Subpart DDDDD.

As is addressed later in this TSD, IERG's Proposal is drafted in order to address each of USEPA's seven criteria for adopting AELs.

II. BACKGROUND

A. Illinois SMB

On June 12, 2015, USEPA published a final rule updating USEPA's national policy regarding startup, shutdown, and malfunction (SSM). 80 Fed. Reg. 33840 (June 12, 2015). In the 2015 final rule, USEPA restated the seven criteria for developing an AEL. 80 Fed. Reg. 33840, 33914. On January 12, 2022, USEPA published a final rule, finding that numerous states, including Illinois, failed to submit SIP revisions required by the Clean Air Act in a timely manner to address USEPA's 2015 findings of substantial inadequacy and SIP Call. 87 Fed. Reg. 1680 (Jan. 12,

2022). The final action required impacted states to submit SIP revisions within 18 months from the effective date, i.e., by August 11, 2023. 87 Fed. Reg. 1680, 1682.

On December 7, 2022, the Illinois Environmental Protection Agency (Illinois EPA) proposed amendments to the Board's SMB regulations in PCB R 23-18, including amending and removing SMB provisions in 35 Ill. Adm. Code Parts 201, 202, and 212, in order to address the SIP Call. Illinois EPA Proposal, PCB R 23-18 (Dec. 7, 2022). On April 6, 2023, in its Second Notice Opinion and Order, the Board directed the Clerk to open a sub-docket rulemaking to consider any proposed AELs. Second Notice Opinion and Order, PCB R 23-18 (Apr. 6, 2023). In the sub-docket rulemaking, the Board established a filing deadline of August 7, 2023 for filing any proposed AEL language. Board Order, PCB R 23-18(A) (July 6, 2023). On July 20, 2023, the Board adopted Illinois EPA's proposal and declined to adopt any of the proposed AELs. Opinion and Order, PCB R 23-18 (July 20, 2023).

B. Boiler MACT

IERG's proposed amendments incorporate provisions from the NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters under 40 CFR 63, Subpart DDDDD, also known as Boiler MACT. Boiler MACT contains limits and standards based on maximum achievable control technologies (MACT).

Boiler MACT was first adopted by USEPA in 2004 to regulate emissions of hazardous air pollutants (HAP) from industrial, commercial, and institutional boilers and process heaters. 69 Fed. Reg. 55218, 55218 (Sep. 13, 2004). USEPA described the boiler and process heater emission units as follows:

> In the final rule, process heater means an enclosed device using controlled flame, that is not a boiler, and the unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to heat a transfer material for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not directly come into contact with process materials. Process heaters do not include units used for comfort heat or space heat, food preparation for on-site consumption, or autoclaves. Boiler means an enclosed device using controlled flame combustion and having the primary purpose of recovering thermal energy in the form of steam or hot water. Waste heat boilers are excluded from the definition of boiler.

69 Fed. Reg. 55218, 55222.[1]

In adopting the Boiler MACT regulations, USEPA explained that boilers and process heaters can emit a wide variety of HAP, which depends on the type of material burned. 69 Fed. Reg. 55218, 55223. USEPA grouped the HAP into four categories: mercury, non-mercury metallic HAP, inorganic HAP, and organic HAP. 69 Fed. Reg. 55218, 55223. USEPA also identified several

[1] Hot water heaters, temporary boilers, and boilers or process heaters that are used specifically for research and development are not regulated under Boiler MACT. 69 Fed. Reg. 55218, 55222.

compounds that could be used as surrogates for the compounds in each HAP category. As to using CO as a surrogate for organic HAP, USEPA explained:

> For organic HAP, we chose to use carbon monoxide (CO) as a surrogate to represent the variety of organic compounds, including dioxins, emitted from the various fuels burned in boilers and process heaters. Because CO is a good indicator of incomplete combustion, there is a direct correlation between CO emissions and the formation of organic HAP emissions. Monitoring equipment for CO is readily available, which is not the case for organic HAP. Also, it is significantly easier and less expensive to measure and monitor CO emissions than to measure and monitor emissions of each individual organic HAP. Therefore, using CO as a surrogate for organic HAP is a reasonable approach because minimizing CO emissions will result in minimizing organic HAP emissions.

