

**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

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

**NOTICE OF FILING**

TO: Mr. Don A. Brown, Timothy Fox  
Clerk of the Board Chloe Salk  
Illinois Pollution Control Board Hearing Officers  
100 West Randolph Street, Illinois Pollution Control Board  
Suite 11-500 60 East Van Buren Street, Suite 630  
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**(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, **PRE-FILED TESTIMONY OF KELLY THOMPSON AND DAVID R. WALL FOR 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: February 6, 2023

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**PRE-FILED TESTIMONY OF KELLY THOMPSON AND DAVID R. WALL  
FOR THE ILLINOIS ENVIRONMENTAL REGULATORY GROUP**

NOW COMES, the Illinois Environmental Regulatory Group (“IERG”), by and through its attorneys, HEPLERBROOM, LLC, and pursuant to 35 Ill. Adm. Code § 102.306 and the Illinois Pollution Control Board’s (“Board”) Notice of Hearing dated December 16, 2022, hereby submits the following Pre-filed Testimony of Kelly Thompson and David R. Wall for presentation at the February 16, 2023 hearing scheduled in the above-referenced matter.

**TESTIMONY OF KELLY THOMPSON**

**I. INTRODUCTION**

My name is Kelly Thompson and I am the Executive Director for the Illinois Environmental Regulatory Group (“IERG”). I have been employed by IERG since 2017. I have served as IERG’s Executive Director since September 2022, and have served as IERG’s Project Manager from 2017 through August 2022. As Executive Director, I regularly interact with environmental professionals employed by IERG’s member companies to discuss environmental issues impacting their facilities in Illinois.

I have participated in IERG’s representation in many of the Illinois Pollution Control Board’s (“Board”) rulemakings. I oversee the production and organization of IERG’s seminars and webinars to educate environmental professionals on regulatory compliance and permitting obligations. I have directly worked on projects which impact IERG members including groundwater quality standards,

water quality standards, coal combustion residuals, time limited water quality standards, waste manifesting, nutrient reduction, among others.

I serve at the Vice President of the Sangamon Conservancy Trust, a land trust that promotes the preservation and conservation of prime agricultural land. I hold a Master's Degree in Environmental Studies from the University of Illinois at Springfield and a Bachelor's Degree in Geography from Eastern Illinois University.

IERG is an Illinois non-profit corporation affiliated with the Illinois Chamber of Commerce and is comprised of 50 member companies that are regulated by governmental 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. Because IERG's members include facilities that have startup, shutdown, and malfunction ("SMB") provisions in their permits, Illinois EPA's proposal will directly impact IERG members.

I will be providing testimony regarding IERG's opposition to Illinois EPA's proposal, as well as industry's understanding of how the SMB regulatory provisions and related permit conditions have been utilized in the past.

Illinois EPA's proposed revisions to 35 Ill. Adm. Code Parts 201, 202, and 212 would seek to remove provisions that allow Illinois EPA to grant advance authorization to sources to continue operating with excess emissions during a malfunction or to violate emissions limitations or standards during startup. IERG is opposed to Illinois EPA's proposed revisions and its approach in addressing SMB by removing such provisions without adding alternative language in its place to address compliance during SMB events.

## II. STARTUP, MALFUNCTION, AND BREAKDOWN IN ILLINOIS

### A. Background of the SMB Regulations

The majority of the SMB provisions addressed in Illinois EPA's proposal were originally adopted by the Board in April 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)). These 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, R71-23 at 9.

As evidenced in the 1972 Board decision quoted above, the SMB relief provisions were a foundational part of the development of the "general standards" (promulgated at the same time, see R71-23). 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.* Additionally, based on Illinois EPA's testimony at the first hearing in this rulemaking, it is clear that the data sets and documents that were the basis of establishing the numerical emission limits in PCB R 71-23 could not have included appropriate emissions information either based on stack tests or a continuous emissions monitoring system ("CEMS"). Testimony of Rory Davis, Illinois EPA, Transcript of First Hearing, PCB R 23-18 at 22:24 and 23:1-14 (Jan. 19, 2023). 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.*

The SMB provisions adopted in PCB R 71-23 remained unchanged today 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).<sup>1</sup> The principle recognized by the Board 50 years ago remains

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<sup>1</sup> The United States Environmental Protection Agency ("USEPA") approved the Part 201 SMB provisions adopted in PCB R 71-23 for incorporation into Illinois' State Implementation Plan ("SIP") on May 31, 1972. *See Part 52 – Approval and Promulgation of Implementation Plans*, 37 Fed. Reg. 10842, 10862 (May 31, 1972).<sup>1</sup> This Federal Register is publicly available on the U.S. Government Information website at <https://www.govinfo.gov/content/pkg/FR-1972-05-31/pdf/FR-1972-05-31.pdf>.

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. Effect of SMB Regulations**

IERG does not agree with Illinois EPA's position that the SMB provisions in Part 201 only provide an affirmative defense to violations that occurred during SMB periods if an enforcement action was commenced. At the first hearing in this rulemaking, Illinois EPA stated:

“The agency's SMB provisions do not establish exceptions to or exemptions from otherwise applicable emission limits. Even if a source has SMB language in its permit, exceedances of emission limits are considered violations and could be subject - - and could subject the source to enforcement by the agency or others. . . .” [Testimony of Rory Davis, First Hearing Transcript, PCB R 23-18, 20:2-10 (Jan. 19, 2023)].

“No; as the agency stated in the statement of reasons, the SSM provisions did not excuse noncompliance with any applicable emission limit. The SSM provisions only provided sources with affirmative defense in the event of an emission exceedance that led to enforcement, and the agency's proposal simply removes these provisions as required by the SIP Call.” [Testimony of Rory Davis, First Hearing Transcript, PCB R 23-18, 66:1-8 (Jan. 19, 2023)].

“Section 201.265 clearly states that these SSM provisions only establish a prima facie defense to an enforcement action alleging a violation of an emission standard. This is consistent with how Illinois EPA has historically interpreted and implemented these provisions.” [Testimony of Rory Davis, First Hearing Transcript, PCB R 23-18, 105:5-11 (Jan. 19, 2023)].

Section 201.149 provides 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. Section 201.149 states:

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. There is no reference to only establishing a prima facie defense or to Section 201.265 in this provision. Furthermore, in the proposal for the 2015 SIP Call, USEPA discussed the various state SSM provisions that USEPA had concerns with. As to Illinois' SMB provisions, USEPA stated:

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.

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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.

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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. 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" (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).<sup>2,3</sup> Therefore, 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. Below are several examples of startup permit conditions and malfunction/breakdown permit conditions that are in existing permits.

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<sup>2</sup> 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).

<sup>3</sup> 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/>.



Example #1:

- b.i. The affected boiler is subject to 35 IAC 216.121, which provides that no person shall cause or allow the emission of CO into the atmosphere from any subject fuel combustion emission source to exceed 200 ppm, corrected to 50 percent excess air.
- ii. Notwithstanding the above, subject to the following terms and conditions, the Permittee is authorized to operate the 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."
  - A. This authorization does not relieve the Permittee from the continuing obligation to demonstrate that all reasonable efforts are made to minimize startup emissions, duration of individual startups and frequency of startups.
  - B. The Permittee shall conduct startup of the affected boiler in accordance with written procedures which shall be maintained at the [ ],<sup>4</sup> that are specifically developed to minimize emissions from startups.
  - C. The Permittee shall fulfill applicable recordkeeping and reporting requirements of Condition 7(i) and 8(f).
  - D. As provided by 35 IAC 201.265, this authorization for excess emissions during startup does not shield a Permittee from enforcement for any violation of applicable emission standard(s) that occurs during startup and only constitutes a prima facie defense to such an enforcement action provided that the Permittee has fully complied with all terms and conditions connected with such authorization.

Example #2:

1.1.3(e) Malfunction and Breakdown Provisions

Subject to the following terms and conditions, the Permittee is authorized to continue operation of the affected unit in violation of the applicable requirements of Condition 1.1.3(b) (35 IAC 214.301) in the event of a malfunction or breakdown of the affected unit, including the H<sub>2</sub>S control system and flare. 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 explaining why such continued operation would be required to provide essential service or to prevent injury to personnel or severe damage to equipment, and describing the measures that will be taken to minimize emissions from any malfunctions and breakdowns.

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<sup>4</sup> IERG is not including the source category referenced in this permit condition as IERG is not providing any potentially identifying information in its SMB examples.

- i. This authorization only allows such continued operation as necessary to provide essential service or to prevent injury to personnel or severe damage to equipment and does not extend to continued operation solely for the economic benefit of the Permittee.
- ii. Upon occurrence of excess emissions due to malfunction or breakdown, the Permittee shall as soon as practicable reduce load of the affected unit, repair the affected unit, or undertake other action so that excess emissions cease.
- iii. The Permittee shall fulfill applicable recordkeeping and reporting requirements of Condition 1.1.9(f). For these purposes, time shall be measured from the start of a particular incident. The absence of excess emissions for a short period shall not be considered to end the incident if excess emissions resume. In such circumstances, the incident shall be considered to continue until corrective actions are taken so that excess emissions cease.
- iv. Following notification to the Illinois EPA of a malfunction or breakdown with excess emissions, the Permittee shall comply with all reasonable directives of the Illinois EPA with respect to such incident, pursuant to 35 IAC 201.263.
- v. This authorization does not relieve the Permittee from the continuing obligation to minimize excess emissions during malfunction or breakdown. As provided by 35 IAC 201.265, an authorization in a permit for continued operation with excess emissions during malfunction and breakdown does not shield the Permittee from enforcement for any such violation and only constitutes a prima facie defense to such an enforcement action provided that the Permittee has fully complied with all terms and conditions connected with such authorization.

As seen from the excerpts above as well as the SMB permit conditions that Illinois EPA provided with its response filed on January 30, 2023, Illinois EPA has included a variety of SMB conditions in permits.<sup>5</sup>

Permit Examples #1 and #2 state that the permittee is authorized to operate the affected emission unit in violation of the applicable emission standard during startup or malfunction/breakdown. These conditions go on to state that the authorization for excess emissions does not shield the permittee from enforcement for any violation of an applicable emission standard that occurs during startup or malfunction/breakdown and only constitutes a prima facie defense to such enforcement action (provided

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<sup>5</sup> Note that most existing permits that contain SMB provisions also contain SMB-related recordkeeping and reporting conditions, which were not included in the above permit excerpts.

that all the terms and conditions are complied with). However, as explained in the next section, it has been the regulated community's long-standing interpretation that having such an authorization in a permit means that the facility is authorized to exceed the applicable limitation during SMB and Illinois EPA will not initiate an enforcement action for such exceedances. In essence, it has been the regulated communities' understanding that these provisions have provided an exemption to the applicable emission standard during periods of SMB. This aligns with USEPA's position, explained above, that Illinois' SMB provisions are ambiguous and could be read to provide an exemption from otherwise applicable emission limitations.

