ILLINOIS POLLUTION CONTROL BOARD
July 11, 2024

IN THE MATTER OF:	)	
	)	
AMENDMENTS TO 35 ILL. ADM. CODE	)	R23-18(A)
201, 202, AND 212	)	(Rulemaking - Air)

Proposed Rule. Second Notice.

OPINION AND ORDER OF THE BOARD (by M. Gibson)

The Board today proceeds to second notice with amendments to the Board's air regulations to provide alternative standards during periods of startup, shutdown, breakdown, and malfunction. The Board received five rulemaking proposals seeking to amend 35 Ill. Adm. Code 212, 215, 216, and 217. One proposal was filed by the Rain CII Carbon LLC; one jointly by Dynegy Midwest Generation, LLC, Illinois Power Generating Company, and Kincaid Generation, LLC and Midwest Generation LLC; one by the American Petroleum Institute; one by East Dubuque Nitrogen Fertilizers, LLC; and one by the Illinois Environmental Regulatory Group.

Below, the Board first provides a table of acronyms and abbreviations it uses in this opinion and order at pages 1-2. The opinion then briefly summarizes the main docket R23-18 at pages 2-3 before providing a procedural history of this subdocket at pages 3-6. The opinion then addresses six preliminary matters at pages 6-12.

The Board then summarizes the record on each of the rulemaking proposals submitted in this sub-docket (A): Rain CII Carbon LLC (Rain Carbon) at pages 12-43; Dynegy Midwest Generation, LLC, Illinois Power Generating Company, and Kincaid Generation, LLC (collectively, Dynegy) and Midwest Generation, LLC (MWG) at pages 43-69; the American Petroleum Institute (API) at pages 69-96; East Dubuque Nitrogen Fertilizers, LLC (EDNF) at pages 97-116; and the Illinois Environmental Regulatory Group (IERG) at pages 116-136.

Next, the Board reaches its conclusion and issues its order at page 136, after which the Board's second-notice proposal is attached.

TABLE OF ACRONYMS AND ABBREVIATIONS

ACI	activated carbon injection
AEL	alternative emission limit
CAA	Clean Air Act
CAM	compliance assurance monitoring
CAAPP	Clean Air Act permit program
CEMS	continuous emissions monitoring system

CFR	Code of Federal Regulations
CMS	continuous monitoring system
CO	carbon monoxide
CPMS	continuous parametric monitoring system
DCEO	Department of Commerce and Economic Opportunity
DSI	dry sorbent injection
EJ	environmental justice
ESP	electrostatic precipitators
FCCU	fluid catalytic cracking unit
FGC	flue gas conditioning
FGD	flue gas desulfurization
HAP	hazardous air pollutant
IEPA	Illinois Environmental Protection Agency
MACT	Maximum Achievable Control Technology
MERP	Modeled Emission Rate for Precursors
mmbtu	1 million British Thermal Units
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
OFA	over-fire air
ppmv	parts per million by volume
PM	particulate matter
SCR	selective catalytic reduction
SEP	supplemental environmental project
SIL	Significant Impact Level
SIP	State Implementation Plan
SMB	start-up, malfunction, or breakdown
SO_2	sulfur dioxide
SSM	start-up, shutdown, and malfunction
TSD	Technical Support Document
USEPA	United States Environmental Protection Agency
VOM	volatile organic material

SUMMARY OF MAIN DOCKET R23-18

On December 7, 2022, IEPA proposed to amend Parts 201, 202, and 212 of the Board's air pollution regulations. 35 Ill. Adm. Code 201, 202, 212. IEPA filed the proposal under the "fast-track" procedures of Section 28.5 of the Environmental Protection Act (Act). 415 ILCS 5/28.5 (2022). Section 28.5 requires the Board to meet a series of specific deadlines when proceeding toward adoption of the rules required to be adopted by the 1990 Clean Air Act Amendments. IEPA proposed removing provisions addressing emission limit exceedances during an SMB event. IEPA asserted that its proposal would implement changes identified by USEPA as necessary to comply with the federal Clean Air Act.

On December 15, 2022, the Board accepted IEPA's proposal for hearing without commenting on its substantive merits and submitted it to first-notice publication. *See* 46 Ill. Reg. 20627, 20638, 20644 (Dec. 30, 2022). After holding two public hearings, the Board on April 6, 2023, adopted a second-notice opinion and order. In it, the Board opened this sub-docket to consider alternative emission limits. At its July 18, 2023 meeting, JCAR objected to the Board's proposal on three grounds. On July 20, 2023, the Board respectfully declined to modify or withdraw the proposal based on JCAR's objections and adopted amendments to Parts 201, 202, and 212. The adopted amendments became effective on July 25, 2023, and were published in the Illinois Register on August 11, 2023. *See* 47 Ill. Reg. 12089, 12101, 12107 (Aug. 11, 2023). After the Board adopted the amended rules, IEPA submitted them to USEPA as a SIP revision.

PROCEDURAL HISTORY OF SUBDOCKET (A)

When it adopted a second-notice proposal in the underlying "fast-track" rulemaking docket, the Board opened this subdocket (A) to consider AELs for SSM periods. Amendments to 35 Ill. Adm. Code 201, 202, and 212, R23-18, slip op. at 22 (Apr. 6, 2023).

On June 12, 2023, API filed a motion for relief from or to clarify the Board's April 6, 2024 order in the underlying "fast-track" docket. On June 22, 2023, both IEPA and Dynegy filed a response to API's motion. On July 6, 2023, the Board granted in part and denied in part API's request for expedited review in this subdocket but otherwise denied API's motion. The order also stated that anyone wishing to file a rulemaking proposal in this sub-docket must do so by August 7, 2023. The order directed that the proposal must comply with requirements of 35 Ill. Adm. Code 102, except for the requirement to submit the signatures of 200 persons.

On August 7, 2023, the Board received five proposals for alternative emissions standards.

Rain Carbon filed its proposal including its Statement of Reasons (Rain Carbon SR) including three exhibits (Rain Carbon Exh. A-C) and proposed revisions to 35 Ill. Adm. Code 212.124, 212.322, and 215.302 (Rain Carbon Prop.).

EDNF filed its proposal including its Statement of Reasons (EDNF SR) including six exhibits (EDNF Exh. 1-6) and proposed revisions to 35 Ill. Adm. Code 217.381 (EDNF Prop.).

Dynegy and MWG filed their proposal including their Statement of Reasons (Dynegy/MWG SR) including nine exhibits (Dynegy/MWG Exh. 1-9), the seventh of which is their Technical Support Document (Dynegy/MWG TSD).

API filed its proposal including its Statement of Reasons (API SR) and its Technical Support Document designated as Exhibit 1 (API TSD). API also submitted its proposed revisions to 35 Ill. Adm. Code 216.103, 216.104, and 216.361 (API Prop.) and a motion for waiver of copy requirements under 35 Ill. Adm. Code 102.202 (API Mot.).

IERG filed its proposal including its Statement of Reasons (IERG SR) and its Technical Support Document designated as Exhibit 1 (IERG TSD). IERG also submitted its proposed revisions to 35 Ill. Adm. Code 216.103, 216.104, and 216.121 (IERG Prop.) and a motion for waiver of copy requirement (IERG Mot.).

On August 14, 2023, IEPA filed comments (PC1), which included a request that the Board conduct two hearings in this subdocket. PC1 at 2-4.

In an opinion and order on August 17, 2023, the Board accepted the five rulemaking proposals for hearing, combined the proposed rule revisions, and – without commenting on its substantive merits – submitted the combined proposals to first-notice publication in the *Illinois Register*. *See* 47 Ill. Reg. 12810, 12824, 12836, 12842 (Sept. 1, 2023). Also on August 17, 2023, the hearing officer scheduled two hearings, the first on September 27, 2023, and the second on November 1, 2023.

In a letter dated August 17, 2023, Board Chair Barbara Flynn Currie requested that DCEO conduct an economic impact study of the rulemaking proposed in this subdocket and respond by October 2, 2023. *See* 415 ILCS 5/27(b) (2022). As of the date of this order, the Board has received no response to this request.

On August 28, 2023, the Board received pre-filed testimony for the first hearing from Ross Gares on behalf of Rain Carbon (Gares Test.), Philip G. Crnkovich on behalf of EDNF (Crnkovich Test.), Cynthia Vodopivec on behalf of Dynegy (Vodopivec Test.), Sharene Shealey on behalf of MWG (Shealey Test.), John Derek Reese on behalf of API (Reese Test.), and David Wall on behalf of IERG (Wall Test.).

After a hearing officer order on August 24, 2024, granted its motion to extend the filing deadline and allowed it to file supplemental testimony, Rain Carbon on September 5, 2023, filed supplemental testimony by Bryan Higgins (Higgins Test.) accompanied by a Technical Support Document (Rain Carbon TSD).

On September 7, 2023, the Board docketed as a public comment (PC2) an email from the staff of Joint Committee on Administrative Rules (JCAR) posing questions about and suggesting changes to the Board's first-notice proposal.

On September 20, 2023, the Illinois Attorney General's Office (AG) pre-filed questions for witnesses testifying at the first hearing (AG Questions). Also on September 20, 2023, the hearing officer filed an order, attached to which were questions for witnesses and proposed nonsubstantive revisions to the first-notice proposal (Board Questions).

The first hearing took place as scheduled on September 27, 2023, and the Board received the transcript on October 2, 2023. On October 18, 2023, both API and IERG filed a motion to correct the transcript. On November 3, 2023, both Dynegy and MWG filed a motion to correct the transcript. On November 15, 2023, EDNF filed motion to correct the transcript. In an order on December 18, 2023, the hearing officer granted the motions to correct, and the Board docketed the corrected transcript of the first hearing (Tr.1).

On October 18, 2023, the Board received post-hearing comment from API (PC3) and IERG (PC4). On October 23, 2023, IEPA filed comments (PC5). On October 26, 2023, EDNF filed post-hearing comments (PC6). On November 3, 2023, Dynegy and MWG filed post-hearing comments (PC7).

On October 26, 2023, the AG filed motion for an additional hearing. On October 27, 2023, Sierra Club filed a response to the AG's motion. On November 9, 2023, both API and IERG responded to the AG's motion.

On November 1, 2023, the second hearing took place as scheduled, and the Board received the transcript (Tr.2) on November 16, 2023.

On November 16, 2023, the Board granted the AG's motion for an additional hearing and the hearing officer scheduled a prehearing conference call for December 6, 2023.

On December 1, 2023, the Board received initial responses to IEPA's comments in PC5 from IERG (PC8), API (PC9), EDNF (PC10), Rain Carbon (PC11), Dynegy/MWG (PC12).

On December 5, 2023, the hearing officer rescheduled the prehearing conference call for February 7, 2024.

In an order on March 6, 2024, the hearing officer scheduled the third hearing on April 15, 2024. The order set a deadline of March 15, 2024, to file responses to IEPA's requests for information (*see* PC5 at 6-27) and pre-filed testimony. The order also set a deadline of April 8, 2024, to file questions based on that information and testimony.