69 Fed. Reg. 55218, 55223.

The initial Boiler MACT rule required sources to be in compliance with the emission limits, operating limits, and work practice standards, except during periods of startup, shutdown, and malfunction (SSM). 69 Fed. Reg. 55218, 55254 (referencing 40 CFR 63.7505 (2004)). Deviations that occurred during a period of SSM were not considered violations of NESHAP Subpart DDDDD if the source could demonstrate that it was operating in accordance with its SSM plan. 69 Fed. Reg. 55218, 55263 (referencing 40 CFR 63.7540(d) (2004)).

In 2011, USEPA significantly revised the SSM provisions in Boiler MACT. 76 Fed. Reg. 15608 (Mar. 21, 2011). USEPA established standards that apply at all times, taking into account startup and shutdown by establishing different standards that apply during those periods. 76 Fed. Reg. 15608, 15608.[2] In the preamble to the final rule, USEPA acknowledged the issues as to compliance during startup and shutdown periods:

> Response: EPA has considered these comments and has revised this final rule to incorporate a work practice standard for periods of startup and shutdown. Information provided on the amount of time required for startup and shutdown of boilers and process heaters indicates that the application of measurement methodology for these sources using the required procedures, which would require more than 12 continuous hours in startup or shutdown mode to satisfy all of the sample volume requirements in the rule, is impracticable. Upon review of this information, EPA determined that it is not feasible to require stack testing—in particular, to complete the multiple required test runs—during periods of startup and shutdown due to physical limitations and the short duration of startup and shutdown periods. Operating in startup and shutdown mode for sufficient time to

[2] USEPA determined that malfunctions should not be viewed as a distinct operating mode, like periods of normal operation, startup, or shutdown. 76 Fed. Reg. 15608, 15613. USEPA explained that periods of normal operation, startup, and shutdown are all predictable and routine aspects of operation, but malfunctions were sudden and infrequent. Therefore, USEPA determined that emissions during malfunctions do not need to be factored into development of the NESHAP standards. In the 2011 final rule, USEPA added an affirmative defense for exceedances of numerical emission limits caused by malfunctions.

> conduct the required test runs could result in higher emissions than would otherwise occur. Based on these specific facts for the boilers and process heater source category, EPA has developed a separate standard for these periods, and we are finalizing work practice standards to meet this requirement.

76 Fed. Reg 15608, 15642.

In the 2011 final rule, USEPA required sources to meet work practice standards during periods of startup and shutdown, including requiring sources to follow the manufacturer's recommended procedures for minimizing periods of startup and shutdown. 76 Fed. Reg 15608, 15613. USEPA explained that enforcement of numeric emission limits would not be feasible during periods of startup and shutdown. 76 Fed. Reg 15608, 15613 ("EPA determined that it is not technically feasible to complete stack testing—in particular, to repeat the multiple required test runs—during periods of startup and shutdown due to physical limitations and the short duration of startup and shutdown periods.").

The Boiler MACT startup and shutdown provisions were revised in 2013. 78 Fed. Reg. 7138 (Jan. 31, 2013). The 2013 final rule revised the work practice standards applicable during startup and shutdown periods to better reflect the MACT during those periods, as well as added definitions for "startup" and "shutdown." As to the revised work practice standards, USEPA required, among other measures, that all continuous monitoring systems be operated during startup and shutdown, and that for startup, the source use one or a combination of the listed clean fuels. 78 Fed. Reg. 7138, 7142.[3]

Major Boiler MACT was revised again in November 2015. 80 Fed. Reg. 72790 (Nov. 20, 2015). The revisions included, among other things, revisions to the definitions of "startup" and "shutdown" and work practices that apply during periods of startup and shutdown. *Id*. USEPA explained as follows:

> The EPA is adopting work practices that apply during the periods of startup and shutdown which reflect the emissions performance achieved by the best performing units. These work practices include use of clean fuels during startup and shutdown. In addition, under the alternate work practice, sources must engage all applicable control devices so that the emissions standards are met no later than four hours after the start of supplying useful thermal energy and must engage PM controls within one hour of first feeding non-clean fuels.

Id. at 72793. Notably, these revisions were finalized after the June 12, 2015 SSM SIP Call.[4]

[3] The 2013 final rule also amended the language of the affirmative defense provision for malfunctions. 78 Fed. Reg. 7138, 7147.

[4] Boiler MACT was revised again in 2022, which included revisions to several numeric emission limits. NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters, 87 Fed. Reg. 60816 (Oct. 6, 2022).