Removal of the SMB provisions in Section 201.149, removal of the SMB permit conditions similar to the conditions above, and removal of the ability to include these provisions in future permits, will have a detrimental effect on a source's ability to comply during periods of SMB. Industry has relied upon its past understanding of the SMB provisions and permit conditions, as well as Illinois EPA's decision to not enforce against SMB exceedances. Illinois EPA's proposal drastically changes the status quo relating to SMB in Illinois. As explained further in David Wall's testimony, the approach proposed by Illinois EPA does not provide a workable path for compliance during SMB events. Illinois EPA's proposal should not be adopted.

**C. Enforcement of Exceedances During SMB**

As explained above, it has been the regulated community's understanding that a SMB authorization in a permit in essence provides an exemption from the otherwise applicable emission limitation during periods of SMB. Relatedly, it has been the regulated community's understanding that, if an exceedance occurs during a SMB period and the facility has a SMB authorization in its permit, that Illinois EPA will not initiate an enforcement action for such exceedance. Based on communications with its members, IERG is not generally aware of enforcement actions initiated by Illinois EPA for

exceedances that occurred during a SMB period where the facility had an SMB authorization in its permit and complied with those provisions.

It is IERG's understanding that Illinois EPA's approach to enforcing exceedances during SMB periods will not change if Illinois EPA's proposal is adopted. Testimony of Rory Davis, First Hearing, PCB R 23-18, 124:11-13, 20-24 and 125:1-19 (Jan. 19, 2023). If Illinois EPA's proposal is adopted without any alternative standards during SMB, entities will be left with inevitable noncompliance during periods of SMB. This leaves facilities in the unfortunate circumstance of either having to choose to not operate in order to remain in compliance or be noncompliant and rely on Illinois EPA's use of enforcement discretion. IERG is opposed to any statutory or regulatory change in this rulemaking that would solely rely on the State's use of enforcement discretion as a replacement for the prima facie defense currently provided during periods of SMB. Use of enforcement discretion is inconsistent with the approach that USEPA has elected to take with its own rules when amending them to replace SMB provisions. Further, Illinois EPA's utilization of enforcement discretion does not alleviate the possibility of federal, other state agency, or third-party citizen's litigation. Nor does enforcement discretion satisfy the mandates and high expectations for compliance that many of Illinois' businesses hold themselves to.

IERG has partnered with the Illinois EPA for decades to educate the regulated community on compliance obligations, and Illinois EPA has consistently taken the stance that compliance is important to Illinois EPA, and that violations will be vigorously pursued. To take a contrary stance, via reliance on enforcement discretion (whether explicitly stated or implied) sends conflicting messages about the importance of compliance. This is not to say that IERG does not support enforcement discretion in the general sense – Illinois EPA necessarily requires flexibility to oversee compliance as it deems appropriate and to allow sources to correct minor compliance issues; however, where those situations

can be reasonably predicted and identified, IERG prefers that the State formally articulate what its expectations are and attempt to identify a path forward to make compliance possible.

All IERG members take very seriously their environmental regulatory and permit compliance obligations. Many have gone so far as to adopt corporate policies at the executive and board levels to direct staff that oversee their facilities to operate in compliance with all laws, regulations, permits, and orders. The employees do not have discretion to knowingly disregard applicable emission standards, and in the case of impossible compliance scenarios as described herein, are left with no feasible alternative.

**D. Need for Alternative Standards during SMB**

Because of the concerns addressed above, alternative standards during periods of SMB must be adopted if the Board decides to adopt Illinois EPA's proposal. Without the adoption of alternative standards that apply during periods of SMB, Illinois EPA's proposal will leave sources with inevitable noncompliance during SMB events. IERG has monitored and continues to monitor developments with other states that are subject to the 2015 SIP Call to see what changes they have made to their programs. IERG believes there is a potential for a workable path forward for SMB that could address both sources' and USEPA's concerns regarding SMB provisions. I believe IERG's proposed amendments, as outlined in David Wall's pre-filed testimony below, is an alternative that provides a workable path forward for certain source categories as it relates to carbon monoxide emissions. Under IERG's proposal, the affected sources would be able to comply with the proposed alternative requirements during SMB events. Illinois EPA would not have to put its efforts towards reviewing copious amounts of deviation reports, and then making decisions on, and potentially pursuing, enforcement. This alternative approach would allow those sources to continue to operate during SMB events in compliance with their permits and applicable regulations. IERG urges the Board to adopt IERG's proposed amendments.

### **III. STAKEHOLDER 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. In that comment, IERG contended that the SIP Call ignored both the Clean Air Act's establishment of Illinois' authority to promulgate specific SIP provisions and Illinois' history of implementing its SMB provisions to maintain and enforce the NAAQS and other Clean Air Act requirements. 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. Illinois EPA conveyed that a dialogue between Illinois EPA and stakeholders was needed in order to find a workable solution.

On January 12, 2022, U.S. EPA again issued final findings 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 also asked Illinois EPA about the status of SMB at IERG's July 2022 Air Seminar. 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. Illinois EPA gave no indication to stakeholders prior to that date as to which path Illinois EPA was considering taking. Illinois EPA gave stakeholders until December 6, 2022 to submit any comments – a total of 19 days, which included the Thanksgiving holiday. Such a limited timeframe is not adequate time, especially for member organizations like IERG, to analyze, discuss with members, and draft comments on the proposed approach. IERG expressed its concerns with this tight timeframe, as well as its concerns regarding Illinois EPA’s proposed revisions, in a virtual meeting with Illinois EPA on November 30, 2022. At that meeting, IERG requested that Illinois EPA extend the stakeholder comment deadline, especially given that Illinois EPA intends to utilize the Fast Track rulemaking process (415 ILCS 5/28.5) to propose its revisions. The request for extension of the comment deadline was denied.<sup>6</sup>

As the Board is well aware, Illinois EPA filed its proposal in this rulemaking using the “Fast Track” rulemaking process under Section 28.5 of the Illinois Environmental Protection Act, 415 ILCS 5/28.5. IERG opposes Illinois EPA’s use of the Fast Track rulemaking process in this instance. Illinois EPA has had more than adequate time to assess and develop its approach and has had the *opportunity* to conduct adequate stakeholder outreach on the proposed approach. However, instead, Illinois EPA circulated its proposed revisions to stakeholders, for the first time, on November 17, 2022. Illinois EPA gave no indication to stakeholders prior to that date as to which path Illinois EPA was considering

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<sup>6</sup> Additionally, one company participating in that meeting expressed an interest in expedited conversations with USEPA Region 5 staff to discuss and obtain concurrence with the proposed alternative emission standards that David Wall sets forth in his pre-filed testimony below. The goal was to quickly incorporate these alternative emission limitations into the Agency’s proposal to introduce a more effective proposal to the Board. The Agency was unwilling to progress those conversations even after timely follow-up from that company.

taking. Illinois EPA should not now be able to utilize the Fast Track rulemaking process, which is a truncated process that inevitably limits the time and opportunity for stakeholder and public participation.

Stakeholder outreach and participation in the development of environmental regulations is fundamental to promulgating regulations that are workable. Communication with the regulated community provides the opportunity to gather practicable information on how the proposed regulations may affect regulated entities. It also allows regulated entities the opportunity to educate Illinois EPA on the unique circumstances some facilities may have (differing equipment configurations, etc.) that will inevitably affect how the proposed rules will impact those facilities. Adequate stakeholder outreach was not conducted in response to the 2015 SIP Call or 2022 Finding of Failure.<sup>7</sup>

While IERG is aware of and sensitive to the threat of sanctions associated with a Finding of Failure by USEPA, use of the Fast Track rulemaking process in this manner by the Illinois EPA should be discouraged by the Board. Given the repeated attempts by IERG and the regulated community at initiating a dialog with the Agency on this topic, coupled with the inadequate public outreach actually conducted, the use of Fast Track process in this instance has the appearance of an attempt to circumvent the normal deliberative and transparent rulemaking to demand that the Board “ram through” what the Agency well knew would be a strongly opposed proposal.

#### **IV. CONCLUSION**

The information in my testimony supports IERG’s opposition to Illinois EPA’s proposal. Additionally, if the Board is inclined to grant Illinois EPA’s proposal, my testimony supports the promulgation of IERG’s proposed amendments to Part 216 as addressed in David Wall’s pre-filed testimony. Thank you for the opportunity to testify. I will be happy to answer any questions.

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<sup>7</sup> There are likely other industry types, which are not currently members of IERG, that are affected by Illinois EPA’s proposal but are not aware of such fact because of the inadequate outreach conducted by the Agency and the use of the Fast Track process in this proceeding.



**TESTIMONY OF DAVID R. WALL**

**I. INTRODUCTION**

My name is David Wall and I am a Principal Consultant and Regional Manager at Trinity Consultants (“Trinity”). I am based in Trinity’s Oakbrook Terrace, Illinois office. I have been a Regional Manager at Trinity since 2015. In my role as a Regional Manager, I oversee Trinity’s environmental consulting operations in Chicago, Minneapolis, Indianapolis, Milwaukee, and Ann Arbor. Prior to becoming Regional Manager at Trinity, I managed Trinity’s suburban Chicago office. I have worked in Illinois for the past 18 years, assisting industrial clients with state and federal air regulatory compliance and air permitting.

I have more than 23 years of experience within the environmental consulting industry, having started with Trinity in 1999. I conduct project management and senior technical consulting for a number of air quality projects ranging from complex permitting projects such as Prevention of Significant Deterioration (PSD) and Title V permits to regulatory reviews and compliance audits. I have personally worked with clients and regulatory agencies in many USEPA Regions.

My work has covered a wide range of industry. I have worked with electric utility, chemical and pharmaceutical manufacturing, petroleum refining, cement, stone and lime, rubber and tire manufacturing, and the agricultural products industry. I have managed a number of projects involving air dispersion modeling and am familiar with USEPA air dispersion models. I have also assisted a number of clients with determining Maximum Achievable Control Technology (MACT) and New Source Performance Standard (NSPS) applicability and strategizing for timely compliance. I have prepared or managed the preparation of hundreds of air permit applications.

A large portion of my career includes a particular focus on the petroleum refining industry where I have worked with more than forty refineries across the nation. I have managed permitting projects

ranging from minor modifications to multi-million and billion-dollar capital projects. I have led negotiations with state and federal agencies to strategically develop permit language to allow for operational flexibility and other unique considerations. With respect to plant site expansions and construction activities, I have provided strategy and agency negotiation skills for a number of large refinery permitting projects including synthetic minor permits as well as PSD/Nonattainment NSR major permits in USEPA Region 5 and other locations nationwide.