On March 15, 2024, the Board received four sets of responses.

EDNF filed its supplemental response (PC13) to IEPA's comments.

Rain Carbon filed its supplemental response (PC14), attached to which were Rain Carbon's revised proposed AELs incorporating IEPA's suggested revisions (Rain Carbon Rev. Prop.). On the same date, Rain Carbon also filed the second pre-filed testimony of Bryan Higgins (Higgins Test. 2), attached to which was Rain Carbon's supplemental Technical Support Document (Supp. Rain Carbon TSD).

API and CITGO Petroleum Corporation (CITGO) filed their supplemental response (PC15).

Dynegy and MWG filed their second comment in response to IEPA (PC16) and pre-filed testimony by Stephen K. Norfleet (Norfleet Test.). On March 22, 2024, Dynegy and MWG filed their final comment in response to IEPA (PC17) and supplemental pre-filed testimony by Mr. Norfleet (Norfleet Supp. Test).

On April 2, 2024, IEPA pre-filed testimony by Rory Davis (IEPA Test.).

On April 8, 2024, the Board received questions to IEPA from the AG (AG Questions 2), IERG (IERG Questions), and API and CITGO (API Questions). On the same day, the hearing officer filed an order attaching a single question for the participants.

Also on April 8, 2024, Rain Carbon filed its second supplemental response (PC17) to IEPA's comments. On April 12, 2024, EDNF filed its supplemental comment in response to prefiled questions (PC18).

On April 15, 2024, the third hearing took place as scheduled, and the Board received the transcript (Tr.3) on April 22, 2024. In an order on April 22, 2024, the hearing officer set a deadline of May 22, 2024, to file post-hearing comments.

On May 13, 2024, API and CITGO filed post-hearing comments (PC19). On May 20, 2024, Rain Carbon filed post-hearing comments (PC20). On May 22, 2024, the Board received post-hearing comments from the AG (PC21), IERG (PC22), IEPA (PC 23), Dynegy and MWG (PC24), and EDNF (PC25).

On June 5, 2024, Rain Carbon filed a motion or leave to file additional public comment (Mot. Leave), attached to which was its additional comment (PC26).

PRELIMINARY MATTERS

API Motion to Waive Copy Requirement

As noted above under "Procedural History," API with its proposal on August 7, 2023, filed a motion to waive copy requirements.

API's motion cites Section 102.202(d) of the Board's procedural rules, which provides that a rulemaking proposal "must include [a]ny material to be incorporated by reference within the proposed rule under Section 5-75 of the IAPA [Illinois Administrative Procedure Act]." API Mot. at 1; *see* 5 ILCS 100/5-75 (2022). In existing 35 Ill. Adm. Code 216.104, IERG proposed to incorporate by reference 40 CFR 63, Subpart A (2022), General Provisions, and 40 CFR 63, Subpart UUU (2022), National Emission Standard for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units. API Mot. at 1; *see* API Prop. at 2.

API argues that, as part of the Code of Federal Regulations, these materials are readily accessible to the Board or within its possession and are publicly available online through the website of the U.S. Government Publishing Office. For these reasons, API requests that the Board waive the requirement to provide a copy of these materials. API Mot. at 1.

The Board recognizes that the materials proposed for incorporation by reference are accessible online, and the Board recently granted a similar motion. *See* Amendments to 35 Ill. Adm. Code Part 203: Major Stationary Source Construction and Modification, 35 Ill. Adm. Code Part 204: Prevention of Significant Deterioration, and 35 Ill. Adm. Code Part 232: Toxic Air Contaminants, R22-17, slip op. at 3 (Apr. 18, 2024). The Board grants API's unopposed motion and waives the requirement in Section 102.202(d) of its procedural rules that API submit a copy of the materials listed in its motion.

IERG Motion to Waive Copy Requirement

As noted above under "Procedural History," IERG with its proposal on August 7, 2023, filed a motion to waive copy requirements.

IERG's motion cites Section 102.202(d) of the Board's procedural rules, which provides that a rulemaking proposal "must include [a]ny material to be incorporated by reference within the proposed rule under Section 5-75 of the IAPA [Illinois Administrative Procedure Act]." IERG Mot. at 1; *see* 5 ILCS 100/5-75 (2022). In existing 35 Ill. Adm. Code 216.104, IERG proposed to incorporate by reference 40 CFR 63, Subpart DDDDD (2022), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters. IERG Mot. at 1; *see* IERG Prop. at 1.

IERG argues that this part of the Code of Federal Regulations is accessible to the Board or within its possession and is publicly available online through the website of the U.S. Government Publishing Office. For these reasons, IERG requests that the Board waive the requirement to provide a copy of this material. IERG Mot. at 1.

Since the Board is not proceeding to second notice with IERG's proposal, as detailed below, the Board denies IERG's motion as moot.

Rain Carbon Motion for Leave to File Additional Comment

As noted above under procedural history, Rain Carbon on June 5, 2024, filed a motion or leave to file additional comment, attached to which was its comment (PC26).

Rain Carbon states that, after it filed its post-hearing comment (PC20), the AG commented opposing its revised proposal. Mot. Leave at 1; *see* PC 21 at 5-6. Although Rain Carbon notes that the post-hearing comment period ended May 22, 2024, it states that the Board's rules allow comment that are not timely "to prevent material prejudice." Mot. Leave at 1, *citing* 35 Ill. Adm. Code 102.108(d). Rain Carbon argues that the Board has accepted untimely comments on this basis in a number of rulemakings. Mot. Leave at 1-2 (citations omitted). Rain Carbon further argues that "when rulemaking, the Board acts in a quasi-legislative capacity, and therefore generally allows items into the record more liberally than it does in adjudicatory proceedings." *Id* at 2, citing Clean-Up Part III Amendments to 35 Ill. Adm. Cod 211, 218, and 219, Technical Corrections to Formulas in 35 Ill. Adm. Code 214 Sulfur Limitations, R4-12, R4-20 (consol.), slip op. at 5 (Apr. 21, 2005).

Rain Carbon asserts that the AG's post-hearing comments "misconstrue and mischaracterize" aspects of its revised proposal and allege that it "has not met its burden of proof." Mot. Leave at 2, *citing* PC21 at 5-6. Rain Carbon adds that the AG made similar argument in its questions submitted for the third hearing. Mot. Leave at 2. Rain Carbon believes that it "fully responded" to these argument at the third hearing. "While the Illinois AG had the opportunity during the Third Hearing to raise the issues it now presents in its Comments, it instead elected to wait until post-hearing to deny Rain Carbon the opportunity to respond." *Id*. Rain Carbon requested leave to file an additional comment before the Board proceeds to second notice "in order to prevent material prejudice that would result if the Illinois AG Comments were allowed to stand – uncontested – with such allegations and misrepresentations." *Id*.

"Within 14 days after service of a motion, a party may file a response to the motion. If no response is filed the party waives objection to the granting of the motion, but the waiver of objection does not bind the Board or the hearing office in its disposition of the motion." 35 Ill. Adm. Code 101.500(d). No participant in this sub-docket has responded to Rain Carbon's motion for leave to file additional comment, and the record shows no opposition to granting it. To develop a more complete record on Rain Carbon's revised proposal, the Board grants the unopposed motion for leave to file and accepts its additional public comment. The Board addresses the additional comment below in its discussion of Rain Carbon's proposal. *See infra* at 42-43.

Revisions Proposed by Board

As noted above under the procedural history, the Board's September 20, 2023 hearing officer order attached questions, the first of which requested comment on the Board's proposed nonsubstantive revisions to the first-notice proposal. The Board indicated that the proposed revisions intended to remove unnecessary language, replace outdated language, update statutory references, and provide other nonsubstantive clarifications.

API

On October 18, 2023, API commented that, regarding changes the Board proposed to its proposed revisions to 35 Ill. Adm. Code 216.103, 216.104, and 216.361, it "has no concerns regarding the Board's proposed revisions to these sections." PC 3 at 1.

IERG

Also on October 8, 2023, IERG stated that, with the Board's proposed revisions to its proposal, it "has no concerns regarding the Board's proposed revisions to Section 216.103 or Section 216.121." PC 4 at 1. Regarding the proposed revisions to 35 Ill. Adm. Code 216.104, IERG responded that it had intended to refer to "the current version of 40 CFR Part 63, Subpart DDDDD, which includes the October 6, 2022 amendments to Subpart DDDDD." PC4 at 1-2, citing Tr.1 at 61 (Wall testimony). To clarify this intent, IERG proposed to revise Section 216.104 as follows:

> The following materials are incorporated by reference: non-dispersive infrared method, 40 CFR 60, Appendix A, Method 10 (1982); 40 C.F.R. Part 63, Subpart A (2022); 40 C.F.R. Part 63, Subpart UUU (2022); 40 C.F.R. 63, Subpart DDDDD (2022) <u>(including amendments published in 87 Fed. Reg. 60,816 (Oct. 6, 2022))</u>. This Section incorporates no later editions or amendments. PC4 at 2.

IERG adds that, if the Board adopts rules after the 2023 edition of the Code of Federal Regulations is published, this proposed revision would be unnecessary. *Id.* In that case, however, "IERG would propose to amend the year parenthetical for 40 CFR 63, Subpart DDDDD from 2022 to 2023." *Id.*

IEPA

IEPA noted that the Board had proposed nonsubstantive revisions to the proposed rules and requested comment on whether the proposed revisions were acceptable. On October 23, 2024, IEPA commented that it "does not have any issues with these changes." PC5 at 27.

EDNF

In its first post-hearing comment on October 26, 2023, EDNF commented that it had reviewed revisions proposed by the Board and "has no objection to those revisions." PC6 at 9; *see* PC26 at 10.

Rain Carbon

On March 15, 2024, Rain Carbon submitted revisions to its proposed AELs, which incorporated revisions proposed by the Board in its September 20, 2023 hearing officer order. PC 14 at 2, n.2.

Dynegy/MWG

In its first post-hearing comment, Dynegy and MWG reported that they "have no concerns regarding the Board's proposed revisions to Section 212.124." PC 7 at 1.

Revisions Proposed by JCAR

During the first hearing, the Board requested that proponents address changes suggested by JCAR in its comment to the Board (PC2). *See* Tr.1 at 50 (Rain Carbon), 63 (IERG), 77 (API), 92 (EDNF), 125 (Dynegy/MWG).

API

On October 18, 2023, API responded that it "does not object to JCAR's proposed changes to 35 Ill. Adm. Code 216.104 or 216.361." PC3 at 1, citing PC2.

IERG

On October 18, 2023, IERG responded that it "does not object to JCAR's proposed changes to 35 Ill. Adm. Code 216.104 or 216.121." PC4 at 2. JCAR had not proposed to revise Section 216.103. *See* PC2 at 5, 30.

EDNF

In its first post-hearing comment on October 26, 2023, EDNF commented that it had reviewed revisions proposed by JCAR and "has no objection to those revisions." PC6 at 9; PC26 at 10.

Rain Carbon

On March 15, 2024, Rain Carbon submitted revisions to its proposed AELs, which incorporate revisions proposed by JCAR in PC 2. PC 14 at 2, n.2.