III. TECHNICAL DISCUSSION

A. Technical Infeasibility of Complying with Section 216.121

CO is emitted from boilers and process heaters as a product of incomplete combustion. Factors that influence complete combustion include time, temperature, and turbulence.[5] CO emissions can be minimized when boilers and process heaters operate at sufficiently high combustion temperature and with sufficient time and turbulence (mixing) in the firebox to allow for more complete combustion to occur. These factors are not technically feasible to sufficiently achieve during startup conditions.

As discussed below, it can take significant time during a boiler or process heater startup to reach sufficient operating temperature for good combustion, particularly when startup occurs after a longer period of shutdown. The length of a startup can vary, depending on the shutdown that necessitated the startup. After a longer shutdown, the combustion temperatures must be raised slowly so as to not damage the boiler equipment including the refractory. Heating the boiler or process heater up too fast can result in refractory damage, with hot spots then forming in the boiler, degrading boiler performance.

Trinity is not aware of a technical means to control the excess CO emissions during these startup periods, other than to follow standard startup procedures to achieve normal operating conditions as quickly as possible while minimizing potential damage to the combustion device (i.e., minimizing the duration of startup while maintaining safe operation).

To better understand the formation of CO emissions during combustion and specifically during startup it is important to understand the relationship between combustion temperatures and the autoignition temperature for CO (the temperature at which it combusts). The autoignition temperature for CO is approximately 1128 °F.[6] Generally, CO emissions should be minimized when combustion temperatures are in excess of the autoignition temperature for CO.

In reviewing available data from some example boilers and process heaters in Illinois, this relationship becomes clear, as does the technical infeasibility to control CO emissions during startup. In looking at example boilers and process heaters with Continuous Emissions Monitoring System (CEMS) data for CO emissions as well as data regarding firebox temperature, the relationship between emissions and temperature is profound. *See, e.g.,* Figure 1,

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[5] "Combustion Efficiency Optimization Manual for Operators of Oil- and Gas-Fired Boilers," USEPA (EPA-340/1-83-023), publicly available on USEPA's website at https://nepis.epa.gov/Exe/ZyNET.exe/50000KGB.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1981+Thru+1985&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C81thru85%5CTxt%5C00000001%5C50000KGB.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL.

[6] Fuels and Chemicals - Autoignition Temperatures Webpage on The Engineering ToolBox website, publicly available at https://www.engineeringtoolbox.com/fuels-ignition-temperatures-d_171.html.

attached hereto as Attachment 1. CO concentrations are elevated at the beginning of startup and remain elevated until firebox temperatures begin to approach the CO autoignition temperature, at which point the CO emissions fall drastically to barely measurable levels.

Generally, excess CO emissions are not a concern during natural gas-fired boiler or process heater shutdowns. A boiler or process heater shutdown is typically just a matter of ceasing fuel flow/feed to the boiler or process heater and can be conducted rapidly for natural-gas fired units. However, as discussed more in the next section, excess CO emissions are a concern for coal-fired and solid fuel-fired boilers and process heaters.

Similarly, a boiler or process heater malfunction or breakdown in many cases may just lead to a boiler or process heater shutdown in order to address the cause of the malfunction. In some instances, if there is a rapid change in process operating conditions due to an upset or malfunction, this could cause a rapid change in boiler or process heater demand which could result in temperature differentials within the boiler or process heater firebox that could result in excess CO emissions; however this is not typically the case.

B. Quantification of Excess Emissions

The magnitude of excess emissions during the startup of a boiler or process heater is impacted primarily by the size (i.e., heat input rating) of the boiler or process heater and the duration of the startup event. The size of the boiler or process heater is dictated by the operational needs of the facility. The duration of the startup is dictated by the type of startup and the time passed since the boiler or process heater was shutdown.

It can take significant time during a boiler or process heater startup to reach sufficient operating temperature for good combustion, particularly when startup occurs after a longer period of shutdown. The length of a startup can vary, depending on the shutdown that necessitated the startup. The basic types of startups are:

- Startup following repairs for an instrument malfunction that trips the boiler or process heater off
- Startup following nominally biennial Illinois Office of the State Fire Marshall ("OSFM") -required boiler inspections (boiler down for approximately one week)
- Startup following system repairs or refractory replacement

These various activities can result in startup durations varying between several minutes to more than a day. After a longer shutdown, the combustion temperatures must be raised slowly so as to not damage the boiler or process heater equipment including the refractory. Heating the boiler or process heater up too fast can result in refractory damage, with hot spots then forming in the boiler or process heater, degrading boiler performance.