In enforcement and litigation matters, I have provided strategy development, agency meeting support, and resolution for alleged violations at multiple petroleum refineries and chemical plants.

Many times, my work has also been of a proactive nature. I have completed many environmental audits and assessments, particularly related to petroleum refining sources and compliance with permits and state and federal air regulations. I have provided environmental auditing and compliance determinations to dozens of facilities. My areas of expertise include state and federal air regulations, historical PSD/NSR applicability, Toxic Release Inventory and annual emission reporting, as well as regulations specific to the refining and petrochemical industries (e.g., BWON, MACT CC, MACT UUU NSPS QQQ, NSPS J/Ja, etc.).

As part of my career at Trinity I have also had the opportunity to teach numerous classes, provide many presentations at trade groups, and serve on several expert panels.

I hold a Bachelor of Science (BS) degree in Chemical Engineering from the Massachusetts Institute of Technology. I am a member of the American Fuels and Petrochemical Manufacturers (AFPM) association, where I serve on the environmental committee. I am also a licensed Professional Engineer. My *curriculum vitae* is attached hereto.

I will be providing testimony in support of IERG's proposal to amend 35 Ill. Adm. Code Part 216, filed simultaneous with this pre-filed testimony. The focus of my testimony will be providing

technical support and justification for IERG's proposed amendments to 35 Ill. Adm. Code 216.121 and 216.361.

Illinois EPA's proposal, if adopted by the Board, will adversely affect entities that currently rely on the SMB provisions and entities that intend to rely on the SMB provisions in the future. Illinois EPA's proposed approach to addressing SMB will leave sources with inevitable noncompliance during SMB events. Section 201.149 provides 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. 35 Ill. Adm. Code 201.49. The Agency has used this provision as a basis to include broad SMB conditions in construction and operating permits. Removal of these provisions and similar provisions from current permits, and removal of the ability to include these provisions in future permits, will have a detrimental effect on sources' ability to comply during periods of SMB. The approach proposed by Illinois EPA does not provide a viable path for compliance during SMB events. The proposal should not be adopted.

However, if the Board is inclined to adopt Illinois EPA's proposal, IERG proposes, in the alternative, amendments in addition to those proposed by Illinois EPA. As described later in my testimony, the proposed amendments have been developed to satisfy USEPA's criteria for alternative emission standards for periods of SSM. IERG hereby submits a proposal, as addressed fully below, to amend Sections 216.121 and 216.361 of the Board's rules governing carbon monoxide ("CO") emissions from fuel combustion emission sources and petroleum and petrochemical processes, respectively. If the Board is inclined to adopt the Agency's Proposal, IERG urges the Board to adopt the additional amendments proposed by IERG. IERG has the authority to propose amendments to a proposal filed by Illinois EPA under the Fast Track rulemaking proceedings under 415 ILCS 5/28.5.<sup>8</sup>

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<sup>8</sup> Section 28.5 of the Act does not prohibit other participants in the rulemaking from proposing revisions to Illinois EPA's amendments proposed under the Fast Track procedures. Section 28.5(l) of the Act provides: "The Board must not revise or

IERG urges the Board to consider IERG's proposed amendments and revise Illinois EPA's proposal after the close of the hearing and comment period.

## II. BACKGROUND ON SSM SIP CALL

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 SIPs. *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 action its SSM policy, in that broad SSM exemption provisions and affirmative defense SIP provisions are generally viewed as inconsistent with the requirements of the Clean Air Act. *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 Clean Air Act. *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

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otherwise change an Agency fast-track rulemaking proposal without agreement of the Agency until after the end of the hearing and comment period. Any revisions to an Agency proposal shall be based on the record of the proceeding." 415 ILCS 5/28.5(l). The Board is authorized to revise Illinois EPA's proposal after the end of the hearing and comment period. Revisions to Illinois EPA's Fast Track proposals have been proposed in prior Fast Track proceedings. *See, e.g.,* IERG's Pre-filed Testimony of Sidney M. Marder, *In the Matter of: Proposed New 35 Ill. Adm. Code 217, Subpart U, NO<sub>x</sub> Control and Trading Program for Specified NO<sub>x</sub> Generating Units, Subpart X, Voluntary NO<sub>x</sub> Emissions Reduction Program, and Amendments to 35 Ill. Adm. Code 211*, PCB R 1-17, at 11-12 (Dec. 8, 2000); Post-Hearing Comments of IERG, PCB R 1-17 (Jan. 10, 2001); Final Opinion and Order, PCB R 1-17, at 17-22 (Feb. 15, 2001). Section 28.5 of the Act provides authority for IERG's proposal herein.

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.*

USEPA also offered additional explanation as to USEPA's recommended criteria for developing alternative emission limitations 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. . . .

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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.<sup>9</sup>

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<sup>9</sup> 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

USEPA then restated the seven criteria, 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);
- (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 alternative emission limitations for modes of source operation other than startup and shutdown, but the same criteria should be utilized. *Id.*

In the 2015 final action, 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

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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.

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).<sup>10</sup> 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).<sup>11</sup>

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. If the SIP submittal is not approved by USEPA, then the State will be subject to certain sanctions, as well as imposition of a Federal Implementation Plan. *Id.*

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<sup>10</sup> 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>.

<sup>11</sup> 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>.

### **III. IERG'S REGULATORY PROPOSAL**

#### **A. Amendments to 35 Ill. Adm. Code 216.121**

##### **1. Overview**

Part 216 of the Board's rules addresses CO emissions. 35 Ill. Adm. Code Part 216. The CO standards 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 are more comprehensive. The NESHAP Subpart DDDDD standards are MACT standards and provide requirements for continuous monitoring, testing, recordkeeping and reporting. 40 CFR 63, Subpart DDDDD.

##### **2. Proposed Amendments**

IERG is proposing to amend Section 216.121 of the Board's rules governing CO emissions from fuel combustion emission sources. Section 216.121 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 unachievable for numerous entities in Illinois during periods of SMB. Removing the SMB provisions, as proposed by Illinois EPA, will leave these entities with no choice except for noncompliance during periods of SMB unless alternative standards for periods of SMB are included in Section 216.121. IERG hereby proposes in Section 216.121 alternative standards for fuel combustion emission sources that would apply during periods of SMB. 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 hereby 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 (a) states that, notwithstanding the generally applicable CO standard in subsection (a), an alternative standard can apply during periods of startup and shutdown. Specifically, the alternate standards proposed for periods of startup and shutdown for these processes are in the NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters under 40 CFR 63, Subpart DDDDD (“Boiler MACT”). The alternate requirements under Boiler MACT that IERG is proposing to incorporate into Section 216.121 are as follows:

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

§ 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.

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(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.

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(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.

- 40 CFR 63, Subpart DDDDD, Table 3 provides the work practice standards applicable to boilers and process heaters at major sources. Specifically, Rows 5 and 6 state:

<b>If your unit is . . .</b>	<b>You must meet the following . . .</b>
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 63.7505 provides the general requirements for complying with NESHAP Subpart DDDDD. Particularly, 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.

- 40 CFR 63.7535 provides the minimum amount of monitoring data that sources are required to obtain under NESHAP Subpart DDDDD. Specifically, 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.

- 40 CFR 63.7555 provides the recordkeeping requirements under NESHAP Subpart DDDDD. Specifically, Sections 63.7555(d)(9)-(13) 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.

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(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.

### **3. Justification**

#### **i. MACT Background**

The alternative standards proposed above are 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 technology (“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). 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).

Major 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.*

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. Major 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).

ii. Seven Criteria for Alternate Emission Limitations

As explained above, 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. USEPA also recognized that it may be appropriate to establish alternative emission limitations for modes of source operation other than startup and shutdown, but the same seven criteria should be utilized. *Id.*

In the sections below, IERG walks through each of the seven criteria as justification for IERG’s proposed amendment to Section 216.121.

- (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 (Boiler MACT), 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 also 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 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. Thus, it is appropriate that the alternative standards under NESHAP Subpart DDDDD would apply to periods of startup and malfunction/breakdown under Section 216.121.

- (2) Use of the control strategy for this source category is technically infeasible during startup or shutdown periods.

CO is emitted from boilers as a product of incomplete combustion. Factors that influence complete combustion include time, temperature, and turbulence.<sup>12</sup> 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.

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<sup>12</sup> "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%5C0000001%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>.



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 basic types of startups are:

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

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 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.

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 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.<sup>13</sup> Generally, CO emissions should be minimized when combustion temperatures are in excess of the autoignition temperature for CO.

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<sup>13</sup> Fuels and Chemicals - Autoignition Temperatures Webpage on The Engineering ToolBox website, publicly available at [https://www.engineeringtoolbox.com/fuels-ignition-temperatures-d\\_171.html](https://www.engineeringtoolbox.com/fuels-ignition-temperatures-d_171.html).

In reviewing available data from some example boilers 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.”

Overall, it is clear that it is not technically feasible to meet the CO standard during boiler startups. This fact has been recognized by both USEPA (through MACT rulemaking, etc.) and Illinois EPA (through issuance of permits with authorization to operate while exceeding the standard during startups).

Generally, excess CO emissions are not a concern during boiler shutdown. A boiler shutdown is typically just a matter ceasing fuel flow/feed to the boiler and can be conducted rapidly. Similarly, a boiler malfunction in many cases may just lead to a boiler 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 demand which could result in temperature differentials within the boiler firebox that could result in excess CO emissions; however this is not

typically the case. In terms of SMB events, startups are the main concern for excess CO emissions from boilers.

- (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 times varies widely. For example, a startup period can be very brief (less than 2 hours) if the boiler comes down due to an instrument issue. A startup period can be moderate in length (less than 18 hours) if the boiler was down for routine periodic internal inspections. A startup period can be long (1.5 to 2 days) for an initial startup of a boiler 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).

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).

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

- (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).

Additionally, below are a few facts on CO emissions in Illinois based on the most recent 2020 Annual Air Quality Report:<sup>14</sup>

- 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 (5% and 16% of the standards, respectively).

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

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<sup>14</sup> The report is publicly available on Illinois EPA’s website at <https://www2.illinois.gov/epa/topics/air-quality/air-quality-reports/Pages/default.aspx>.

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.

- (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 and shutdown 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. . . .
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	. . . 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.

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.

- (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).

- (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).

IERG believes the proposed revisions to Part 216 to adopt alternative emission limits and standards that apply during periods of SMB meet the seven criteria identified by USEPA for developing alternative emission limitations. If the Board is inclined to adopt the Agency's Proposal, IERG urges the Board to adopt the additional amendments proposed by IERG.