Dynegy/MWG

In its post-hearing comment, Dynegy and MWG responded to JCAR's suggestion that the proposal should define "good engineering practices." Dynegy and MWG's response is discussed in depth in their section below. *See* PC22 at 11-13; *infra* at 57-58.

Envtl. Comm. of the Fla. Elec. Power Coordinating Group v. EPA, *et al*.

This case resulted from petitions for review filed regarding USEPA's SSM SIP Call. On March 1, 2024, the U.S. Court of Appeals for the D.C. Circuit vacated the SIP Call as to specific types of SSM SIP provisions. Envtl. Comm. of the Fla. Elec. Power Coordinating Group v. EPA, *et al.*, No. 15-1239 (D.C. Cir. 2024).

In its one question for the third hearing, the Board asked IEPA and the participants "to comment on any implication of the court's opinion in that case "on Board rules adopted in the main docket as well as the proposed rules in Subdocket A."

Rain Carbon

Rain Carbon asserts that this decision "does not directly apply to the Illinois SIP because the Illinois SIP call was not before the Court." PC20 at 9. Rain Carbon notes that USEPA has taken no immediate action on Illinois' SIP, and it stresses IEPA's testimony that it "does not intend to withdraw its SIP submittal or to propose regulations to the Board seeking repromulgation of the previous [SMB] provisions." *Id*. at 9-10. Rain Carbon concludes that "the Board should thus proceed to adopt Rain Carbon's Revised Proposed AELs." *Id*. at 10.

Dynegy/MWG

Dynegy and MWG assert that, although the D.C. Circuit did not directly consider the Illinois SSM provisions, they are analogous to provisions of other states' SIPs that the court found to be sufficient under the CAA. PC24 at 9. Based on the court's decision, Dynegy and MWG argues that the more narrowly-tailored AELs in their joint proposal comply with federal law. *Id*. at 10. They conclude by requesting that the Board adopt the proposal for second notice review. *Id*. at 17

API

API argues that the Illinois SSM provisions repealed in R23-18 included at least one of the types of SSM provisions as to which the SIP Call was vacated. PC15 at 5. API notes that the D.C. Circuit's decision does not repeal the rule adopted by the Board in the main docket R23-18 and "does not impact this sub-docket rulemaking." PC19 at 4. "API urges the Board to move forward with this sub-docket proceeding and grant the relief requested by API." PC 15 at 5; *see* PC19 at 4.

<u>EDNF</u>

EDNF states that the Board has already adopted changes to the SSM rules in the main docket R23-18 and that the decision of the D.C. Circuit does not repeal that rule change. PC18 at 3-4. EDNF urges the Board to continue its consideration in this subdocket and ultimately to adopt EDNF's proposed AELs. *Id*. at 3; *see* PC26 at 3, n.1. It argues that its proposal, "to which Illinois EPA has no objections, is a well-crafted clarification and adjustment to the emission limits applicable to EDNF's operations that will allow the company to start up and shut down is operations in compliance with Illinois law." PC18 at 3-4.

<u>IERG</u>

Although IERG states that the D.C. Circuit's decision "did not discuss specific state SIPs," it argues that the opinion "call into question the basis for the Board's removal of the SMB provisions" in the main docket R23-18. PC22 at 10-11. However, IERG states that "[t]his sub-docket specifically addresses proposed AELs and does not propose general SMB provisions." *Id*. at 11. "IERG requests that the Board move forward to Second Notice in this sub-docket rulemaking with the proposed AELs." *Id*.

<u>IEPA</u>

IEPA stresses that Illinois was not a party in this case, which did not consider Illinois' SIP. PC23 at 2., *citing* Tr.3 at 15. "The Appellate Court did not indicate that it was vacating SIP Calls that had not been appealed, and USEPA has not advised the Illinois EPA what indirect impacts, if any, the Appellate Court's decision may have on states such as Illinois." PC23 at 2, *citing* Tr.3 at 16-17.

IEPA states that D.C. Circuit's decision "should have no implications on the Board's previous adoption of rules in the main R23-18 docket." PC23 at 2. IEPA argues that the Board adopted rules in compliance with applicable requirements "in response to federal mandates that were in place throughout the rulemaking proceeding." *Id*., *citing* Tr.3 at 15. IEPA adds that tit does not intend to repromulgate the previous SSM provisions or withdraw its SIP submission of the rules adopted in R23-18. PC23 at 2, *citing* Tr.3 at 18-19.

IEPA states that the decision by the D.C. Circuit "should have no implications for the Board's consideration of proposed rules in the current R23-18(A) rulemaking." PC23 at 3. It adds that USEPA's criteria for considering AELs have existed for decades and were simply updated by the 2015 SIP Call. *Id*., *citing* Tr.3 at 19-20.

AG

The AG argues that whether the Board rules in the past included "the type of SSM exemption that the D.C. Circuit approved of or disapproved of is on no consequence to the current Board rulemaking in this docket. PC21 at 2. Because of the rules removed by the Board in the main docket R23-18, the AG asserts that "the D.C. Circuit's recent ruling has no effect on current Board regulations." *Id*. The AG further argues that the ruling in the D.C. Circuit "has no bearing" on the proposal in this sub-docket: "none of the proposals would introduce a form of relief for SSM events in a manner discussed by the D.C. Circuit. Instead, the proposed regulations constitute alternative emission limitations, which, when 'properly developed,' are a 'replacement' for unlawful SSM exemptions." *Id*., *citing* 80 Fed. Reg. 33845 (June 12, 2015).

Board Summary

The Board finds that the D.C. Circuit's decision has no effect on the current rulemaking because the Board removed the provisions allowing an affirmative defense to violations during SSM events in the main docket, R23-18.

SUMMARY OF RULEMAKING PROPOSALS IN SUBDOCKET (A)

Rain Carbon

Rain Carbon proposes alternative emission standards for opacity, PM, and VOM during periods of start-up, malfunction, or breakdown at its coke calcining facility in Robinson, Crawford County. Rain Carbon SR at 1, 22. It asserts that its proposal is "narrowly tailored" to account for periods when its pollution control technology and practices cannot ensure compliance with applicable emission limits. *Id*.; Gares Test. at 2.

The Board first discusses background on Rain Carbon, then Rain Carbon's proposal, then the technical feasibility and economic reasonableness of the proposal, then IEPA's request for more information, then Rain Carbon's response to IEPA's request, then IEPA's testimony, then questions at the third hearing, and finally post-hearing comments.

Background

The Board first discusses Rain Carbon's facility and its operations and then its current emissions limitations.

Facility and Operations

Rain Carbon operates two coke calcining lines, both of which use a rotary kiln. In the calcining process, green coke is fed as a raw material into a kiln. The process removes moisture and volatile material and makes the coke denser. Material leaving the kiln is known as calcined coke, which is used by steel and aluminum industries. Rain Carbon SR at 12; *see* Gares Test. at 4.

"The kilns have the potential to emit PM and VOM" and are subject to emission limitations. Rain Carbon SR at 13, *citing* 35 Ill. Adm. Code 212.123 (opacity), 212.322 (PM), 215.301 (VOM). Emissions from the kilns are controlled by pyroscrubbers. "The main function of a pyroscrubber in the coke calcining process is to oxidize the carbonaceous contents, including hydrocarbon volatiles, of the exhaust gas from the kiln." Gares Test. at 4. Except during start-up, malfunction, or breakdown, pyroscrubbers operate at a minimum of 1800 ºF. They "draw kiln exhaust countercurrent to the flow of coke and are designed to handle high temperature exhaust while removing VOM and PM from the exhaust gases." Rain Carbon SR at 13; *see* Gares Test. at 4. Mr. Gares testified that pyroscrubbers alone when operated above 1800 ºF are sufficient to control emissions from the kilns and ensure compliance with PM, opacity, and VOM limits. Gares Test. at 5, *citing* 35 Ill. Adm. Code 212.123, 212.322, 215.301.

Rain Carbon describes a pyroscrubber as a self-sustaining device. "The coke fines entering the pyroscrubber from the kiln serve as fuel which in turn remove the VOM and PM." Rain Carbon SR at 13; *see* Gares Test. at 5. Rain Carbon reports that, from time to time, a lack of fuel entering the pyroscrubber may result in temporarily operating it below 1800 º F. Rain Carbon asserts that this occurrence is "unavoidable" but limited to specific circumstances. Rain Carbon SR at 13.

First, this reduced temperature may occur when Rain Carbon starts the kiln from ambient temperature after "an outage or other event that cause the kiln to be taken offline and emptied of coke." Rain Carbon SR at 14. When this occurs, Rain Carbon pre-heats the kiln using natural gas burners until the pyroscrubber reaches a minimum of 400 ºF. At that point, Rain Carbon introduces green coke into the kiln to provide the heat necessary to reach 1800 ºF. *Id*. at 12-13; *see* Gares Test. at 5. Rain Carbon reports that it experiences an average of fewer than 10 start-ups annually per kiln and that start-up from ambient temperature "generally takes no more than 24 hours to complete." Rain Carbon SR at 14; *see* Gares Test. at 7, 8.

Second, this reduced temperature may occur as a result of a malfunction or breakdown that interrupts feeding green coke into a kiln or discharging calcined coke from it. If Rain Carbon needs to pause production but cannot or does not discharge coke from a kiln, it may operate the kiln on "slow roll." Rain Carbon SR at 14; *see* Gares Test. at 6. Operating the kiln on "slow roll" reduces fines entering the pyroscrubber and reduces the pyroscrubber temperature. Rain Carbon may use natural gas burners to supply supplemental heat to maintain or stabilize temperature under various operating conditions. Rain Carbon SR at 12-13. Using natural gas burners allows the kiln to return more quickly to a normal pyroscrubber temperature and production rate. Using natural gas burners also minimizes emissions and the duration of higher emissions and improves the kiln's longevity. *Id*. at 14-15; *see* Gares Test. at 8-9. Rain Carbon acknowledges that malfunctions and breakdowns periodically occur and that pyroscrubber temperatures will fall below 1800 ºF for period of four to five hours. Rain Carbon SR at 15; *see* Gares Test. at 7, 8.

The AG asked Rain Carbon whether it is "appropriate to assume that when a kiln is experiencing an SMB event the temperature in the kiln is less than 1800 ºF. By extension, is it appropriate to assume that when the temperature in the kiln is less than 1800 ºF the kiln is operating in excess of its CAAPP emissions limitations?" AG Questions at 6 (¶3c).

Mr. Gares first responded that the 1800 ºF temperature is measured at the inlet to the pyroscrubber, and the kiln temperature is hotter. Tr.1 at 20. He stated that the facility's CAAPP permit and 2017 settlement agreement with IEPA prohibit it from operating when the three-hour average temperature at the inlet to the pyroscrubber is below 1800 ºF unless it is during startup, malfunction, or breakdown. *Id*. at 20-21. He testified that, "[b]elow that temperature, the pyroscrubber cannot ensure compliance at all times with the opacity, PM, and VOM emission limits applicable to the kilns." *Id* at 21. Mr. Gares added that the converse is not always true because some malfunction or breakdowns are resolved quickly enough that the facility need not stop the feed to the kiln, and the pyroscrubber temperature does not always drop below 1800 ºF as a three-hour rolling average. *Id*.