It is to the facility's benefit to minimize the frequency and the startup duration of boilers and process heaters to the greatest extent practical. However, duration of startup times varies widely. For example, a startup period can be very brief (less than 2 hours) if the boiler or process heater comes down due to an instrument issue. A startup period can be moderate in length (less than 18

hours) if the boiler or process heater was down for routine periodic internal inspections. A startup period can be long (more than 1 day) for an initial startup of a boiler or process heater or a startup after a protracted outage or if refractory work was done (the temperature must be increased very gradually for refractory dry-out and to avoid refractory damage).

Reviewing available data for boilers and process heaters currently operating in Illinois, some general trends and ranges can be summarized as follows:

- An extended startup (following significant preventative maintenance activities including refractory replacement) is typically only conducted once every 5 years.
- A startup of moderate duration typically occurs every 1-2 years (as dictated by required boiler inspections or additional maintenance requirements).
- A brief startup (following process upset, instrumentation issues, etc.) typically occurs 5-10 times per year.

Based on reviewing available data for boilers and process heaters currently operating in Illinois and consistent with data reviewed by USEPA during Boiler MACT rule development, CO concentrations are elevated during startup (typically ranging from 300-1,500 ppmv). However, the overall magnitude of the emissions during a startup event are, as previously noted, a function of the size of the boiler or process heater, which is dictated by the operational requirements of the facility, and the duration of the startup, which is impacted by the specific reason for the startup. As such, the mass emissions of a boiler or process heater startup event can typically vary from only a few lbs per event for a brief startup to a few hundred lbs per event for an extended startup.

Over the course of a year, for a given boiler or process heater, total emissions due to startup events might range from a few lbs of CO to approximately 2,000 lbs of CO, again depending on the size of the boiler or process heater and the duration/frequent of startups.

Excess CO emissions during boiler or process heater shutdown are primarily limited to coal-fired solid fuel-fired boilers and process heaters. For natural gas-fired boilers and process heaters, combustion ceases once the natural gas is stopped. However, coal-fired and solid fuel-fired boilers and process heaters may have a longer residence time for fuel remaining in the combustor after fuel delivery is stopped. As a result, there can be a brief period of incomplete combustion as the fuel stops burning and bed temperature cools off, resulting in elevated CO emissions.

Review of available data for coal-fired and solid fuel-fired boilers and process heaters shows that duration of excess CO emissions during shutdown is much lower than periods of startup. This period is typically 1-2 hours; however, depending on shutdown circumstances, shutdown duration could be as long as 9 hours. CO emissions typically range from 200 ppmv to 500 ppmv.

C. Methods Employed to Reduce Emissions During Startup and Shutdown

Trinity is not aware of a technical means to control the excess CO emissions during these startup periods, or for shutdown periods for coal-fired and solid fuel-fired boilers and process heaters, other than to follow standard startup and shutdown procedures to achieve normal operating conditions as quickly as possible while minimizing potential damage to the combustion device (i.e., minimizing the duration of startup and shutdown while maintaining safe operation). This is consistent with the work practices required by USEPA under Boiler MACT. Further, it is always in the facility's best interests to minimize the duration of the startup and to shut down as quickly, but safely, as possible and quickly return to normal operations while still ensuring safe operations and preventing damage to equipment.

D. No Adverse Air Quality Impact

Fuel combustion sources have operated in the State of Illinois with startup and shutdown emissions for decades. During this time, there has never been a CO nonattainment area in the State of Illinois.[7] The most recent data from the state's CO ambient monitoring network indicates ambient air quality levels only a fraction (1-13%) of the standards as show below.[8]

Carbon Monoxide 1-hour Monitoring

AQS ID	City	NAAQS (ppm)	Second Highest Daily Samples; 1-hour[1] (ppm)		% of NAAQS	
17-019-1001	Bondville	35	0.453	0.349	1%	1%
17-031-0119	Lansing		2.2	1.7	6%	5%
17-031-4201	Northbrook		0.976	0.964	3%	3%

1. The 1-hour CO standard cannot be exceedance more than once in a given year. IEPA did not provide a design value for 1-hour CO in the 2021 Air Quality Report.