**B. Amendment to 35 Ill. Adm. Code 216.361**

**1. Overview**

Part 216 of the Board's rules addresses CO emissions. 35 Ill. Adm. Code Part 216. The CO standards 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 at 40 CFR 63 Subpart UUU are more comprehensive. The standards in Subpart UUU are MACT standards and provide requirements for continuous monitoring, testing, recordkeeping and reporting. 40 CFR 63, Subpart UUU. Under Subpart UUU, CO is regulated as a surrogate for organic HAP species, as good combustion results in the elimination of CO and organic HAP.

**2. Proposed Amendments**

IERG is proposing to amend Section 216.361 of the Board's rules governing CO emissions from petroleum and petrochemical processes. Section 216.361(a) prohibits causing or allowing the emission of a CO waste gas stream into the atmosphere unless such waste gas stream is burned in a direct flame afterburner or CO boiler so that the resulting concentration of CO in such waste gas stream is less than or equal to 200 ppm corrected to 50% excess air. 35 Ill. Adm. Code 216.361(a). The CO standard in Section 216.361(a) for petroleum and petrochemical processes is unachievable for refineries in Illinois during periods of SMB. Removing the SMB provisions, as proposed by Illinois EPA, will leave refineries with no choice except for noncompliance during periods of SMB unless alternative standards for periods of SMB are included in Section 216.361. IERG hereby proposes in Section 216.361 alternative CO standards for petroleum and petrochemical processes that would apply during periods of SMB. Additionally, in conjunction with the proposed amendment to Section 216.361, IERG proposes

amendments to Sections 216.103 and Section 216.104, governing definitions and incorporations by reference respectively. IERG proposes the following amendment to Section 216.361:

**Section 216.361      Petroleum and Petrochemical Processes**

- a) No person shall cause or allow the emission of a carbon monoxide waste gas stream into the atmosphere from a petroleum or petrochemical process unless such waste gas stream is burned in a direct flame afterburner or carbon monoxide boiler so that the resulting concentration of carbon monoxide in such waste gas stream is less than or equal to 200 ppm corrected to 50 percent excess air, or such waste gas stream is controlled by other equivalent air pollution control equipment approved by the Agency according to the provisions of 35 Ill. Adm. Code 201.
- b) Notwithstanding subsection (a), any existing petroleum or petrochemical process using catalyst regenerators of fluidized catalytic converters equipped for in situ combustion of carbon monoxide, may emit a carbon monoxide waste gas stream into the atmosphere if the carbon monoxide concentration of such waste gas stream is less than or equal to 750 ppm corrected to 50 percent excess air.
- c) Notwithstanding subsection (a), any new petroleum or petrochemical process using catalyst regenerators of fluidized catalytic converters equipped for in situ combustion of carbon monoxide, may emit a carbon monoxide waste gas stream into the atmosphere if the carbon monoxide concentration of such waste gas stream is less than or equal to 350 ppm corrected to 50 percent excess air.
- d) Notwithstanding subsections (a) through (c), during periods of startup, shutdown and hot standby, any new or existing petroleum catalytic cracking units can elect to comply with subsection (a) or the alternate limitation for these operating modes in 40 CFR 63 Subpart UUU Tables 9, 10, 14, and 41 and 40 CFR 63.1565(a)(5), 40 CFR 63.1570(c) and (f), 40 CFR 63.1572(c) and 40 CFR 63.1576(a)(2) and (d).

IERG is hereby proposing to amend Section 216.361, which provides the CO standard for petroleum and petrochemical processes. IERG is proposing to amend Section 216.361 by adding a new subsection (d). The proposed new subsection (d) states that, notwithstanding the generally applicable CO standard in subsection (a), an alternative limitation can apply during periods of startup, shutdown and hot standby. Specifically, the alternate limitation proposed for periods of startup, shutdown, and hot



standby for these processes are in the NESHAP for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units at 40 CFR 63, Subpart UUU. The pertinent alternative limits in Subpart UUU are as follows:

- 40 CFR 63.1565(a)(5) provides the requirements for organic HAP emissions from catalytic cracking units. Specifically, Section 63.1565(a)(5) states:

**(a) *What emission limitations and work practice standards must I meet?***

You must:

(5) On or before the date specified in § 63.1563(d), you must comply with one of the two options in paragraphs (a)(5)(i) and (ii) of this section during periods of startup, shutdown and hot standby:

(i) You can elect to comply with the requirements in paragraphs (a)(1) and (2) of this section; or

(ii) You can elect to maintain the oxygen (O<sub>2</sub>) concentration in the exhaust gas from your catalyst regenerator at or above 1 volume percent (dry basis) or 1 volume percent (wet basis with no moisture correction).

- 40 CFR 63, Subpart UUU, Table 9 provides the operating limits for organic HAP emissions from catalytic cracking units. Specifically, Row 3 of Table 9 states:

<b>For each new or existing catalytic cracking unit . . .</b>	<b>For this type of continuous monitoring system . . .</b>	<b>For this type of control device . . .</b>	<b>You shall meet this operating limit . . .</b>
3. During periods of startup, shutdown or hot standby	Any	Any	Meet the requirements in § 63.1565(a)(5).

- 40 CFR 63.1570(c) provides:

(c) At all times, you must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize

emissions does not require you to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved. Determination of whether a source is operating in compliance with operation and maintenance requirements will be based on information available to the Administrator which 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 63.1570(f) provides:

(f) You must report each instance in which you did not meet each emission limitation and each operating limit in this subpart that applies to you. This includes periods of startup, shutdown, and malfunction. You also must report each instance in which you did not meet the work practice standards in this subpart that apply to you. These instances are deviations from the emission limitations and work practice standards in this subpart. These deviations must be reported according to the requirements in § 63.1575.

- 40 CFR 63.1572(c) provides:

(c) Except for flare monitoring systems, you must install, operate, and maintain each continuous parameter monitoring system according to the requirements in paragraphs (c)(1) through (5) of this section. For flares, on and after January 30, 2019, you must install, operate, calibrate, and maintain monitoring systems as specified in §§ 63.670 and 63.671. Prior to January 30, 2019, you must either meet the monitoring system requirements in paragraphs (c)(1) through (5) of this section or meet the requirements in §§ 63.670 and 63.671.

(1) You must install, operate, and maintain each continuous parameter monitoring system according to the requirements in Table 41 of this subpart. You must also meet the equipment specifications in Table 41 of this subpart if pH strips or colorimetric tube sampling systems are used. You must meet the requirements in Table 41 of this subpart for BLD systems. Alternatively, before August 1, 2017, you may install, operate, and maintain each continuous parameter monitoring system in a manner consistent with the manufacturer's specifications or other written procedures that provide adequate assurance that the equipment will monitor accurately.

(2) The continuous parameter monitoring system must complete a minimum of one cycle of operation for each successive 15-minute period. You must have a minimum of four successive cycles of

operation to have a valid hour of data (or at least two if a calibration check is performed during that hour or if the continuous parameter monitoring system is out-of-control).

(3) Each continuous parameter monitoring system must have valid hourly average data from at least 75 percent of the hours during which the process operated, except for BLD systems.

(4) Each continuous parameter monitoring system must determine and record the hourly average of all recorded readings and if applicable, the daily average of all recorded readings for each operating day, except for BLD systems. The daily average must cover a 24-hour period if operation is continuous or the number of hours of operation per day if operation is not continuous, except for BLD systems.

(5) Each continuous parameter monitoring system must record the results of each inspection, calibration, and validation check.

- NESHAP Subpart UUU, Table 10 provides requirements for the continuous monitoring systems for organic HAP emissions from catalytic cracking units. Specifically, Table 10, Row 3 states:

<b>For each new or existing catalytic cracking unit . . .</b>	<b>And you use this type of control device for your vent . . .</b>	<b>You shall install, operate, and maintain this type of continuous monitoring system . . .</b>
3. During periods of startup, shutdown or hot standby electing to comply with the operating limit in § 63.1565(a)(5)(ii)	Any	Continuous parameter monitoring system to measure and record the concentration by volume (wet or dry basis) of oxygen from each catalyst regenerator vent. If measurement is made on a wet basis, you must comply with the limit as measured (no moisture correction).

- NESHAP Subpart UUU, Table 14 provides the requirements for continuous compliance with operating limits for organic HAP emissions from catalytic cracking units. Specifically, Table 14, Row 3 states:

<b>For each new or existing catalytic cracking unit . . .</b>	<b>If you use . . .</b>	<b>For this operating limit . . .</b>	<b>You shall demonstrate continuous compliance by . . .</b>
3. During periods of startup, shutdown or hot standby electing to comply with the operating limit in § 63.1565(a)(5)(ii).	Any control device	The oxygen concentration limit in § 63.1565(a)(5)(ii)	Collecting the hourly average oxygen concentration monitoring data according to § 63.1572 and maintaining the hourly average oxygen concentration at or above 1 volume percent (dry basis).

- NESHAP Subpart UUU, Table 41 provides the requirements for installation, operation, and maintenance of continuous parameter monitor systems. Specifically, Table 41, Row 10 states:

<b>If you use . . .</b>	<b>You shall . . .</b>
3. Oxygen content sensors <sup>2</sup>	Locate the oxygen sensor so that it provides a representative measurement of the oxygen content of the exit gas stream; ensure the sample is properly mixed and representative of the gas to be measured.
	Use an oxygen sensor with an accuracy of at least $\pm 1$ percent of the range of the sensor or to a nominal gas

	concentration of $\pm 0.5$ percent, whichever is greater.
	Conduct calibration checks at least annually; conduct calibration checks following any period of more than 24 hours throughout which the sensor reading exceeds the manufacturer's specified maximum operating range or install a new oxygen sensor; at least quarterly, inspect all components for integrity and all electrical connections for continuity; record the results of each calibration and inspection.

<sup>2</sup> This does not replace the requirements for oxygen monitors that are required to use continuous emissions monitoring systems. The requirements in this table apply to oxygen sensors that are continuous parameter monitors, such as those that monitor combustion zone oxygen concentration and regenerator exit oxygen concentration.

- 40 CFR 63.1576(a)(2) provides:

(a) You must keep the records specified in paragraphs (a)(1) through (3) of this section.

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(2) The records specified in paragraphs (a)(2)(i) through (iv) of this section.

(i) Record the date, time, and duration of each startup and/or shutdown period for which the facility elected to comply with the alternative standards in § 63.1564(a)(5)(ii) or § 63.1565(a)(5)(ii) or § 63.1568(a)(4)(ii) or (iii).

(ii) In the event that an affected unit fails to meet an applicable standard, record the number of failures. For each failure record the date, time and duration of each failure.

(iii) For each failure to meet an applicable standard, record and retain a list of the affected sources or equipment, an estimate of the volume of each regulated pollutant emitted over any emission limit and a description of the method used to estimate the emissions.