After noting that Rain Carbon's kilns each experience fewer than 10 startups annually, the AG asked Rain Carbon how many malfunctions and breakdowns its kilns experience on average on an annual basis over the past 10 years. AG Questions at 6 (¶3a); *see* Rain Carbon SR at 15. The AG also asked Rain Carbon how many hours on average its facility had operated on an annual basis over the past decade. AG Questions at 6 (¶3b).

At the first hearing, Mr. Gares responded that Rain Carbon intended "to submit to the Board records related to hours of operation as well as startup, malfunction, and breakdown, and associated pyroscrubber and the temperatures." Tr.1 at 16. He added that "[i]t is not appropriate to average the number of operational hours or the number of startup, shutdown, and malfunction hours over the past decade as such averages do not reflect changes in operation . . . In some years the facility has operated periodically on campaigns, and in other years the facility has operated more continuously. *Id.* at 16-17.

Noting Mr. Gares' testimony that Rain Carbon must shutdown and restart its kilns as a result of malfunctions (Gares Test. at 2-3), the Board asked him to describe the typical malfunction and breakdown events that require shutting down Rain Carbon's facility. Board Questions at 1 (¶3).

Mr. Gares responded that "[t]here's no such thing as a typical malfunction or breakdown." Tr.1 at 32. He stated that the event could result from mechanical failure, electrical failure, or a refractory failure of process equipment. *Id*. at 32. He added that some malfunction or breakdown events can be repaired within a period of time that allows the facility to operate in an idle or slow roll mode. *Id*. at 34, citing Gares Test. at 7-8. He testified that this operation could cause the inlet temperature to the pyroscrubber to fall below 1800 ºF and require the facility to shutdown without the proposed AELs. *Id*. at 34.

The Board noted Mr. Gares' testimony on using natural gas burners to increase the temperature of the kiln and pyroscrubber. The Board asked him to comment on "whether high temperature natural gas burners are available that may be used to increase the temperature of the kiln and pyroscrubber form ambient to a minimum temperature of 1800 ºF." If so, the Board asked him to discuss the implications of using them. Board Questions at 1 (¶5).

Mr. Gares responded that the burners are not designed or operated to achieve a minimum pyroscrubber inlet temperature to ensure environmental compliance. The burner preheats the kiln, and green coal must be added to reach the 1800 ºF temperature. "That temperature cannot be achieved by burners alone." Tr.1 at 38. Although he acknowledged the burner upgrade project underway at the facility, Mr. Gares testified that higher capacity burners will not be able to raise temperatures nearly enough to maintain a temperature of 1800 ºF at the inlet to the pyroscrubber. *Id*. at 39. He also testified that the upgrade would not eliminate the need for the proposed AELs. *Id*.

Mr. Gares testified that SMB events do not occur frequently but occur often enough to warrant Rain Carbon's requested relief. Gares Test. at 8. If Rain Carbon is not allowed to operate pyroscrubbers at temperatures below 1800 ºF during malfunctions, Mr. Gares testifies that it will experience more start-up events with more operation below 1800 ºF. *Id*. at 9. He further testified that there is sufficient control below 1800 ºF to ensure compliance with VOM and opacity limits during malfunction and breakdown events, so its proposal seeks only relief from PM requirements during malfunctions and breakdowns. *Id*. at 8.

Current Emission Limitations

The Board first discusses the 2015 SIP call, then Rain Carbon's 2017 settlement with IEPA, next its CAAPP permit, and finally Rain Carbon's 2023 settlement with USEPA.

2015 SIP Call.

PM and Opacity. Illinois' SIP establishes PM and opacity emission limits intended to assure attaining and maintaining NAAQS for PM. Under 35 Ill. Adm. Code 212.322(a), a person must not cause or allow the emission of PM into the atmosphere in any one-hour period from a process emission unit that exceeds the allowable emission rates in subsection (c).

Under 35 Ill. Adm. Code 212.123(a), a person must not cause or allow the emission of smoke or other particulate matter with an opacity greater than 30 percent from any emission unit other than fuel combustion emission units. Under subsection (b),

> [t]he emission of smoke or other particulate matter from any such emission unit may have an opacity greater than 30 percent but not greater than 60 percent for a period or periods aggregating 8 minutes in any 60 minute period provided that such opaque emissions permitted during any 60 minute period shall occur from only one such emission unit located within a 305 m (1000 ft) radius from the center point of any other such emission unit owned or operated by such person, and provided further that such opaque emissions permitted from each such emission unit shall be limited to 3 times in any 24 hour period.

Rain Carbon cites 35 Ill. Adm. Code 201.149, which provides that

> [a] person must not 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 applicable standards or limitations stated in Subchapter c [Emissions Standards and Limitation for Stationary Sources, Parts 211-229] except as specifically provided for by such standard or limitation. A person must not cause or allow violation of the applicable standards or limitations stated in Subchapter c during startup except as specifically provided for by such standard or limitation.

VOM. VOM is a precursor to the formation of ground-level ozone, which forms when NO_x and VOM react in the atmosphere in the presence of sunlight. Rain Carbon SR at 6. Illinois' SIP includes VOM emission limits.

Under 35 Ill. Adm. Code 215.301, a person must not cause or allow the discharge of more than 3.6 kg/hr (8 lbs/hr) of organic material into the atmosphere from any emission source, except under 35 Ill. Adm. Code 215.302, 215.303, and 215.304.

2017 IEPA Settlement.

Rain Carbon argues that its CAAPP permit includes specific relief from the requirement to comply with opacity, PM, and VOM emission limits during SMB events. Under a 2017 settlement agreement, its facility is required to control opacity and PM and VOM emissions by maintaining a minimum operating temperature of 1800 ºF at the inlet to its pyroscrubbers except during SMB events. Rain Carbon SR at 2-3, 16-17; *see* People v. Rain CII Carbon, PCB 04-137 (Feb. 16, 2017); Rain Carbon Exh. A at 18-19 (Section V(D)(1)(f)); Gares Test. at 2, 10. Rain Carbon argues that this condition of the settlement recognizes that the facility needs relief during SMB events when it cannot achieve and maintain the minimum operating temperatures necessary to comply with opacity, PM, and VOM limits. Rain Carbon SR at 16.

Rain Carbon asserts that the rules adopted by the Board in docket R23-18 conflict with the compliance requirements in the 2017 IEPA Settlement. Rain Carbon SR at 18. However, it argues that, if the Board adopts its rulemaking proposal, "then there will be no need to modify the 2017 IEPA Settlement because the relief granted by rule will be more stringent than the requirements of the 2017 IEPA Settlement." *Id*. at 23; *see id*. at 18-19.

CAAPP Permit.

Rain Carbon operates its facility under CAAPP Permit No. 95120092 (Rain Carbon SR, Rain Carbon Exh. B). It states that "[t]he CAAPP requires adherence to work practice standards applicable during start-up, malfunction, or breakdown events in order for the Facility to temporarily exceed opacity, PM, and VOM limits otherwise applicable during normal operations." Rain Carbon SR at 2; Gares Test. at 2.

Mr. Gares' testimony cites Permit Condition 4.2.4(a)(i)(A), which provides that under 35 Ill. Adm. Code 201.149, 201.261, and 201.262, Rain Carbon is authorized to operate Kilns 1 and 2 in violation of specified opacity, PM, and VOM requirements during start-up. Gares Test. at

10, *citing* Rain Carbon SR, Exh. B at 32. The condition also requires Rain Carbon to comply with Section 7.3 of the permit. During start-up, Section 7.3 requires it to

> (1) adhere to established written start-up procedures, (2) refrain from introducing green coke feed (a) unless the pyroscrubber is operating at a temperature of at least 400ºF or (b) if the baghouse controlling that kiln cooler is not operating properly, (3) use natural gas as a supplemental heat source to the kiln in order to reach a pyroscrubber operating temperature of 1800 ºF, (4) achieve a pyroscrubber operating temperature of 1800 ºF within 24 hours after introducing green coke feed to the kiln, and (5) comply with robust monitoring and recordkeeping requirements. Rain Carbon SR at 20; *see* Rain Carbon SR, Rain Carbon Exh. B at 50 (Start-Up Requirements).

Mr. Gares' testimony also cites Permit Condition 4.2.4(a)(i)(B), which authorizes Rain Carbon to operate in violation of specified requirements during malfunction or breakdown. Gares Test. at 10-11, *citing* Rain Carbon SR, Exh. B at 32. The permit condition also requires Rain Carbon to comply with Section 7.4 of the permit. If there is a malfunction or breakdown of both thermocouples at the inlet of a pyroscrubber, Section 7.4 requires Rain Carbon to

> (1) repair or replace at least one of the thermocouples within 24 hours, (2) cease green coke feed to a kiln within 24 hours unless at least one thermocouple at the inlet of the kiln's pyroscrubber functions properly, and (3) comply with robust monitoring and recordkeeping requirements. Rain Carbon SR at 20; *see* Rain Carbon SR, Rain Carbon Exh. B. at 52-53.

Mr. Gares testifies that Rain Carbon's proposed AELs "are more stringent than the relief previously authorized under the CAAPP permit and more stringent than the relief still afforded by the 2017 IEPA Settlement." Gares Test. at 11.

2023 USEPA Settlement.

Rain Carbon asserts that USEPA acknowledged in a February 2023 administrative consent order that the facility's CAAPP permit reflects the 2017 IEPA Settlement. Rain Carbon SR at 18, *citing* Rain Carbon SR, Rain Carbon Exh. C at 3-4 (¶¶14-15); *see id*. at 3. Rain Carbon argues that the 2023 USEPA Settlement recognized its ability to operate its kilns and associated pyroscrubbers "in violation of applicable emissions limits during SMB." *Id*. at 21, citing *id*., Rain Carbon Exh. C at 4 (¶¶16, 19); *see* Gares Test. at 11.

Rain Carbon stresses that the 2023 USEPA Settlement required it to implement facility improvements intended to minimize emissions during SMB events. Rain Carbon SR at 21, *citing id*., Rain Carbon Exh C at 6 (¶29); *see* Gares Test. at 3, 11. First, Rain Carbon must "increase each existing kiln burner's natural gas firing capacity, which will reduce the duration that the temperature in the pyroscrubber remains below 1800 ºF during short-term feed stoppages and start-up events." Rain Carbon estimates that this requirement will cost $851,000. Rain Carbon SR at 21-22; *see* Gares Test. at 12. Also, Rain Carbon must make improvements "to reduce the number and duration of feed chute plugs, thereby reducing the potential duration that the pyroscrubber must operate below 1800 ºF during a malfunction or breakdown." Rain Carbon estimates that these improvements will cost $439,000. *Id*. These two improvements have combined estimated costs of $1,290,000. Rain Carbon SR at 22; Gares Test. at 12. Mr. Gares testified that, although Rain Carbon works to reduce emissions during SMB events, it cannot entirely avoid those events, and its requested relief remains "necessary and proper." Gares Test. at 12.