Carbon Monoxide 8-hour Monitoring

AQS ID	City	NAAQS (ppm)	Second Highest Daily Samples; 8-hour (ppm)		% of NAAQS	
17-019-1001	Bondville	9	0.4	0.3	4%	3%
17-031-0119	Lansing		1.2	1.1	13%	12%
17-031-4201	Northbrook		0.8	0.8	9%	9%

1. The 8-hour CO standard cannot be exceedance more than once in a given year. IEPA did not provide a design value for 8-hour CO in the 2021 Air Quality Report.

[7] https://www3.epa.gov/airquality/greenbook/anayo_il.html
[8] https://epa.illinois.gov/content/dam/soi/en/web/epa/topics/air-quality/air-quality-reports/documents/2021-Annual-Air-Quality-Report.pdf

The proposed rulemaking will not result in any increase in CO emissions from the regulated fuel combustion emission sources. As such, the proposed amendment has no potential to adversely impact on air quality. Fuel combustion sources will continue to operate as they always have and as the ambient monitor data indicates – there maintains a large compliance margin below the CO NAAQS across the state.

E. Anti-Backsliding

Fuel combustion emission sources have operated in the State of Illinois with startup and shutdown emissions for decades. Nothing regarding the recent SMB rulemaking in PCB R 23-18 will change how fuel combustion emission sources operate during startup or shutdown nor impact their historical emissions. IERG's proposed amendments merely document compliance with the best practices that most of the potentially impacted facilities are already following. As there will be no change in emissions from regulated sources, this proposed amendments will not result in any "backsliding."

IV. USEPA AEL CRITERIA

IERG's proposed amendments were drafted to satisfy each of the seven AEL criteria discussed by USEPA in the 2015 SSM final rule. In the following sections, each of USEPA's seven AEL criteria are addressed.

Criterion #1: The revision is limited to specific, narrowly defined source categories using specific control strategies (e.g., cogeneration facilities burning natural gas and using selective catalytic reduction).

IERG's proposed revision to Section 216.121 is limited to boilers and process heaters with actual heat input greater than 2.9 MW (10 mmbtu/hr). Under NESHAP Subpart DDDDD, the emission limitations, work practice standards, and operating limits apply at all times, except during periods of startup and shutdown. 40 CFR 63.7500(f). A boiler or process heater must comply with the work practice standards in either Table 3 Item 5 or Table 3 Item 6 during periods of startup or shutdown, respectively. 40 CFR 63, Subpart DDDDD, Table 3, Items 5 and 6. During startup and shutdown, the boiler or process heater must: (i) operate all continuous monitoring systems ("CMS") at all times; (i) collect monitoring data per Section 63.7535(b); (iii) keep records during periods of startup or shutdown; and (iv) provide reports concerning activities and periods of shutdown. Additionally, for startup, the facility must use one or a combination of clean fuels as identified in Table 3, Row 5 and must vent emissions of fuels that are not clean fuels to the main stacks and engage control devices per the options in Table 3, Row 5. For shutdowns, Table 3, Item 6 requires venting of emissions of fuels that are not clean fuels to the main stacks, and requires, in addition to the fuel used prior to initiation of shutdown, using another fuel to support the shutdown process.

The Illinois regulations at Section 216.121 provide generally applicable CO standard of 200 ppm, correct to 50% excess air, for any fuel combustion emission source with actual heat input greater than 2.9 MW (10 mmbtu/hr). 35 Ill. Adm. Code 216.121. As proposed by IERG, this standard would continue to be the CO standard applicable during normal, steady-state operation.

Facilities would then have the choice, during periods of startup or shutdown, to either comply with the 200 ppm standard or comply with the incorporated NESHAP Subpart DDDDD work practice standards. As explained above, USEPA understood the concerns with meeting the Boiler MACT standards during periods of startup and shutdown.

Criterion #2: Use of the control strategy for this source category is technically infeasible during startup or shutdown periods.

CO is emitted from boilers and process heaters as a product of incomplete combustion. Factors that influence complete combustion include time, temperature, and turbulence.[9] CO emissions can be minimized when boilers and process heaters operate at sufficiently high combustion temperature and with sufficient time and turbulence (mixing) in the firebox to allow for more complete combustion to occur. These factors are not technically feasible to sufficiently achieve during startup conditions.