(iv) Record actions taken to minimize emissions in accordance with § 63.1570(c) and any corrective actions taken to return the affected unit to its normal or usual manner of operation.

- 40 CFR 63.1576(d) provides:

(d) You must keep records required by Tables 6, 7, 13, and 14 of this subpart (for catalytic cracking units); Tables 20, 21, 27 and 28 of this subpart (for catalytic reforming units); Tables 34 and 35 of this subpart (for sulfur recovery units); and Table 39 of this subpart (for bypass lines) to show continuous compliance with each emission limitation that applies to you.

### 3. Justification

#### i. MACT Background

The alternative emission limitations and standards proposed above are from the NESHAP for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units at 40 CFR 63, Subpart UUU. NESHAP Subpart UUU contains limits and standards based on maximum achievable control technology (“MACT”). The alternative emission limitations and standards proposed above were promulgated by USEPA in December 2015, subsequent to the 2015 SSM SIP call. *See Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards*, 80 Fed. Reg. 75178 (Dec. 1, 2015).<sup>15</sup> The amendments relating to SSM were proposed in response to the Sierra Club Petition and to address USEPA’s concerns regarding general SSM exemptions. *Id.* at 75184. Specifically, USEPA removed the SSM exemption provisions or references from NESHAP Subpart UUU and inserted alternative emission standards during periods of SSM. *Id.* USEPA explained:

In proposing the standards in this rule, the EPA has taken into account startup and shutdown periods and, for the reasons explained below, we are proposing alternate standards for those periods for a few select emission sources. We expect facilities can meet nearly all of the emission standards in Refinery MACT 1 and 2 during startup and shutdown, including the amendments we are proposing in this action. For most of the emission sources, APCD are operating prior to process startup and continue to operate through process shutdown.

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<sup>15</sup> This Federal Register is publicly available on the U.S. Government Information website at <https://www.govinfo.gov/content/pkg/FR-2015-12-01/pdf/2015-26486.pdf>.

For Refinery MACT 1 and 2, we identified three emission sources for which specific startup and shutdown provisions may be needed. First, as noted above, most APCD used to control metal HAP emissions from FCCU under Refinery MACT 2 (e.g., wet scrubber, fabric filter, cyclone) would be operating before emissions are routed to them and would be operating during startup and shutdown events in a manner consistent with normal operating periods, such that the monitoring parameter operating limits set during the performance test are maintained and met. However, we recognize that there are safety concerns associated with operating an ESP during startup of the FCCU, as described in the following paragraphs. Therefore, we are proposing specific PM standards for startup of FCCU controlled with an ESP under Refinery MACT 2.

During startup of the FCCU, “torch oil” (heavy oil typically used as feed to the unit via the riser) is injected directly into the regenerator and burned to raise the temperature of the regenerator and catalyst to levels needed for normal operation. Given the poor mixing of fuel and air in the regenerator during this initial startup, it is difficult to maintain optimal combustion characteristics, and high CO concentrations are common. Elevated CO levels pose an explosion threat due to the high electric current and potential for sparks within the ESP. Consequently, it is common practice to bypass the ESP during startup of the FCCU. Once torch oil is shut off and the regenerator is fueled by catalyst coke burn-off, the CO levels in the FCCU regenerator off-gas will stabilize and the gas can be sent to the ESP safely.

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As mentioned previously, “torch oil” is injected directly into the regenerator and burned during FCCU startup to raise the temperature of the regenerator and catalyst to levels needed for normal operation. During this period, CO concentrations often will exceed the 500 ppm emissions limit due to the poor mixing of fuel and air in the regenerator. The emissions limit is based on CO emissions, as a surrogate for organic HAP emissions, and the emission limit is evaluated using a 1-hour averaging period. This 1 hour averaging period does not provide adequate time for short-term excursions that occur during startup to be offset by lower emissions during normal operational periods.

Based on available data during normal operations, ensuring adequate combustion (indicated by CO concentration levels below 500 ppmv) minimizes organic HAP emissions. Low levels of CO in the exhaust gas are consistently achieved during normal operations when oxygen concentrations in the exhaust gas exceed 1-percent by volume (dry basis). Thus, maintaining an adequate level of excess oxygen for the combustion of fuel in the FCCU is expected to minimize organic HAP emissions. Emissions of CO during startup result from a series of reactions with the fuel source and are dependent on mixing, local oxygen concentrations, and temperature. While the refinery owner or operator has direct control over air blast rates, CO emissions may not always directly correlate with the air blast rate. Exhaust oxygen concentrations are expected to be more directly linked with air blast rates and are, therefore, more directly under control of the refinery owner or operator. We are proposing an excess oxygen concentration of 1 volume percent (dry basis) based on a 1-hour average during startup. We consider the 1-

hour averaging period for the oxygen concentration in the exhaust gas from the FCCU to be appropriate during periods of FCCU startup because air blast rates can be directly controlled to ensure adequate oxygen supply on a short-term basis.

*Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards*, 79 Fed. Reg. 36880, 36943 (June 30, 2014).<sup>16</sup>

ii. Seven Criteria for Alternative Emission Limitations

As explained above, 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. USEPA also recognized that it may be appropriate to establish alternative emission limitations for modes of source operation other than startup and shutdown, but the same seven criteria should be utilized. *Id.*

In the sections below, IERG walks through each of the seven criteria as justification for IERG’s proposed amendments to Section 216.361.

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<sup>16</sup> This Federal Register is publicly available on the U.S. Government Information website at <https://www.govinfo.gov/content/pkg/FR-2014-06-30/pdf/2014-12167.pdf>.



- (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 216.361 is limited to specific, narrowly defined source categories using specific control strategies. The proposed revision is limited to fluid catalytic cracking units ("FCCUs") as defined in the federal MACT standard. There are only four petroleum refineries in Illinois. Most or all of the FCCUs at the refineries in Illinois are controlled by CO boilers during steady-state operation.

Under NESHAP Subpart UUU, the generally applicable CO standard applicable to FCCUs is CO emissions from the FCCU regenerator or CO boiler serving the FCCU must not exceed 500 ppmv (dry 1-hour basis). 40 CFR 63.1565(a)(1); 40 CFR 63, Subpart UUU Table 8. During periods of startup, shutdown, or hot standby, a source can elect to comply with the alternative standard of maintaining the oxygen concentration in the exhaust gas of the FCCU regenerator at or above 1 volume percent (dry basis) or 1 volume percent (wet basis with no moisture correction). 40 CFR 63.1565(a)(5).

The Illinois regulations at Section 216.361 provide a more stringent generally applicable CO standard of 200 ppm corrected to 50% excess air. 35 Ill. Adm. Code 216.361(a). As proposed by IERG, the existing 216.361 standards would continue to be the CO standards applicable during normal operation. USEPA understood the concerns with meeting the MACT standard during periods of startup, shutdown, and hot standby. Thus, it is appropriate that the alternative emission limitation and standards under NESHAP Subpart UUU would apply to periods of startup, shutdown, and hot standby under Section 216.361.

- (2) Use of the control strategy for this source category is technically infeasible during startup or shutdown periods.

CO emissions from an FCCU are the result of incomplete combustion when coke deposits are burned off the circulating catalyst in the FCCU regenerator. As with any type of combustion, the factors

that influence complete combustion include time, temperature, and turbulence. During normal operations, a typical FCCU operates in either full burn mode or in partial burn mode with CO emissions controlled by a CO boiler. Under either of these scenarios, good combustion is achievable and CO emissions can be minimized. When operating normally, an FCCU is essentially in a thermodynamic balance as the heat from combusting the coke deposits is utilized in cracking the feed to the unit. However, during startup, there is no feed to the unit and no coke combustion. For the unit to operate properly and safely, it first must be brought up to the proper operating temperature. This is done through the combustion of torch oil. When combusting torch oil and bringing the unit up to temperature, elevated CO emissions occur. Depending on how long the FCCU had been shut down prior to the startup (i.e., how much it has cooled off), the startup can take hours or even days to safely reach the proper operating temperature. It is not technically feasible to meet the CO standard during this startup period.

More specifically, the FCCUs in Illinois use CO boilers to control CO. Typically, the FCCUs will startup in full burn mode and the source will bypass the CO boiler during startup. This is because of safety and reliability concerns – starting up a FCCU in full burn mode through CO boilers is generally not safe or reliable. These concerns were detailed in comments submitted to USEPA during the NESHAP Subpart UUU rulemaking:

*Comment:* Several commenters stated that the EPA should provide alternate standards for startups of FCCU equipped with CO boilers and for any FCCU during periods of shutdown and hot standby. The commenters stated that the EPA incorrectly assumes that refiners are able to safely and reliably start up their FCCU with flue gas boilers in service and meet the normal operating limit of 500 ppm CO. They claimed that most refiners are unable to reliably start up their FCCU with flue gas boilers in service due to the design of the boiler and the fact that many boilers are not able to safely and reliably handle the transient FCCU operations that can occur during startup, shutdown, and hot standby. One commenter stated that FCCU built with CO boilers experience issues with flame stability due to fluctuating flue gas compositions and rates when starting up and shutting down. Accordingly, the commenter stated, startup and shutdown activities at FCCU using a boiler as an APCD are not currently meeting the Refinery

MACT 2 standard of 500 ppm CO on a 1-hour basis, and this level of control does not qualify as the MACT floor. The commenter gave examples of facilities where FCCU, including those equipped with post-combustion control systems, do not consistently demonstrate compliance with a 500 ppm CO concentration standard during all startup and shutdown events.

Commenters stated that reliable boiler operation is critical to the overall refinery steam system and refineries must avoid jeopardizing boiler operation to prevent major upsets of process operations. A major upset or site-wide shutdown could result in flaring and emissions of HAP far in excess of that emitted while bypassing the CO boiler.

Commenters stated that combustion of torch oil in the FCCU regenerator during startup is one of the primary reasons the CO limit cannot be met during these operations. Torch oil is also used during shutdown to control the cooling rate (and potential equipment damage) and during hot standby and, thus, the normal CO standard cannot be met at these times either. Hot standby is used to hold an FCCU regenerator at operating temperature for outages where a regenerator shutdown is not needed and to avoid full FCCU shutdowns. Full cold shutdown also increases personnel exposures associated with removing catalyst and securing equipment. Additionally, this can produce additional emissions over maintaining the unit in hot standby. Commenters claimed that because of the variability of CO during torch oil operations, it is not possible for the EPA to establish a CAA section 112(d) standard for startup and shutdown activities at FCCU because refineries cannot measure a constant level of emissions reductions.