Proposed AELs

The Board first discusses Rain Carbon's initial proposal, then general questions on the proposal at the first hearing, then the initial modeling demonstrating noninterference.

Initial Proposal

USEPA issued the 2015 Final SIP Call, which required states including Illinois to submit revised SIPs correcting SSM provisions. Rain Carbon SR at 9, citing 80 Fed. Reg. 33844 (June 12, 2015). Rain Carbon argues that USEPA acknowledged in the 2015 Final SIP Call that states can employ various strategies to address excess emissions that may occur during SSM events. Rain Carbon SR at 9-10, citing 80 Fed. Reg. 33978 (June 12, 2015). Rain Carbon adds that the Final 2015 SIP Call recommended that alternative standard should be narrowly tailored and reflect several factors. Rain Carbon SR at 10, citing 80 Fed. Reg. 33980 (June 12, 2015).

***Opacity*.** Rain Carbon proposed to add subsection (e) to 35 Ill. Adm. Code 212.124 "to allow for up to a 3-hour averaging period (using Test Method 9 of Appendix A to 40 C.F.R. Part 60) to demonstrate compliance with the opacity standard during start-up:"

e) During any period of start-up at the emission unit designated Kiln 1 or Kiln 2 at the Rain CII Carbon LLC facility located in Robinson, Illinois, when average opacity exceeds 30 percent for a six-minute period, as applicable pursuant to Section 212.123(a) of this Subpart, compliance with Section 212.123(a) may alternatively be demonstrated for that six-minute period as follows.

1) Compliance with that six-minute period may be determined based on Test Method 9 (40 C.F.R. Part 60, Appendix A, incorporated by reference in Section 212.113) opacity readings the average of non-consecutive opacity readings during a 1-hour period; provided, however, that compliance may be based on the average of up to three, 1-hour average periods, in the event that compliance is not demonstrated during the preceding hour. For purposes of this subsection (e), "start-up" is defined as the duration from when green coke feed is introduced into the kiln until the temperature at the pyroscrubber inlet servicing the kiln achieves a minimum operating temperature of 1800 °F (based on a three-hour rolling average). Rain Carbon Prop. at 6-7; *see* Rain Carbon SR at 4;

> Gares Test. at 13; *see also* 47 Ill. Reg. 12820 (Sept. 1, 2023) (merging single subsection (1) into (e)).

Mr. Gares testified that the proposal intends to "address the first few hours of the start-up of a kiln when the *potential* for opacity is the highest because of the lower pyroscrubber inlet temperature." Gares Test. at 14 (emphasis in original); *see* Higgins Test. at 17. He further testified that Rain Carbon does not propose averaging for the duration of the start-up but proposes "limited relief during the period of start-up when it is not possible to reach pyroscrubber temperatures sufficient to control PM and, therefore opacity levels." Gares Test. at 14.

The AG asked Rain Carbon why it believes that adopting the proposed subsection (e) "is preferable to pursuing an adjusted opacity standard pursuant to Section 212.126." AG Questions at 7 (¶5).

Mr. Higgins responded that "Section 212.126 does not apply to Rain Carbon's facility." Tr.1 at 27. He added that it governs adjusted standards for emissions from fuel combustion sources subject to Sections 212.201, 212.202, 212.203, or 212.204. *Id*. Rain Carbon "operated kilns that are process emission units which are not fuel combustion emission units." *Id*.

The Board noted Mr. Gares' testimony that Rain Carbon's proposed AEL for PM had not proposed an averaging period for the duration of the startup. The Board asked Mr. Gares to comment on any significant difference between the time during which it is not possible to reach pyroscrubber temperatures sufficient to control PM and the duration of startup. Board Questions at 2 (¶8).

Mr. Gares responded by comparing the ability of the facility to demonstrate compliance with the opacity and PM regulations. Tr.1 at 41. He stated that the facility generally expects to achieve compliance with the opacity standard by the end of the first hour of startup from ambient temperatures. *Id*. "An averaging period is appropriately tailored for this type of emissions profile." *Id* at 41-42. Compliance with the PM standard may not be achieved until the pyroscrubber inlet temperature reaches 1800 ºF, which generally takes 17-24 hours after feed is introduced to the kiln during a startup or five to seven hours after feed is reintroduced if the kiln was in idle or slow roll state during a malfunction or breakdown event. *Id*. at 42. He concluded that averaging "is not appropriate as an alternative emissions limit for PM due to the longer and more varied scenarios when PM compliance cannot be achieved." *Id*. at 43.

Mr. Higgins testimony characterizes the proposal as "a narrow extension of the averaging period during start-up." Higgins Test. at 17. Citing Rain Carbon's Engineering Study, he testified that "opacity levels are sufficiently controlled after an adequate amount of coke is added to the kiln." *Id*. He added that Rain Carbon did not seek relief from the opacity standard during malfunction/breakdown because the pyroscrubber retains a sufficient temperature in those events to comply with the standard. *Id*.

The Board also cited AirSource Appendix C3 and asked "[w]hat would be the shortest averaging time to comply with the 30% opacity limit?" Board Questions at 2 (¶10a). The Board also requested that Rain Carbon comment on whether these results support a shorter averaging period than up to three 1-hour averaging periods. *Id*. (¶10b).

Mr. Higgins responded that "Rain Carbon lacks sufficient data to determine the shortest averaging time required to comply with the 30 percent opacity standard during startup." Tr.1 at 47. He first noted that Rain Carbon does not routinely perform these engineering tests. *Id*. He added that "startup conditions are inherently variable." *Id*. at 47-48, *citing* Rain Carbon TSD at 2-1, 4-1 (Tables 2-1, 4-1). He concluded that Rain Carbon's requested averaging period intends to accommodate higher and longer durations of opacity emissions. *Id*. at 48.

***PM*.** Rain Carbon proposed to add a subsection (d) to 35 Ill. Adm. Code 212.322 "to establish an annual limit on the number of hours (720 hours) that each kiln may during SMB events exceed the PM standard for process emission units:"

d) Alternative Standard

1) The owner and operator of the Rain CII Carbon LLC facility located in Robinson, Illinois, shall be allowed to emit particulate matter into the atmosphere in excess of the allowable emission rates specified in subsection (c) applicable to the emission unit designated Kiln 1 or Kiln 2 during any period of time that the temperature of the inlet to the pyroscrubber servicing either emission unit does not achieve a minimum operating temperature of 1800 °F during start-up, malfunction, or breakdown (based on a three-hour rolling average).

2) Use of the alternate standard in subsection (d)(1) shall not to exceed 720 hours in the aggregate per kiln in a calendar year. It shall not be a violation of this Part to operate the pyroscrubber servicing Kiln 1 or Kiln 2 below the minimum operating temperature in subsection (d)(1) during this time.

3) During any time that Kiln 1 or Kiln 2 is operated while the pyroscrubber servicing that emission unit is not achieving the minimum operating temperature in subsection (d)(1), the owner and operator must: (i) minimize emissions to the extent reasonably practicable; (ii) not introduce green coke into the kiln unless or until a minimum operating temperature of 400 °F measured at the inlet to the pyroscrubber is achieved; and (iii) operate the natural gas-fired burners to minimize the duration that a kiln operates below 1800 °F, consistent with technological limitations, manufacturer specifications, and good air pollution control practices for minimizing emissions.

4) The owner and operator must keep and maintain all records necessary to demonstrate compliance with this subsection,

> including, but not limited to, records of each hour that the pyroscrubber operated below the minimum operating temperature specified in this subsection. Rain Carbon SR at 4; Rain Carbon Prop. at 9; *see* Gares Test. at 14-15; Higgins Test. at 19; *see also* 47 Ill. Reg. 12823 (Sept. 1, 2023) (re-designating subsections (d)(3)(i-iii) as (d)(3)(A-C)).

Mr. Gares testified that the proposed AEL intends to address "any operation condition (*i.e.*, whether that be start-up or the result of a malfunction/breakdown of equipment) during which the inlet temperature to the pyroscrubber drops below 1800 ºF." Gares Test. at 15. Mr. Higgins testified that Rain Carbon "has not in recent years operated in SMB conditions for close to 720 hours per year per kiln." Higgins Test. at 19. Mr. Gares testified that the proposed 720-hour annual limit is "reasonably tailored" to Rain Carbon's operations and reasonably limits the impact of PM emissions that are not sufficiently controlled during those conditions. Gares Test. at 15. Mr. Higgins testified that Rain Carbon seeks the allowance for up to 720 hours to align with the fullest extent of operation allowed by its CAAPP permit. Higgins Test. at 19. He added that, because of the unpredictable nature of malfunctions and breakdowns and the start-up that may ensue from them, Rain Carbon may conceivably experience SMB events lasting a total of 720 hours in a year and need relief from PM limits. *Id*.

The Board noted that proposed subsection (d)(2) of its AEL for PM provides in part that "[i]t shall not be a violation of this Part to operate the pyroscrubber servicing Kiln 1 or Kiln 2 below the minimum operating temperature in subsection (d)(1) during this time." The Board asked Rain Carbon to clarify whether any provision in 35 Ill. Adm. Code 212 requires it to operate the pyroscrubber servicing Kiln 1 or 2 at 1800 ºF. If not, the Board asked Rain Carbon to explain the intent of the proposed language. Board Questions at 1 (¶4).

Mr. Gares responded that "the facility is effectively required to maintain a temperature at or above 1800 ºF at the inlet to the pyroscrubber to ensure that the PM emissions are sufficiently controlled by the pyroscrubber to demonstrate compliance with Section 212.322." Tr.1 at 36, *citing* Rain Carbon SR at 16-20, Gares Test. at 9-10. He added that the 2017 settlement agreement with IEPA requires the facility to maintain a temperature of 1800 ºF at the inlet to the pyroscrubber to ensure compliance with PM emission limits under Part 212. *Id*. He added that the facility's CAAPP permit incorporates this requirement. *Id*.

<u>VOM</u>. Rain Carbon proposed to add a subsection (b) to 35 Ill. Adm. Code 215.302 "to establish an averaging period of up to 24 hours during start-up to demonstrate compliance with the VOM standard:"

> b) Compliance with the permitted emissions of organic material under subsection (a) during any period of start-up at the emission unit designated Kiln 1 or Kiln 2 at the Rain CII Carbon LLC facility located in Robinson, Illinois, shall be determined by the average of hourly emissions of organic material during start-up of the emission unit; provided, however, that in no event shall the averaging period of any single start-up exceed twenty-four (24) hours. For purposes of the alternative standard in subsection (b),

> "start-up" is defined as the duration from when green coke feed is introduced into the kiln until the temperature at the pyroscrubber inlet servicing the kiln achieves a minimum operating temperature of 1800°F (based on a 3-hour rolling average). During any period of startup, the owner and operator must:
>
> 1) minimize emissions to the extent reasonably practicable;
>
> 2) not introduce green coke into the kiln until a minimum operating temperature of 400°F measured at the inlet to the pyroscrubber is achieved; and
>
> 3) operate the natural gas-fired burners to minimize the duration of start-up, consistent with technological limitations, manufacturer specifications, and good air pollution control practices for minimizing emissions.
>
> 4) The owner and operator must keep and maintain all records necessary to demonstrate compliance with this subsection, including, but not limited to, records of the duration and frequency of each start-up period. Gares Test. at 16; *see* Rain Carbon SR at 4; Rain Carbon Prop. at 18.