It can take significant time during a boiler startup to reach sufficient operating temperature for good combustion, particularly when startup occurs after a longer period of shutdown. The length of a startup can vary, depending on the shutdown that necessitated the startup. The various activities can result in startup durations varying between several minutes to more than a day. After a longer shutdown, the combustion temperatures must be raised slowly so as to not damage the boiler or process heater equipment including the refractory. Heating the boiler up or process heater too fast can result in refractory damage, with hot spots then forming in the boiler or process heater, degrading boiler or process heater performance.

Excess CO emissions during boiler or process heater shutdown are primarily limited to coal-fired solid fuel-fired boilers and process heaters. For natural gas-fired boilers and process heaters, combustion ceases once the natural gas is stopped. However, coal-fired and solid fuel-fired boilers and process heaters may have a longer residence time for fuel remaining in the combustor after fuel delivery is stopped. As a result, there can be a brief period of incomplete combustion as the fuel stops burning and bed temperature cools off, resulting in elevated CO emissions.

Trinity is not aware of a technical means to control the excess CO emissions during startup periods, or during shutdown periods for coal-fired and solid fuel-fired boilers or process heaters, other than to follow standard startup procedures to achieve normal operating conditions as quickly as possible while minimizing potential damage to the combustion device.

[9] "Combustion Efficiency Optimization Manual for Operators of Oil- and Gas-Fired Boilers," USEPA (EPA-340/1-83-023), publicly available on USEPA's website at https://nepis.epa.gov/Exe/ZyNET.exe/50000KGB.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1981+Thru+1985&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C81thru85%5CTxt%5C00000001%5C50000KGB.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL.

To better understand the formation of CO emissions during combustion and specifically during startup it is important to understand the relationship between combustion temperatures and the autoignition temperature for CO (the temperature at which it combusts). The autoignition temperature for CO is approximately 1128 °F.[10] Generally, CO emissions should be minimized when combustion temperatures are in excess of the autoignition temperature for CO.

In reviewing available data from some example boilers and process heaters in Illinois, this relationship becomes clear; as does the technical infeasibility to control CO emissions during startup. In looking at example boilers with Continuous Emissions Monitoring System (CEMS) data for CO emissions as well as data regarding firebox temperature, the relationship between emissions and temperature is profound. *See* Figure 1, attached hereto as Attachment 2. CO concentrations are elevated at the beginning of startup and remain elevated until firebox temperatures begin to approach the CO autoignition temperature, at which point the CO emissions fall drastically to barely measurable levels.

The technical infeasibility to meet the CO standard during startup has been recognized by Illinois EPA in issuing several construction permits for boilers that include language such as "the Permittee is authorized to operate an affected boiler in violation of 35 IAC 216.121 during startup. This authorization is provided pursuant to 35 IAC 201.149, 201.161 and 201.262, as the Permittee has applied for such authorization in its application, generally describing the efforts that will be used to minimize startup emissions, duration of individual starts, and frequency of startups."

> **Criterion #3: The alternative emission limitation requires that the frequency and duration of operation in startup or shutdown mode are minimized to the greatest extent practicable.**

It is to the facility's benefit to minimize startup duration of boilers and process heaters to the greatest extent practical. However, duration of startup and shutdown times varies widely, as discussed above.

IERG is proposing to incorporate the general duty to minimize emissions under Boiler MACT as follows:

> At all times, you must operate and maintain any affected source (as defined in § 63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

40 CFR 63.7500(a)(3).

[10] Fuels and Chemicals - Autoignition Temperatures Webpage on The Engineering ToolBox website, publicly available at https://www.engineeringtoolbox.com/fuels-ignition-temperatures-d_171.html.

As such, IERG's proposed alternative emission limitation includes a requirement to minimize emissions at all times, including during startup and shutdown.

> **Criterion #4: As part of its justification of the SIP revision, the state analyzes the potential worst-case emissions that could occur during startup and shutdown based on the applicable alternative emission limitation.**

In the 2015 SIP Call final rule, USEPA included a response to comments that provided further clarity on the information required for an approvable alternative emissions limitation. USEPA explained:

> The EPA does not agree with the comment that suggests ''worst-case modeling'' would always be needed to show that a SIP revision establishing alternative emission limitations for startup and shutdown would not interfere with attainment or reasonable further progress. The nature of the technical demonstration needed under section 110(l) to support approval of a SIP revision depends on the facts and circumstances of the SIP revision at issue. The EPA will evaluate SIP submissions that create alternative emission limitations applicable to certain modes of operation such as startup and shutdown carefully and will work with the states to assure that any such limitations are consistent with applicable CAA requirements. Under certain circumstances, there may be alternative emission limitations that necessitate a modeling of worst-case scenarios, but those will be determined on a case-by-case basis.