The commenters recommended expansion of the proposed standard of greater than 1-percent hourly average excess regenerator oxygen to all FCCU, including units with fired boilers. These commenters suggested that maintaining an adequate level of excess oxygen for the combustion of fuel in the regenerator is the best way to minimize CO and organic HAP emissions from FCCU during these periods.

*Response:* After reviewing the comments and discussing CO boiler operations with facility operators, we agree that the 1-percent minimum oxygen limit should be more broadly applicable to FCCU startup and shutdown regardless of the control device configuration and have revised the final rule accordingly.

80 Fed. Reg. 75178, 75220-75221 (Dec. 1, 2015).

As explained above, starting up a FCCU in full burn mode through CO boilers is generally not safe or reliable. Also, as explained above and recognized by USEPA, the generally applicable CO limit is simply not achievable during startup periods. It is technically infeasible to meet these CO limits during startup periods.

Similarly, FCCUs can experience elevated CO emissions during hot standby. As with startup, during hot standby the unit is typically not receiving feed and torch oil is combusted to maintain heat within the unit. It is not technically feasible to control CO emissions during hot standby operations.

During shutdowns, as feed is removed from the FCCU and the unit begins to cool there is also the potential for incomplete combustion and excess CO emissions. It is not technically feasible to control CO emissions during shutdowns.

Malfunctions may result in excess CO emissions if they affect the combustion characteristics in the FCCU regenerator or interrupt the feed to the unit. Malfunctions by nature are not predictable or avoidable so it is not technically feasible to control CO emissions during these events.

- (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.

FCCUs are the primary gasoline-making units in petroleum refineries and operate year-round to provide essential products. Sources with FCCUs have planned startup and shutdowns for periodic maintenance events (multi-year turnaround cycle). Each startup of a FCCU after a maintenance event is unique, depending on what, if any, other units are down for maintenance.

IERG is proposing to incorporate the general duty to minimize emissions under NESHAP Subpart UUU, which states, in part:

At all times, you must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved. . . .

40 CFR 63.1570(c). As such, IERG's proposed alternative emission limitation includes a requirement to minimize emissions at all times, including during startup. Furthermore, it is to each refinery's benefit to complete startup as quickly as possible. The FCCU is a critical operating unit for a refinery. When an

FCCU is down or not operating normally, refineries typically operate the entire plant at significantly reduced production rates or not at all. Lost production and the economic consequences are a strong incentive to minimum startup time. Therefore, there is an inherent goal to minimize the time of startup as much as is safely practicable, which in turn minimizes emissions during startup.

- (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).

It is IERG’s understanding that other states either do not have CO standards for FCCUs or they exempt units subject to federal regulations. *See, e.g.*, Indiana regulations at 326 IAC 9-1-1(b)(1), (b)(5), and 9-1-2; *see, e.g.*, California - Bay Area Air Quality Management District regulations at 9-10-305 (explicitly exempting periods of startup, shutdown, and curtailed operation (<30%)).<sup>17</sup> Therefore, the 200 ppm CO limit in Section 216.361 is unique to Illinois.

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<sup>17</sup> The Indiana regulations referenced are available at [http://iac.iga.in.gov/iac/iac\\_title?iact=326](http://iac.iga.in.gov/iac/iac_title?iact=326). The BAAQMD regulations referenced are publicly available at [https://www.baaqmd.gov/~media/dotgov/files/rules/refinery-rules-definitions/rg0910\\_20211103-pdf.pdf?la=en&rev=6e3872940d924000b45ea05f05b5a309](https://www.baaqmd.gov/~media/dotgov/files/rules/refinery-rules-definitions/rg0910_20211103-pdf.pdf?la=en&rev=6e3872940d924000b45ea05f05b5a309).

With respect to emission impacts of alternative CO standard proposed by IERG, all petroleum refineries in Illinois currently have FCCU SMB relief provisions in their operating permits and currently rely on the excess emission authorizations. Below is an example of a startup provision in a current Clean Air Act Permit Program (“CAAPP”) permit:

e. Startup Provisions

Subject to the following terms and conditions, the Permittee is authorized to operate the fluid catalytic cracking unit in violation of Condition 7.3.3(b) and (c) 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 startups and frequency of startups.”

Permit Condition 7.3.3(c) referenced in the above excerpt sets forth the 200 ppm corrected to 50% excess air emission limit in 35 Ill. Adm. Code 216.361(a). Thus, the above startup provision states that, subject to the following terms and conditions, the permittee is authorized to operate the FCCU in violation of the limit in Section 216.361(a) during startup. There are additional provisions under this paragraph in the permit including startup-related recordkeeping requirements and a provision stating that the authorization does not relieve the permittee from the continuing obligation to demonstrate that all reasonable efforts are made to minimize startup emissions duration of individual startups, and frequency of startups.

The above permit example includes a provision that states:

- iv. As provided by 35 IAC 201.265, an authorization in a permit for excess emissions during startup does not shield a Permittee from enforcement for any violation of applicable emission standard(s) that occurs during startup and only constitutes a prima facie defense to such an enforcement action provided that the Permittee has fully complied with all terms and conditions connected with such authorization.

Per the first paragraph above, the permittee is authorized to operate the FCCU in violation of the limit in Section 216.361(a) during startup. The second paragraph immediately above states that such authorization does not shield a permittee from enforcement for any violation of the standard, but

constitutes a prima face defense to such enforcement action. However, it is IERG's understanding that the long-standing practice has been that, if SMB provisions were included in a permit, Illinois EPA would not enforce violations for exceedances during the SMB events. Below is an example of a malfunction and breakdown provision in a current CAAPP Permit:

f. Malfunction and Breakdown Provisions

Subject to the following terms and conditions, the Permittee is authorized to continue operation of the fluid catalytic cracking unit in violation of the applicable requirements of Conditions 7.3.3(b) and (c) in the event of a malfunction or breakdown of the CO boiler and/or the ESP on the affected fluid catalytic cracking unit.

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 explaining why such continued operation would be required to provide essential service or to prevent injury to personnel or severe damage to equipment, and describing the measures that will be taken to minimize emissions from any malfunctions and breakdowns. This authorization supersedes the general prohibition in Condition 9.2.3 against continued operation in such circumstances.

- i. This authorization only allows such continued operation as necessary to provide essential service or to prevent injury to personnel or severe damage to equipment and does not extend to continued operation solely for the economic benefit of the Permittee.

Per the above provision, the permittee is authorized to continue operation of a FCCU in violation of the 200 ppm corrected to 50% excess air emission limit in 35 Ill. Adm. Code 216.361(a). Continued operation is only allowed during malfunction or breakdown if it is necessary to provide essential service or to prevent injury to personnel or severe damage to equipment.

Also, all petroleum refineries are subject to NESHAP Subpart UUU and the associated startup provisions (compliance required on or before January 30, 2019). As part of compliance with federal NESHAP and NSPS rules, these facilities have CO continuous emissions monitoring systems (CEMS) that collect continuous emissions data during all periods of operation, including periods when the CO boilers are bypassed. As such, these "worst-case emissions" for all operating scenarios are already

reported and captured in the Illinois emission inventory. As such, if Illinois removes the SMB provisions from the SIP and institutes the federal Subpart UUU alternative approach for CO, there should be no impact on reported emissions relative to today.

Additionally, below are a few facts on CO emissions in Illinois based on the most recent 2020 Annual Air Quality Report:<sup>18</sup>

- Illinois has never had any portions of the state designated as nonattainment for CO, and has no violating CO monitors for either the 1-hour (35 ppm) or 8-hour (9 ppm) CO National Ambient Air Quality Standards (“NAAQS”).
- The CO NAAQS allows for one exceedance per year. 40 CFR 50.8(a)(1)-(2).
- 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 (5% and 16% of the standards, respectively).
- The petroleum refinery CO emissions (as described earlier, FCC emissions are monitored and quantified using CO CEMS, including non-steady-state periods of operation) are a small fraction of the Illinois point source inventory, only 4.1%.

Including mobile source and other inventory sectors, the petroleum refinery CO emissions are an extremely small fraction of the Illinois inventory, only 0.2% (based on 2016 emissions). *See* Lake Michigan Air Directors Consortium (“LADCO”), “Attainment Demonstration Modeling for the 2015 Ozone NAAQS, Technical Support Document,” Table 4-2 (Sep. 21, 2022).<sup>19</sup> Given the above, IERG’s proposal would have no impact on “worst case” FCC emissions reported today. Additionally, the current emissions are a very small fraction of the state’s inventory (approximately two one-thousandths).

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<sup>18</sup> The report is publicly available on Illinois EPA’s website at <https://www2.illinois.gov/epa/topics/air-quality/air-quality-reports/Pages/default.aspx>.

<sup>19</sup> The Technical Support Document is publicly available on LADCO’s website at [https://www.ladco.org/wp-content/uploads/Projects/Ozone/ModerateTSD/LADCO\\_2015O3\\_ModerateNAASIP\\_TSD\\_21Sep2022.pdf](https://www.ladco.org/wp-content/uploads/Projects/Ozone/ModerateTSD/LADCO_2015O3_ModerateNAASIP_TSD_21Sep2022.pdf).



- (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.

USEPA's discussion of the MACT alternative emission limitation in the NESHAP Subpart UUU rulemaking supports this criterion. USEPA explained that bypassing the CO boiler during startup of the FCCU ensures adequate combustion, which minimizes organic hazardous air pollutant ("HAP") emissions. 79 Fed. Reg. 36880, 36943 (June 30, 2014). USEPA explained:

Low levels of CO in the exhaust gas are consistently achieved during normal operations when oxygen concentrations in the exhaust gas exceed 1-percent by volume (dry basis). Thus, maintaining an adequate level of excess oxygen for the combustion of fuel in the FCCU is expected to minimize organic HAP emissions.

*Id.* USEPA further explained:

Comment: .... The commenters recommended expansion of the proposed standard of greater than 1-percent hourly average excess regenerator oxygen to all FCCU, including units with fired boilers. These commenters suggested that maintaining an adequate level of excess oxygen for the combustion of fuel in the regenerator is the best way to minimize CO and organic HAP emissions from FCCU during these periods.

Response: After reviewing the comments and discussing CO boiler operations with facility operators, we agree that the 1-percent minimum oxygen limit should be more broadly applicable to FCCU startup and shutdown regardless of the control device configuration and have revised the final rule accordingly.

80 Fed. Reg. 75221.

IERG is proposing to incorporate by reference the MACT 1% by volume (dry basis or wet basis with no moisture correction) alternative emission limitation into Section 216.361 during periods of startup, shutdown, and hot standby. IERG's proposal will minimize the impact of emissions of CO and HAP during startup 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.

IERG is proposing to incorporate the general duty to minimize emissions under NESHAP

Subpart UUU into Section 216.361. The general duty to minimize emissions under NESHAP Subpart UUU states, in part:

At all times, you must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved. . . .