Mr. Gares testified that Rain Carbon's proposed AEL applies only to start-ups "because the lower pyroscrubber temperatures during malfunctions remain sufficient to control VOM within applicable emission limits." Gares Test. at 17. Also, Rain Carbon asserts that its proposed amendments are more stringent than the work practice standards in its CAAPP permit and the requirements under its 2017 settlement with IEPA. Rain Carbon SR at 4.

Mr. Higgins' testimony acknowledged that Rain Carbon's Engineering Test showed that VOM emissions during start-up did not exceed 8 lbs/hr in any of the five test runs. Higgins Test. at t 18, *citing* Rain Carbon TSD at 3-1 (Table 3-1: VOM Sampling Results). He stressed that "VOM emissions were highest during the first few hours of a start-up when temperatures at the inlet to the pyroscrubber are farthest away from the optimal 1800 ºF minimum operating temperature." Higgins Test. at 18. Although Rain Carbon considers the Engineering Test results representative of start-up conditions, it argues that "the testing occurred over a single day and simply cannot be used as evidence that emissions of VOM during start-up conditions will always remain below the regulatory limit." *Id*. Mr. Higgins testified that, during the Engineering Test, temperatures at the inlet to the pyroscrubber were "significantly hotter than expected" at the beginning of the start-up. *Id*., n.15. He testified that, whether because of hot ambient temperatures or any other cause, these higher temperatures "may have served to *reduce* the levels of VOM (and, for that matter, opacity) typically expected during these periods." *Id*. Mr. Higgins' testimony concluded that "because the Engineering Test does not reflect all start-up conditions that the kilns will experience, "the averaging period proposed in the AEL for VOM is appropriate and necessary." Higgins Test. at 19.

The Board noted that the TSD shows mass VOM emission rates during each of five test runs were below the allowable VOM emission rate of 8 lb/hr. Board Questions at 3 (¶11). If the test runs represent a typical startup, the Board asked Rain Carbon whether they support a shorter averaging time than the proposed 24-hour averaging period for VOM emissions during startups. *Id*.

Mr. Higgins responded that these VOM results "demonstrate that VOM emissions are substantially higher during the initial period of startup when the inlet temperature to the pyroscrubber is lowest." Tr.1 at 49, *citing* Rain Carbon TSD at 3-1 (Table 3-1). He testified that, although VOM emissions during the first run were below the regulatory limit, the inlet temperature of 700 ºF was higher than the temperature at which green coal is typically introduced. Tr.1 at 49. He concluded that the proposed AEL for VOM sets "an appropriate averaging period to accommodate expected high VOM emissions during initial periods of startup." *Id*. at 50.

General Questions at the First Hearing. At the first hearing, the AG asked Rain Carbon questions about its proposal in general.

The AG calculated that Rain Carbon exceeds its emissions limitations during startups approximately 432 hours per year or 5.4% of its estimated operating time. AG Questions at 6 (¶3d); *see id*., n.2. The AG noted that Rain Carbon proposed an annual limit of 720 hours during which each kiln may exceed the PM standard during SMB events. AG Questions at 6 (¶3d), *citing* Rain Carbon SR at 4. Also, the Board noted Mr. Gares' testimony that Rain Carbon's kilns on average annually experience fewer than five startups lasting up to 24 hours and fewer than 10 malfunctions lasting four to five hours. Based on these durations, the Board asked him to explain why Rain Carbon's proposed AEL for PM seeks relief for 720 hours – or 30 days – per year for each kiln. Board Questions at 1-2 (¶6a).

Mr. Gares responded that the number of startups, malfunctions, and breakdowns "can vary greatly in a given year." Tr.1 at 23. He explained that Rain Carbon had two reasons for proposing a 720-hour limit for each kiln to exceed the PM standard during SMB events. First, "[b]ecause there are no technical or economically feasible options to control emissions while the inlet pyroscrubber temperature is below 1800 degrees, we propose 720 hours to ensure a satisfactory margin of compliance." *Id*. at 24. Second, he testified that Rain Carbon "conducted extremely conservative ambient air quality modeling to demonstrate that 720 hours per kiln per year would not interfere" with applicable PM standards. *Id*.

The AG also asked Rain Carbon why it believes its proposed AEL for PM is "narrowly tailored" and avoids backsliding. AG Questions at 6-7 (¶3d), *citing* Rain Carbon SR at 1. Mr. Gares responded by citing Mr. Higgins' testimony as evidence that Rain Carbon's AELs are consistent with Section 110(l) of the CAA. *Id*. at 25; *see infra* at 25-32, 34-38 (addressing noninterference demonstration).

Rain Carbon argues that its proposed rules are consistent with these recommendations. First, the proposal is limited to two emission its, its Kilns No. 1 and No. 2. Rain Carbon SR at 23. Because Rain Carbon's proposed amendments are site-specific, the AG questioned whether

Rain Carbon agreed that its proposal is subject to 35 Ill. Adm. Code 102.210. AG Questions at 5 (¶1); *see* Tr.1 at 13 (clarifying citation). Mr. Gares responded that Rain Carbon followed the Board's July 6, 2023 order, which directed participants wishing to propose AELs to do so in this docket by August 7, 2023. Tr.1 at 13-14. He added that Rain Carbon "agreed with the Board's determination that this is the proper forum" for submitting its proposal. *Id*. at 14. Second, Rain Carbon asserts that "there is no alternative strategy, including additional pollution control equipment, that eliminates the need for the proposed alternative standards during SSB." Rain Carbon SR at 23. Third, it argues that its proposal is limited in scope and duration. *Id*. Finally, it asserts that its proposal requires "appropriate recordkeeping and reporting." *Id*.

Mr. Gares testified that the SMB relief in its 2017 IEPA Settlement and its CAAPP permit are based on rules repealed in the underlying rulemaking. Gares Test. at 2. Without that relief, he testified that Rain Carbon "would be effectively required to maintain 1800 ºF at the pyroscrubber inlet from the moment it first adds green coke to the kiln – a condition that is not achievable." *Id.* He further testified that, without that relief, Rain Carbon may be forced to "shut down and restart the kilns during malfunction events, rather than use best pollution control practices to maintain temperature in the kiln to avoid unnecessary shutdown/start-up events" and higher emissions. *Id*. at 2-3.

The AG noted Rain Carbon's acknowledgment that IEPA's "authority to grant exemptions to emissions limitations during SMB events stemmed from the regulatory provisions repealed in R23-18." AG Questions at 5 (¶2), *citing* Rain Carbon SR at 2. The AG cites USEPA's finding that those provisions were substantially inadequate. AG Questions at 5-6, *citing* 78 Fed. Reg. 12460, 12515 (Feb. 22, 2013). The AG asked Rain Carbon what it means when it asserts that "relief provided to Rain Carbon's Facility during SMB events does not reflect Illinois EPA's exercise of enforcement discretion or an authorization of a prima facie defense to enforcement during SMB." AG Questions at 6, *citing* Rain Carbon SR at 3.

Mr. Gares responded that the facility's SMB relief is authorized by a 2017 settlement agreement with IEPA requiring Rain Carbon to maintain a minimum inlet pyroscrubber temperature of 1800 ºF except during SMB events. Tr.1 at 15. He added the settlement agreement is not affected by the rules adopted in R23-18 or those proposed by Rain Carbon in the subdocket. *Id*. at 15-16.

Rain Carbon proposes to amend opacity, PM, and VOM provisions for its emission units designated as Kiln 1 and Kiln 2 and their associated pyroscrubbers. Rain Carbon SR at 2, 4, *citing* Ill. Adm. Code 212.124, 212.322, 215.302. Mr. Gares testified that the proposed AELs are more stringent than the relief provided by the 2017 IEPA settlement. Gares Test. at 12-13. He added that Rain Carbon proposed relief during malfunctions or breakdowns only from the PM limits "because only PM compliance (not VOM or opacity) is jeopardized when lower kiln temperatures occur." *Id*. at 13. Mr. Higgins testified that Rain Carbon relied on data obtained from an Engineering Test "to set AELs that both avoided interference with the NAAQS and set limits with sufficient latitude to account for differences that will occur during transient and highly variable SMB conditions." Higgins Test. at 17.

The AG noted USPEA's statement that the "correct approach" to setting emissions limitations during startup considers four factors:

> (i) The emission limitation contains no exemption for emissions during SSM events; (ii) the component of any alternative emissions limitation that applies during startup and shutdown is clearly stated and obviously is an emission limitation that applies to the source; (iii) the component of any alternative emission limitation that applies during startup and shutdown meets the applicable stringency level for this type of emission limitation; and (iv) the emission limitation contains requirements to make it legally and practically enforceable. AG Questions at 7 (¶4), citing 80 Fed. Reg. 33979 (June 12, 2015).

The AG asked whether each of Rain Carbon's proposed amendments satisfies these factors and to provide the basis for each of its proposed amendments. AG Questions at 7 (¶4).

Mr. Higgins responded that Rain Carbon's Statement of Reasons supports the conclusion that each of its proposed AELs is consistent with USEPA's 2015 SIP Call, including the factors cited by the AG. Tr.1 at 26. He also stressed USEPA's clarification that numerical limitations are not required at all times. *Id*. at 26-27.

Initial Modeling Demonstrating Noninterference.

Rain Carbon asserts that USEPA has designated Crawford County as "unclassifiable/attainment" for the PM and Ozone NAAQS. Rain Carbon SR at 28, n.18. Rain Carbon adds that Crawford County attains the 2015 8-hour ozone NAAQS and "the 2012 PM NAAQS (including the annual $PM_{2.5}$ standard, the 1997 24-hour $PM_{2.5}$ standard and the 2006 24-hour PM_{10} standard)." *Id*. at 28. Rain Carbon argues that Crawford County attained these standards before the SSM rulemaking in R23-18 so that the relief in its current CAAPP permit had not resulted in nonattainment of any NAAQS. *Id*. at 29. Rain Carbon further argues that its proposal is more stringent than emissions allowed under its permit. *Id*.

Section 110(l) of the CAA "prohibits USEPA from approving any proposed SIP revision that would interfere with the attainment and maintenance of the NAAQS in effect at the time of the revision." Rain Carbon SR at 27, *citing* 42 USC 7410(l).; *see* Higgins Test. at 3. Rain Carbon states that the CAA does not define "interference," but air quality modeling for the specific NAAQS can be used to show that a proposal will not interfere with attaining or maintaining the PM and ozone NAAQS. Rain Carbon SR at 28 (*citing* USEPA draft guidance). It adds that "there is no NAAQS for opacity and, therefore, a noninterference demonstration is not required for opacity. *Id*.; *see* Higgins Test. at 3.