80 Fed. Reg. 33840, 33867 (June 12, 2015).

Below are a few facts on CO emissions in Illinois based on the most recent 2021 Annual Air Quality Report:[11]

- Illinois has no violating CO monitors for either the 1-hour or 8-hour CO National Ambient Air Quality Standard ("NAAQS").
- The CO NAAQS allows for one exceedance per year.
- Most recent Illinois data shows the highest monitor's worst daily high 1-hour and 8-hour CO NAAQS readings are dramatically below the NAAQS.

Sources subject to Boiler MACT have been utilizing the federal SSM provisions proposed to be incorporated by IERG since 2015 and such approach has had minimal if no impact on CO emissions in Illinois. CO emissions in Illinois are still at a fraction of the CO NAAQS. Therefore, additional analysis of worst-case emissions under this criterion is not necessary.

[11] The report is publicly available on Illinois EPA's website at https://epa.illinois.gov/content/dam/soi/en/web/epa/topics/air-quality/air-quality-reports/documents/2021-Annual-Air-Quality-Report.pdf.

Criterion #5: The alternative emission limitation requires that all possible steps are taken to minimize the impact of emissions during startup and shutdown on ambient air quality.

IERG is proposing to incorporate the startup requirements that mandate the use of clean fuels under Boiler MACT. Specifically, Table 3, Rows 5 and 6 provide, in part:

If your unit is . . .	**You must meet the following . . .**
5. An existing or new boiler or process heater subject to emission limits in Table 1 or 2 or 11 through 15 to this subpart during startup	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, clean dry biomass, 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 choose to comply using paragraph (1) of the definition of "startup" in § 63.7575, once you start firing fuels that are not clean fuels 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, and selective catalytic reduction (SCR). You must start your limestone injection in FBC boilers, dry scrubber, fabric filter, 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 paragraph (2) of the definition of "startup" in § 63.7575, once you start to feed fuels that are not clean fuels, 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 engage and operate PM control within one hour of first feeding fuels that are not clean fuels. 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. You must develop and implement a written startup and shutdown plan, as specified in § 63.7505(e).
	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.
6. An existing or new boiler or process heater subject to emission limits in Table 1 or 2 or Tables 11 through 15 to this subpart during shutdown	You must operate all CMS during shutdown. While firing fuels that are not clean fuels 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, 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, ultra-low 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.

40 CFR 63, Subpart DDDDD, Table 3, Rows 5 and 6. IERG's proposal will minimize the impact of emissions of CO during startup on ambient air quality.

Criterion #6: The alternative emission limitation requires that, at all times, the facility is operated in a manner consistent with good practice for minimizing emissions and the source uses best efforts regarding planning, design, and operating procedures.

IERG is proposing to incorporate the general duty to minimize emissions under Boiler MACT as follows:

> At all times, you must operate and maintain any affected source (as defined in § 63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

40 CFR 63.7500(a)(3).

Criterion #7: The alternative emission limitation requires that the owner or operator's actions during startup and shutdown periods are documented by properly signed, contemporaneous operating logs or other relevant evidence.

The Boiler MACT provisions that IERG is proposing to incorporate address this criterion. 40 CFR 63.7555 requires the following records relating to SSM be kept:

- Records of the calendar date, time, occurrence and duration of each startup and shutdown
- Records of the type(s) and amount(s) of fuels used during each startup and shutdown
- For each startup period, for units selecting paragraph (2) of the definition of "startup" in § 63.7575, records of the time that clean fuel combustion begins; the time when you start feeding fuels that are not clean fuels; the time when useful thermal energy is first supplied; and the time when the PM controls are engaged
- If you choose to rely on paragraph (2) of the definition of "startup" in § 63.7575, for each startup period, records of the hourly steam temperature, hourly steam pressure, hourly steam flow, hourly 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. In addition, if compliance with the PM emission limit is demonstrated using a PM control device, you must maintain records as specified in paragraphs (d)(12)(i) through (iii) of this section. . . .
- Development and implementation of a written startup and shutdown plan