40 CFR 63.1570(c).

- (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 NESHAP Subpart UUU provisions that IERG is proposing to incorporate into Section 216.361 address this criterion. 40 CFR 63.1572(c) requires the operation of a continuous parametric monitoring system ("CPMS") for oxygen in the FCCU regenerator exhaust. The CPMS must meet the requirements of 40 CFR 63.1572(c) and Tables 10 and 41 of NESHAP Subpart UUU (including recording a value at a minimum frequency of 15 minutes). IERG is also proposing to incorporate the applicable recordkeeping provisions in 40 CFR 63.1576(a)(2) and (d). Specifically, Section 63.1576(a)(2)(i) requires the source to record the date, time, and duration of each startup and/or shutdown period for which the source elected to comply with 40 CFR 63.1565(a)(5)(ii).

IERG believes the proposed revision to Section 216.361 to adopt alternative emission limits and standards that apply during periods of SMB meet the seven criteria identified by USEPA for developing

alternative emission limitations. If the Board is inclined to adopt the Agency's Proposal, IERG urges the Board to adopt the additional amendments proposed by IERG.

**C. Amendments to 35 Ill. Adm. Code 216.103 and 216.104**

In conjunction with the proposed amendments to Sections 216.121 and 216.361, IERG proposes amendments to Sections 216.103 and Section 216.104, governing definitions and incorporations by reference respectively. Specifically, IERG proposes to amend Sections 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 applies to Subpart B of this Part. The definitions for "catalytic cracking unit" and "hot standby" in 40 CFR 63.1579 apply to Subpart N of this Part. The definitions of "startup" and "shutdown" in 40 CFR 63.2 apply to Subpart N 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 63.2 (2022); 40 CFR 63, Subpart UUU (2022); 40 CFR 63, Subpart DDDDD (2022).

Because IERG is proposing to incorporate provisions of NESHAP Subpart DDDDD into Section 216.121, IERG proposes to amend Section 216.103 to reference the definitions of "startup" and "shutdown" in NESHAP Subpart DDDDD. These definitions in 40 CFR 63.7575 are 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.

Because IERG is proposing to incorporate provisions of NESHAP Subpart UUU into Section 216.361, IERG proposes to amend Section 216.103 to reference the definitions of “catalytic cracking unit” and “hot standby” in NESHAP Subpart UUU, and the definitions of “startup” and “shutdown” in the General Provisions in NESHAP Subpart A. These definitions are as follows:

“Catalytic cracking unit” definition in 40 CFR 63.1579:

*Catalytic cracking unit* means a refinery process unit in which petroleum derivatives are continuously charged; hydrocarbon molecules in the presence of a catalyst suspended in a fluidized bed are fractured into smaller molecules, or react with a contact material suspended in a fluidized bed to improve feedstock quality for additional processing; and the catalyst or contact material is continuously regenerated by burning off coke and other deposits. The unit includes, but is not limited to, the riser, reactor, regenerator, air blowers, spent catalyst or contact material stripper, catalyst or contact material recovery equipment, and regenerator equipment for controlling air pollutant emissions and equipment used for heat recovery.

“Hot standby” definition in 40 CFR 63.1579:

*Hot standby* means periods when the catalytic cracking unit is not receiving fresh or recycled feed oil but the catalytic cracking unit is maintained at elevated temperatures, typically using torch oil in the catalyst regenerator and recirculating catalyst, to prevent a complete shutdown and cold restart of the catalytic cracking unit.

“Startup” definition in 40 CFR 63.2:

*Startup* means the setting in operation of an affected source or portion of an affected source for any purpose.

“Shutdown” definition in 40 CFR 63.2:

*Shutdown* means the cessation of operation of an affected source or portion of an affected source for any purpose.

IERG also proposes to amend Section 216.104 to incorporate by reference NESHAP Subpart A, Subpart UUU, and Subpart DDDDD because they are referenced in IERG’s proposed amendments to Sections 216.121 and 216.361.

**D. Effect of IERG’s Proposal**

The purpose and effect of this Proposal is to amend Sections 216.121 and 216.361 of the Board’s rules governing carbon monoxide (“CO”) emissions from fuel combustion emission sources and petroleum and petrochemical processes. The CO standards in Sections 216.121 and 216.361 are unachievable for entities in Illinois during periods of SMB. It is IERG’s understanding that removing the SMB provisions in Part 201, as proposed by Illinois EPA, will leave affected entities in Illinois with no technically feasible option for compliance with Sections 216.121 and 216.361 during periods of SMB. IERG is not aware of any control equipment options available for affected facilities to comply with the standards in Sections 216.121 or 216.361, as applicable, during periods SMB given the physical limitations of the boilers and of the FCCUs as explained above. IERG therefore is proposing alternative CO standards for fuel combustion emission sources and petroleum and petrochemical processes that would apply during periods of SMB.

The effect of this Proposal is to provide alternative standards for CO that apply during periods of SMB so that entities can continue to operate in compliance with a CO emission standard during periods of SMB. As explained above, the proposed alternative standards for CO are based on the federal MACT standards in NESHAP Subparts UUU and DDDDD. To IERG’s knowledge, many of the entities in

Illinois that have a concern with complying with the CO standard in Section 216.121 during periods of SMB are already subject to NESHAP Subpart DDDDD. Additionally, the refineries in Illinois are already subject to NESHAP Subpart UUU and, to IERG's knowledge, utilize the alternate emission standards referenced in IERG's proposed amendments above. Therefore, this Proposal will not result in any adverse harm to the environment or human health.

**E. Geographic Regions and Sources Affected**

As explained in Illinois EPA's rulemaking proposal, the removal of the current SMB provisions in Parts 201, 202, and 212 are applicable statewide. Statement of Reasons, PCB R 23-18 at 15. Per Illinois EPA, "[a]ny source that applies for an operating permit that would otherwise seek this permission from the Agency would be impacted by this rulemaking." *Id.*

IERG's proposed revision to Section 216.121 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 SMB. 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 SMB periods. These sources would therefore be more likely to benefit from IERG's proposed amendment to Section 216.121 as opposed to sources without a CO CMS for their boiler or process heater. The facilities with CO CEMs have a general duty to operate the CEMS at all

times the source is in operation, including during startup shutdown and malfunction. Such facilities are obligated to report deviations. 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. 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's proposed revisions to Section 216.361 would impact petroleum and petrochemical processes because Section 216.361 only applies to such processes. To IERG's knowledge, this would include only the four petroleum refineries in Illinois, which are located in Will County (two refineries), Madison County, and Crawford County. The four refineries are members of IERG and support IERG's proposed revision to Section 216.361.

**F. Technical Feasibility, Economic Reasonableness, and Environmental and Economic Impact**

The alternative standards proposed as to Section 216.121 are from the NESHAP For Industrial, Commercial, and Institutional Boilers and Process Heaters at 40 CFR 63, Subpart DDDDD. NESHAP Subpart DDDDD contains limits and standards based on MACT. The alternative standards proposed to be incorporated into Section 216.121 were promulgated by USEPA in 2013 and revised in 2015. In those rulemakings, USEPA found that the SSM provisions were technically feasible. 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 and likely already utilize the alternate standards referenced in IERG's proposed amendments. Therefore, IERG's proposed amendment to Section 216.121 should not have any additional economic impact.

The alternative emission limitations and standards proposed herein are from the NESHAP for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units at 40 CFR 63, Subpart UUU. NESHAP Subpart UUU contains limits and standards based on MACT. The alternative emission limitations and standards proposed above were promulgated by USEPA in December 2015. 80 Fed. Reg. 75178 (Dec. 1, 2015). In that rulemaking, USEPA found that the alternative standard that applies during periods of SSM was technically feasible, as referenced above. Specifically, USEPA found the oxygen concentration alternative limit to be appropriate because "air blast rates can be directly controlled to ensure adequate oxygen supply on a short-term basis." 79 Fed. Reg. 36880, 36943 (June 30, 2014).

As for economic reasonableness, USEPA found the rules adopted in the December 2015 action to be economically justified. Per USEPA, the total capital investment cost of the final amendments and standards was estimated at \$283 million. 80 Fed. Reg. 75178, 75225 (Dec. 1, 2015). USEPA also estimated that all petroleum product refiners would incur annual compliance costs of less than 1% of their sales. *Id.* at 75226. As for the economic impact on Illinois sources, the four refineries in Illinois are already subject to NESHAP Subpart UUU and, to IERG's knowledge, utilize the alternate emission standards referenced in IERG's proposed amendments. Therefore, IERG's proposed amendment to Section 216.361 should not have any additional economic impact.



**III. CONCLUSION**

The information in my testimony supports the promulgation of IERG's proposed amendments to Part 216. The Board's adoption of Illinois EPA's proposal without adopting any alternative limits or standards that apply during periods of SMB will result in inevitable noncompliance during periods of SMB. I urge the Board to adopt IERG's proposed amendments to Part 216.

Thank you for the opportunity to testify. I will be happy to answer any questions.

Respectfully Submitted,

DATE: February 6, 2023

By: /s/ Melissa S. Brown

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## AREAS OF SPECIALIZATION

- ▶ Management of air permitting projects (state construction, PSD and Title V) for complex industries including power production, petrochemical and petroleum refining
- ▶ Environmental auditing and compliance and enforcement support
- ▶ Benzene Waste Operations NESHAP (BWON) applicability, enforcement and compliance support
- ▶ NSPS/MACT/NESHAP compliance support
- ▶ Regulatory training
- ▶ Emissions quantification and reporting
- ▶ Toxic Release Inventory (TRI)

## EDUCATION

B.S. Chemical Engineering, Massachusetts Institute of Technology

## AFFILIATIONS

American Fuel and Petrochemical Manufacturers  
Chemical Industry Council of Illinois

## CERTIFICATIONS

Professional Engineer  
Certified Manager

## TECHNICAL EXPERTISE

**Project Management** – Managed over 250 air permitting and environmental compliance projects for clients in the following industries: bulk terminals, cement and aggregate products, chemical manufacturing, electric/steam cogeneration, electric generation, food processing, pipelines, pulp and paper, hospitals/universities, and petroleum refining. Projects range from simple modifications to multi-billion-dollar capital investments.

**Environmental Auditing/Compliance Determinations** – Provided environmental auditing and compliance determinations to dozens of facilities. Areas of expertise include state and federal air regulations, historical PSD/NSR applicability, CEMS requirements (40 CFR 60 and 40 CFR 75), TRI and

## SUMMARY OF EXPERIENCE

At Trinity, Mr. Wall serves as a Regional Manager supervising operations in Trinity's Midwest Region including offices in Chicago, Indianapolis, Ann Arbor, Milwaukee, and Minneapolis. He is involved in state, Title V, and Prevention of Significant Deterioration (PSD) permitting projects, CEMS compliance, the evaluation of control and monitoring technologies and NSPS/NESHAP Compliance assistance.