Mr. Higgins testified that "[a] Section 110(l) noninterference demonstration is not actually necessary." Higgins Test. at 3. He asserts that Rain Carbon's proposed AELs are more stringent than its 2017 IEPA settlement and current CAAPP permit. His testimony argues that the proposal will improve air quality in comparison with emission authorized before adoption of the underlying docket R 23-18. *Id*. at 3-4. Mr. Higgins testifies that "improvements in air quality cannot interfere with NAAQS attainment/maintenance." *Id*. at 4.

Nonetheless, Mr. Higgins testified that Rain Carbon worked with Trinity Consultants (Trinity) to provide a noninterference demonstration. Rain Carbon SR at 28; Rain Carbon TSD at 1; *see* Higgins Test. at 3. "[I]n an abundance of caution," air quality modeling compared the proposed AELs "to emissions from the Facility that would occur if relief during SMB was never authorized." *Id*. at 4.

<u>Modeling Approaches</u>. Mr. Higgins testified that Trinity used different approaches to demonstrate non-interference for VOM and PM. To determine the impact on the ozone NAAQS, Trinity used MERPs to analyze the impact of VOM on secondary formation of ozone. Higgins Test. at 4, *citing* Rain Carbon TSD at 3-1 – 3-2 (Section 3.2: Modeled Emission Rates for Precursors). "VOM MERPs represent a level of increased precursor emissions that are not expected to contribute significantly to (*i.e.*, will not interfere with) ozone formation." Higgins Test. at 4. Trinity used USEPA's 2019 MERPs guidance "to estimate the level of emissions that would have a significant impact on ozone concentrations." *Id*., *citing* Rain Carbon TSD at 3-2 – 3-4 (Section 3.4: Assessment Approach and Results). Trinity then compared these levels to annualized emission rates from the kilns during start-up. Higgins Test. at 4, *citing* Rain Carbon TSD at 3-4 – 3-5.

To determine the impact on the PM NAAQS, Trinity modeled the pyroscrubber stacks based on allowable PM emissions and stack characteristics representing baseline or non-MSB operations. Although Mr. Higgins' testimony acknowledges that precursor pollutants NO_x and SO_2 can generate secondary formation of $PM_{2.5}$, he asserts that "[e]mission rates of NO_x and SO_2 are expected to be lower during SMB events than during normal operation," and Trinity did not complete a secondary formation analysis for $PM_{2.5.}$ Rain Carbon TSD at 5, n.3. Trinity modeled emission rates and stack characteristics from an engineered test during startup conditions "to calculate pollutant concentrations for every hour at modeled receptor locations surrounding the facility." *Id*. at 5. Trinity then modeled the difference between these values to determine the net impact concentrations. *Id*. Rain Carbon asserts that the modeled impacts represent "the *additional* contribution from operating during limited periods when the pyroscrubber inlet temperature is less than 1800 ºF." Rain Carbon SR at 29-30 (emphasis in original) (*citing* USPEA guidance). Rain Carbon compared the difference to SIL concentrations for PM. *Id*.; *see* Rain Carbon TSD at 4-2 – 4-3. Rain Carbon argues that USEPA uses SILs to "quantify the point below which a new or modified source does not cause, or contribute to, a violation of the NAAQS or PSD [Prevention of Significant Deterioration] increment . . . ." Rain Carbon SR at 30.

The Board noted Mr. Higgins' testimony that Trinity had used SILs to assess the environmental impact of the proposed AELs because of the lack of thresholds for evaluating the impact of SMB events. The Board asked him to comment on whether this methodology had been used "in Illinois or other states to evaluate the impact of SMB emissions on attainment or maintenance of NAAQS to USEPA." Board Questions at 2 (¶9a). If so, the Board requested the citation to Federal Register notice of USEPA determinations on using SILs to evaluate SMB emissions. *Id*. ¶(9b). If not, the Board asked Rain Carbon to comment on whether USEPA would approve AELs based on this approach. (¶9c).

Mr. Higgins responded that Rain Carbon was not aware of how other states are modeling SMB proposals in response to USEPA's SIP Call. Tr.1 at 44. He testified that ambient air quality modeling software does not distinguish emissions during normal operations from emissions during SMB events. *Id*. at 44-45. He added that the software considers these emissions during SMB events "as if they were generated by a plan modification," and using SILs "to assess the impact of a proposed major modification is a well-accepted methodology." *Id*. at 45. He added that it is appropriate to use SIL to demonstrate compliance with Section 110(l) of the CAA, because impacts of a model below the SIL are considered not to have a meaningful or significant impact on air quality. *Id*. at 45-46, *citing* Rain Carbon SR at 30-31. He also asserted that this demonstrates that the proposed AELs will not interfere with the NAAQS for PM or ozone in Illinois. *Id*. at 46.

***Modeling Methodologies*.** Mr. Higgins testified that assessing whether the proposed AELs will interfere with NAAQS requires a two-step analysis. First, it requires using a combination of measured emissions and modeling to project representative emissions of VOM and PM during SMB events. Second, "the SMB emissions must then be modeled over the corresponding NAAQS averaging period to determine the extent of the modeled impacts on ambient air quality." Higgins Test. at 5.

Mr. Higgins' testimony stresses that, compared to normal operations, emissions during SMB events are irregular, and the events themselves vary unpredictably from year to year. Higgins Test. at 5, 7. He testified that, because of this irregularity, "there are no known prescribed methodologies for assessing emissions and environmental impacts from SMB events. However, there are prescribed methods for normal, steady-state operations that utilize measured emission rates using in-stack sampling to predict environmental impacts through ambient air quality monitoring." *Id*. at 5-6. Mr. Higgins testified that Trinity used emissions data from in-stack sampling conducted under USEPA methods. *Id.* at 6, *citing* 40 CFR 60, Appendix A. Trinity used this data as an input to air dispersion modeling performed under USEPA methodology. *Id*., *citing* 40 CFR 51, Appendix W. Based on 2019 USEPA guidance, Trinity used MERPs to evaluate potential environmental impacts. *Id*. (citation omitted).

Mr. Higgins testified that, while "there are no known thresholds established for determining whether an SMB event would have a significant impact to the ambient air," USEPA has defined SILs as thresholds "for determining whether an emissions increase from a project would have a significant impact on the surrounding ambient air quality." Higgins Test. at 6. He reported that the PSD permitting process uses these SILs to consider whether a project's increased emissions may interfere with an applicable NAAQS. *Id*. In the absence of thresholds specifically for SMB events, Mr. Higgins testified that Trinity used appropriate SILs to assess the significance of Rain Carbon's proposed AELs. *Id*. at 6-7, citing Rain Carbon TSD at 4-2 – 4-3 (Section 4.2.2: Source Characterization).

Mr. Higgins testified that air dispersion modeling generates "impact results at thousands of discrete locations near the facility for *every hour* over a consecutive five-year period." Higgins Test. at 7, *citing* 40 CFR 51, Appendix W. For the $PM_{2.5}$ 24-hour SIL, the most restrictive SIL, "the modeled result from the calendar day with the highest impact from each of five calendar years is averaged and compared to the SIL." Higgins Test. at 7. However, Mr.

Higgins testified that "it is highly unlikely – if not impossible – for an SMB event to occur for the entire 24 hours of each of those specific days in five consecutive years. *Id*. He asserts that this this modeling does not directly represent "the potential significance of environmental impact from operating under SMB conditions." *Id.*, citing Rain Carbon TSD at 4-13 – 4-16 (Section 4.2.10.3: Malfunction Scenarios).

Mr. Higgins testified that Trinity used a Monte Carlo statistical analysis for appropriately weighing unpredictable SMB events and to generate a more representative model of the impacts of the proposed AELs. Higgins Test. at 7, *citing* Rain Carbon TSD at 4-16 – 4-20 (Section 4.3: Monte Carlo Statistical Analysis). He adds that USEPA and other regulatory agencies have relied on this approach to evaluate "impacts from random, sporadic, and infrequent operation scenarios which have potential to emit regulated pollutants." Higgins Test. at 8, n.9, *citing* 88 Fed. Reg. 25080 (Apr. 25, 2023). This analysis provides a mechanism to "simulate a large number of random selections of air dispersion modeling results, based on user-defined input (*e.g.*, 30 SMB events per year)." Higgins Test. at 7. His testimony provided an example for a source assessing the significance of $PM_{2.5}$ 24-hour impacts and assuming no more than 30 SMB events in a year. The simulation "can randomly select 30 days in each of five years of results generated by an air dispersion model and average the highest selected results form each year" and then repeat the simulation. *Id*. at 8. "If the simulation is repeated 1,000 times, then there are 1,000 results, which are directly comparable to the SIL and can be formed into a statistical distribution. *Id*. Mr. Higgins testified that this distribution can then quantify the probability that 30 randomly selected SMB events per year for five consecutive years may have a significant impact. *Id*.

<u>Engineering Test.</u> Mr. Higgins testified that Rain Carbon conducted an Engineering Test to collect emissions data during a single start-up event at Kiln 1 at the facility. Higgins Test. at 8-9, *citing* Rain Carbon TSD at 2-1 (Section 2: Opacity), 3-1 (Section 3.1: Engineering Study). To develop a model of ambient air quality impacts from period SMB events, the study sought "to evaluate the emissions profile of PM, opacity, and VOM during representative start-up conditions, from the period of time that green coke is introduced into the Kiln (at approximately 400-600 ºF), until the inlet temperature to the pyroscrubber reaches 1800 ºF." Higgins Test. at 9. His testimony argues that the test results provide "an appropriate – and the only available – surrogate for emissions that may be experienced during malfunction/breakdown events" when the pyroscrubber inlet temperature may fall below 1800 ºF. *Id*.

Noting that Rain Carbon conducted the engineering test during startup conditions, the AG asked whether "it is appropriate to draw a conclusion about PM emissions during malfunction and breakdown events based on modeling that relied on data gathered during startup conditions." AG Questions at 7 (¶6).

Mr. Higgins responded that "it is appropriate to model malfunction breakdown emissions based on PM data collected during start-up conditions." Tr. 1 at 28. First, he stressed that the common factor during startup, malfunction, and breakdown is that the temperature at the inlet to the pyroscrubber is below 1800 ºF, which limits the kiln's ability to comply with the applicable PM limit. *Id*. He argued that relying on startup data is "inherently conservative" because those events commonly last longer than malfunction and breakdown events. *Id*. Second, he stated that "during the initial hours of startup the inlet temperature to the pyroscrubber is lower than the temperature typically experienced during a malfunction breakdown, meaning that startup events have greater OM emissions. *Id*. at 28-29. Third, he stated that, during malfunction and breakdown events, the facility stops feed to the kiln, which tends to reduce the generation of PM emissions as compared to startup conditions where feed is increased. *Id*. at 29, *citing* Rain Carbon SR at 14-15.