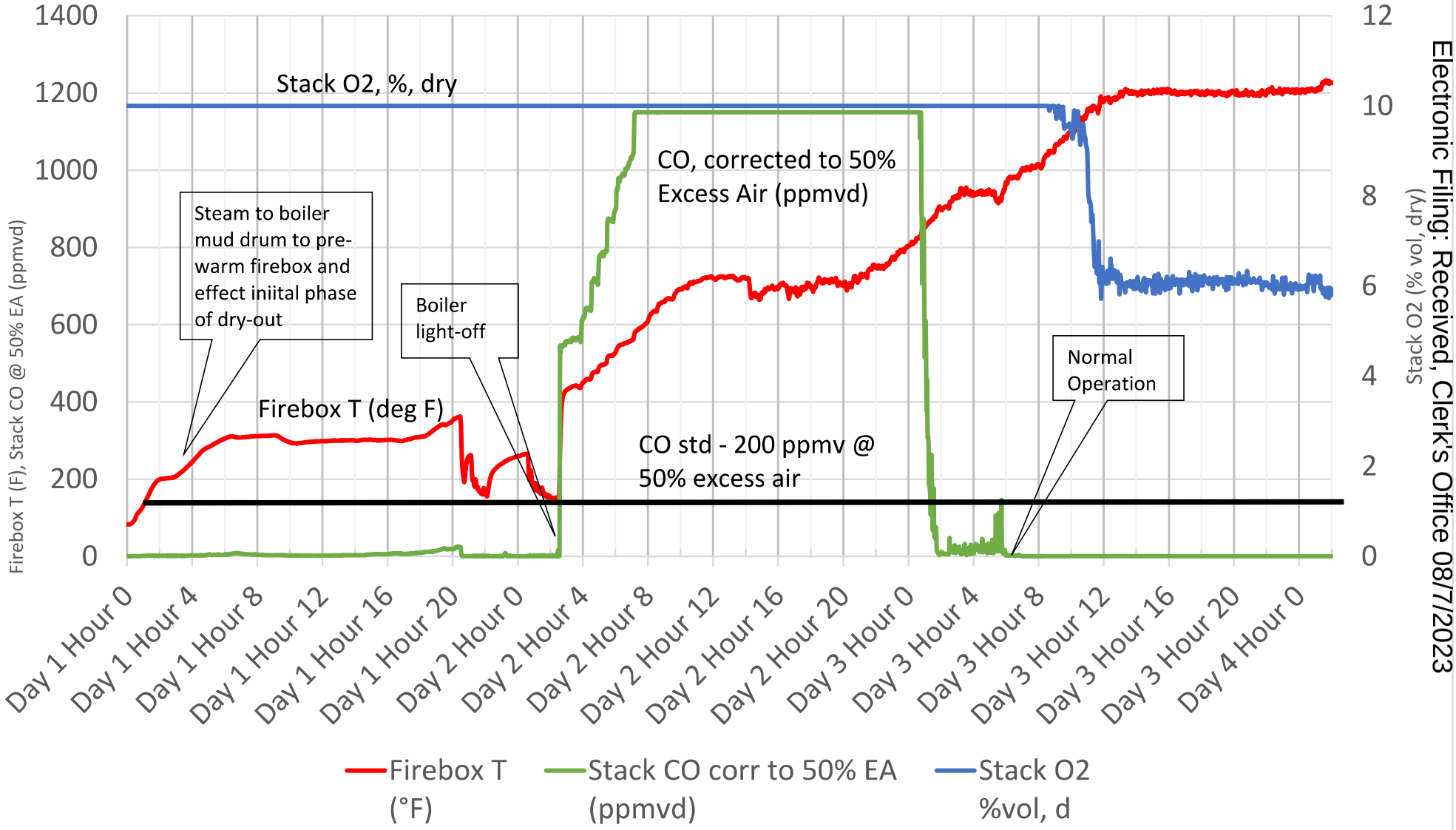
See 40 CFR 63.7555(d)(9)-(12).

V. CONCLUSION

IERG's proposed amendments are technically justified and will not result in any adverse impacts to the environment or public health.

Figure 1. Example Startup Involving Refractory Dry-out

(Dates/Times for Illustration Purposes Only)



ATTACHMENT 1