Mr. Wall has significant compliance support, permitting and auditing experience in the petroleum refining and petrochemical industries. He has managed permitting projects ranging from minor modifications to multi-billion-dollar capital projects. He has performed consent decree based and internally driven compliance audits at refineries and chemical plants with topics ranging from general Title V compliance to historical PSD applicability issues and U.S. EPA enforcement initiative "marquee" issues such as BWON, NSPS J/Ja, LDAR, and flaring, as well as compliance programs such as BWON and TRI. Mr. Wall also serves as the instructor for Trinity's *Clean Air Act Workshop for Petroleum Refineries* and *Benzene Waste Operations NESHAP* professional training courses.

Mr. Wall has experience working with electrical utilities and industrial cogeneration and powerhouse facilities to provide permitting services, auditing, and support with cap and trade programs such as the Acid Rain Program and associated CEMS and other monitoring requirements under 40 CFR 60 and 40 CFR 75.

annual emission reporting, as well as regulations specific to the refining and petrochemical industries (e.g., BWON, MACT CC, MACT UUU NSPS QQQ, NSPS J/Ja, HON/MON, etc.).

**Emissions Quantification** – Supervised the preparation of numerous emissions inventories for annual state inventory reporting requirements, U.S. EPA Toxic Release Inventory (TRI) reporting, and the federal GHG Mandatory Reporting Rule. Managed “deep dive” audits and compliance program revamps for TRI reporting at several refineries. Prepared emissions estimates for release, fire, and other emergency events including as part of enforcement proceedings.

**Course Instructor/Speaker** - Frequent instructor of educational courses focused on federal air quality regulations and the primary instructor of Trinity's Clean Air Act for the Petroleum Refining Industry course and Benzene Waste Operations NESHAP workshop. In the past, he has served as the primary instructor for the following Trinity courses: Air Quality Regulations in Pennsylvania, Air Quality Regulations in Indiana, MACT Compliance for Petroleum Refineries, Combustion MACT, and Air Emissions Quantification. Mr. Wall has developed detailed custom training courses for a number of clients in complex industries with topics including industry-specific NSPS and NESHAPs as well as CEMS and the Acid Rain Program. Mr. Wall has also provided several custom training sessions to multi-site and corporate personnel in the refining industry on several occasions. In this capacity, Mr. Wall has taught dozens of air quality related courses to hundreds of representatives from industry, state environmental agencies, and the EPA. He has also been a presenter at a number of environmental conferences such as AFPM (formerly NPRA), API, CICI, and EUEC.

**Expert Testimony/Litigation Support** – Provided direct written and verbal testimony and other litigation support primarily for the petroleum refining and chemical industry. Included evaluation of air pollution control equipment, historical PSD applicability, BWON applicability, and permit appeal support. Provided support to facilities in responding to state and U.S. EPA inspections, non-compliance allegations, violation notices, and enforcement actions.

**New Source Review and Title V Permitting** – Involved in the successful completion of numerous federal NSR, Title V, and state permitting actions throughout the U.S. Managed the preparation of air permit applications in various states and EPA regions. Supervised detailed regulatory applicability assessments. Led negotiations with state and federal agencies to strategically develop permit language to allow for operational flexibility and other unique considerations.

**Continuous Emissions Monitoring Systems** – Supported facilities with respect to assessing compliance with regulatory requirements applicable to CEMS including QA/QC and certification requirements of 40 CFR 60 (Appendices B and F) and 40 CFR 75. Provided training on regulatory requirements and engaged in compliance auditing for facilities across various industries, with a particular focus on industrial boilers and process heaters and electric utilities. Provided support related to applicability determinations and ongoing compliance support for cap and trade programs including the Ozone Transport Commission NOx Budget Program, NOx SIP Call/Federal NOx Budget Program, the Acid Rain Program and CAIR.

**Dispersion Modeling** – Managed dispersion modeling projects ranging from NAAQS and PSD Increment analyses and Class I area analyses in support of PSD permit applications to risk based analysis of toxic pollutant emissions.

## PUBLICATIONS AND PRESENTATIONS

Wall, D.R. "The Increasing Importance of Class I Area Analyses in Permitting Power Generation Facilities." Presented at the 2001 Electric Utilities Environmental Conference, Tucson, Arizona, January 8-11, 2001.

DiSario, J.; Shimada, A.; Wall, D.R. "Implementation Challenges for the Upcoming NOx SIP Call: Lessons Learned from the Ozone Transport Commission (OTC) NOx Budget Program and Implications for 2003 – 2007." Presented at the 2001 National Petrochemical and Refiners Association Environmental Conference, Austin, Texas, September 24, 2001.

Gale, T.; Land, D.; Shimada, A.; Wall, D.R. "Permitting Challenges for Modifications to Meet Tier 2 Low Sulfur Gasoline Requirements" Presented at the 2002 National Petrochemical and Refiners Association Environmental Conference, New Orleans, LA, September 9, 2002.

Wall, D.R. "Current and Future Challenges in Conducting an AERMOD-PRIME Analysis" Presented at the AWMA Guideline on Air Quality Models Conference, Mystic, CT, October 22, 2003.

Wall, D.R. "TRI Reporting after Large Events – Conducting an Emission Inventory after a Disaster or Liquid Spill" Presented at the American Petroleum Institute Toxics Release Inventory (TRI) RY2009 Workshop, New Orleans, LA, April 7 2010.

Wall, D.R. "Everyone in Uniform" (analysis of proposed U.S. EPA Uniform Standards regulations for storage vessels, transfer operations and equipment leaks). Hydrocarbon Engineering, September 2012.

Wall, D.R., Wilkin S.N. "A Critical Review of the Uniform Standards Proposal" Presented at the American Fuel and Petrochemical Manufacturers annual environmental conference, Denver, CO, October 16, 2012.

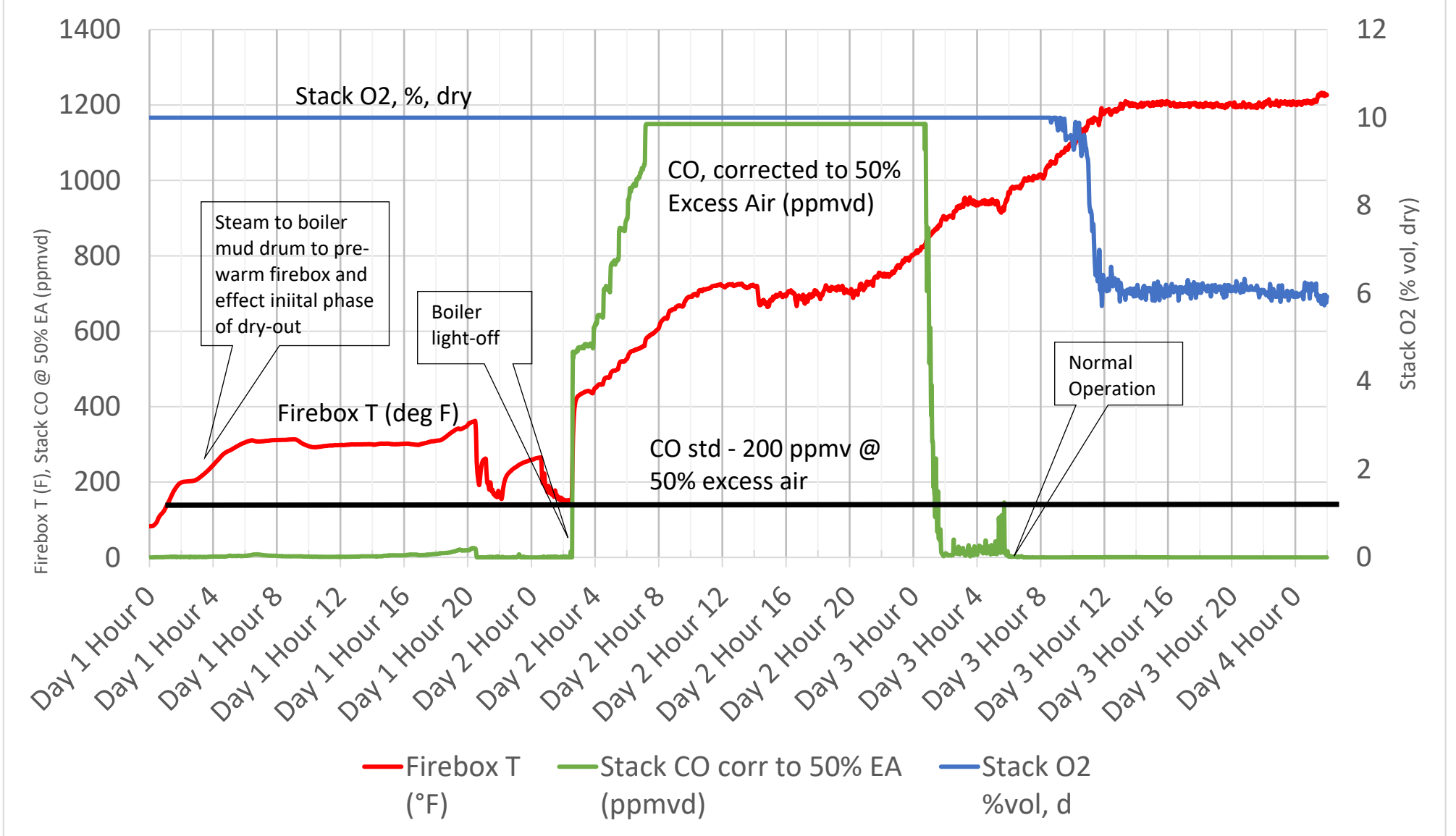
Wall, D.R. "Flare Monitoring Requirements" Presented at the AFPM/API NSPS Ja Workshop, Houston, TX, February 27, 2013.

## EMPLOYMENT HISTORY

1999 - Present Trinity Consultants Incorporated

1997 - 1999 W.R. Grace & Co. (co-op)

Figure 1. Example Startup Involving Refractory Dry-out  
(Dates/Times for Illustration Purposes Only)



**CERTIFICATE OF SERVICE**

I, the undersigned, on oath state the following: That I have served the attached

**PRE-FILED TESTIMONY OF KELLY THOMPSON AND DAVID R. WALL FOR THE  
ILLINOIS ENVIRONMENTAL REGULATORY GROUP** via electronic mail upon:

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Illinois Pollution Control Board  
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That my email address is [Melissa.Brown@heplerbroom.com](mailto:Melissa.Brown@heplerbroom.com)

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Date: February 6, 2023

/s/ Melissa S. Brown  
Melissa S. Brown