Mr. Higgins testified that Rain Carbon contracted with AirSource Technologies (AirSource) to conduct the Engineering Test, which tested PM, VOM, and opacity during a July 20, 2023 start-up of Kiln 1. Higgins Test. at 9; *see* Rain Carbon TSD, Appendix A (Source Emissions Test Report). AirSource did so by following the requirements of USEPA methods except for sample durations, which were shorter than 60 minutes. Higgins Test. at 9-10, n.10. "The shorter duration is not believed to impact the results in a way that would suggest they should not be used in this analysis." *Id*. Although Kiln 2 was not operating at the time of the test, Kilns 1 and 2 have similar design and operations so that "similar emissions results during start-up would be expected between both kilns." *Id*. at 10, n.11. From AirSource's report, Trinity obtained emissions and stack information to use in MERPs and air dispersion modeling.

The AG asked Rain Carbon whether there are any differences between Kiln 1 and Kiln 2 that would affect its conclusion that it would expect similar emissions results during startups from the two kilns. AG Questions at 7 (¶7), citing Higgins Test. at 10 n.11, 14.

Mr. Gares responded that there are no differences that would cast doubt on this conclusion. Tr.1 at 29. He testified that the two kilns "are nearly identical in design." *Id*. at 29-30. The model impact from the kilns "differ because of the different geographic location of the stacks from the pyroscrubber servicing each kiln." *Id* at 30.

VOM. VOM is a precursor pollutant that contributes to the secondary formation of other regulated pollutants including ozone. Because of the complexity of the reactions involved, evaluating secondary ozone formation requires complex photochemical modeling, which USEPA has performed "across an array of hypothetical sources across the continental U.S. to relate VOM to secondary ozone (8-hour basis) formation." Higgins Test. at 10. "Based on the precursor emission rates and the modeled maximum concentrations, MERPs were calculated to represent the precursor emission rates (in tons per year, "tpy") that would result in concentrations equal to the SILs. *Id*., *citing* Rain Carbon TSD at 3-2 – 3-4 (Section 3.3: MERPs View Qlik and Hypothetical Source Selection), 3-4 – 3-5 (Section 3.4: Assessment Approach and Results).

The Engineering Test obtained VOM lb/hr emission rates during start-up, which were used to conduct a MERPs assessment of potential ozone impacts from SMB events. Higgins Test. at 11, *citing* Rain Carbon TSD at 3-1 (Section 3.1: Engineering Study). Mr. Higgins testified that "[t]he MERPs method uses the impact modeled by the U.S. EPA at a nearby location with similar stack height and annual emissions to scale impacts from Rain Carbon based on its emissions as a proportion of those used by the U.S. EPA." Higgins Test. at 11, *citing* Rain Carbon TSD at 3-2 – 3-4 (Section 3.3 MERPs View Qlik and Hypothetical Source Selection). He adds that Trinity used results of the Engineering Study "to represent emissions that *could* be emitted during SMB events." Higgins Test. at 11 (emphasis in original). It then compared resulting impacts to the SIL for ozone to determine the significance that SMB events may have.

Mr. Higgins testified that the MERPs analysis concluded that "the potential impact on ambient ozone concentrations is order of magnitude lower than the SIL. *Id.*, *citing* Rain Carbon TSD at 3-4 – 3-5 (Section 3.4: Assessment Approach and Results).

PM. Using PM emission rates from the Engineering Test as inputs into AERMOD, Trinity evaluated the impact of the proposed AELs on the PM NAAQS. Higgins Test. at 11, *citing* Rain Carbon TSD at 4-2 (Section 4.2.1: Dispersion Modeling Selection). 4-2 – 4-3 (Section 4.2.2: Source Characterization). The testing produced five mass emission rates for PM, each representing part of the start-up and associated pyroscrubber inlet temperature range. Higgins Test. at 11. Based on the Engineering Test report, each rate was paired with the associated stack flow rate and temperature. *Id.*

<u>Modeling Results</u>. Mr. Higgins testified that Trinity conducted modeling to find "a maximum number of hours that Kiln 1 and Kiln 2 could operate at emission rates realized during the Engineering Test that would demonstrate compliance with the applicable PM NAAQS." Higgins Test. at 12. He added that Trinity's modeling included conservative assumptions that ensured an appropriate margin for establishing an AEL ensuring noninterference with the PM NAAQS. First, the model assumed 720 hours of SMB operation for both kilns for each of five consecutive years, although Rain Carbon consistently experiences fewer annual hours of SMB events. Higgins Test. at 12. Second, Mr. Higgins testified that models may assume that "all 720 hours of SMB operation per kiln consisted of SMB events that lasted 24 hours." *Id.* Although the modeled maximum impact of SMB operations of a kiln is based on an average of the single days on which the highest impact occurred in each of the five modeled years, he testified that "[t]he probability that Rain Carbon would actually operate a kiln in SMB mode for 24 consecutive hours, in the worst possible day of the year, five years in a row, is extremely low." *Id.* Third, Trinity assumed that "emissions of PM_{10} and $PM_{2.5}$ are equal to PM." *Id.* at 13. Also, Trinity assumed "that the worst-case PM test runs . . . will occur at the time of day when dispersion is least favorable." *Id.*

VOM During Start-Up. Mr. Higgins testified that, under 2022 USEPA guidance, "the SIL for 8-hr Ozone is 1 parts per billion." Higgins Test at 13. Annualized from the Engineering Test, the VOM impact from SMB operations from Kilns 1 and 2 is 3.24 tons per year. *Id.* Trinity then compared that rate to applicable VOM MERPs for expected secondary impacts form the additional VOM emissions during SMB under the proposed AELs. "The results demonstrate that the expected secondary contribution of VOM during start-up from the proposed AEL is *1000 time* below the VOM SIL (0.001 ppb compared to the 1 ppb SIL)." *Id.* (emphasis in original). Trinity concluded that "no interference with the Ozone NAAQS is expected to occur as a result of the proposed VOM AEL." *Id*, *citing* Rain Carbon TSD at 3-4 – 3-5 (Section 3.4: Assessment Approach and Results).

PM During Start-Up. Trinity modeled the potential to exceed the $PM_{2.5}$ 24-hour SIL, the $PM_{2.5}$ Annual SIL, and the PM_{10} 24-hour SIL during start-up. Higgin Test. at 14. The model based start-up conditions on emissions data from the Engineering Test extrapolated over a 24-hour period, a period that conservatively represents the duration of a start-up. *Id*., n.13. Mr. Higgins testified that "[n]either the $PM_{2.5}$ Annual SIL, nor PM_{10} 24-hour SIL results showed any potential exceedances, even if operating in SMB mode for every hour for five consecutive years." Higgins Test. at 14, *citing* Rain Carbon TSD at 4-13 (Table 4-8: Preliminary SIL Results for Start-Up Events). Modeling did not further evaluate these SILs.

Because the $PM_{2.5}$ 24-hour SIL is more restrictive, Mr. Higgins' testimony continued to address only that SIL. He testified that "[t]he Kiln 1 model showed no impacts greater than the $PM_{2.5}$ 24-hours SIL. Higgins Test. at 14, *citing* Rain Carbon TSD at 4-13 (Table 4-8). He added that "[t]his remained true even when conservatively modeling the 720 hours per year SMB operation spread out over thirty 24-hour events." Higgins Test. at 14.

Mr. Higgins testified that "[t]he Kiln 2 model did show some small potential for impacts greater than the $PM_{2.5}$ 24-hour SIL. Higgins Test. at 14, *citing* Rain Carbon TSD at 4-13 (Table 4-8). He further testified that it is appropriate to apply a Monte Carlo statistical analysis to this model "to provide a more representative evaluation of whether the proposed PM AEL could actually have the potential to interfere with the NAAQS." Higgins Test. at 14. He added that the low probability of the modeled Kiln 2 results does not provide a modeled basis to conclude that the PM AEL would interfere with the PM NAAQS based on SMB emissions. *Id*.

Applied to modeled results for Kiln 2, the Monte Carlo analysis "randomly selected 30 days per year for each kiln (24 hours of SMB operation per day) over the course of five consecutive years and determined the maximum impact from those random selections." Higgins Test. at 15. The analysis repeated these steps to generate 1,000 random results, which were formed into a statistical distribution. *Id*. Mr. Higgins testified that "[t]he analysis determined that the chances of Kiln 2 having a potentially significant impact from operating 24 hours per day, 30 days per year is 8.3%, or approximately *once every 60 years*. *Id*. (emphasis in original). He added that this does not reflect the low probability that Kiln 2 would so operate in SMB mode. *Id*., *citing* Rain Carbon TSD at 4-18 – 4-20 (Section 4.3.1.1: Kiln 2 Only Start-Up Scenario).

Mr. Higgins testified that the model applied Monte Carlo analysis to both kilns operating simultaneously in start-up mode for 24 hours in SMB mode. Describing this scenario as "unlikely," he acknowledged that "a significant impact *could* occur." Higgins Test. at 15, n.14. He added that, "because it is rare that both kilns enter start-up simultaneously . . . these modeled results are not considered to represent a potential interference with the PM NAAQS." *Id*.

PM During Malfunction/Breakdown. Trinity used the same models to represent malfunction events as it had to assess start-up. Higgins Test. at 15, *citing* Rain Carbon TSD at 4-13 – 4-16 (Section 4.2.10.3: Malfunction Scenarios). Mr. Higgins testified that the model adjusted the duration to 12 hours to "better reflect" the duration of these events compared to start-ups. Higgins Test. at 15. The model also sought to simulate the randomness of malfunction/breakdown events by applying "half of the SMB emission rate across 24 hours/day." *Id*.

Mr. Higgins testified that "[t]he models for both kilns operating individually (*i.e.*, both kilns are not operating in SMB mode simultaneously) resulted in impacts that re all under the $PM_{2.5}$ 24-hour SIL." Higgins Test. at 15; *see* Rain Carbon TSD at 4-16 (Table 4-12: Preliminary SIL Results for Malfunction Events). He added that, although a Monte Carlo analysis could be applied to these model results, "it is not necessary to do so when there is no possibility of exceeding the SIL (even when considering operation in SMB mode 24 hours per day, every day, for five consecutive years)." *Id*. at 15-16.

To determine the probability of a significant impact if Rain Carbon operates in malfunction mode for 720 hours per year per kiln, Trinity performed a Monte Carlo analysis to the models for both kilns operating concurrently and simultaneously experiencing a malfunction. Higgins Test. at 16, *citing* Rain Carbon TSD at 4-20 (Section 4.3.1.2: Kiln 1 & Kiln 2 Malfunction Scenario). He argued that this approach is conservative because of the low probability that both kilns would experience malfunctions at the same time. Higgins Test. at 16. Applying the Monte Carlo analysis to the modeling results "found a 4.5% probability of both kilns experiencing a 12-hour SMB event on the same day in five consecutive years in a combination that results in an impact greater than the SIL. In other words, a SIL impact might occur approximately *once in every 112 years*." *Id*. (emphasis in original). Mr. Higgins concluded that granting up to 720 hours of SMB operating time per kiln "will have an extremely low chance of resulting in a significant impact on the ambient air." *Id*.

Technical Feasibility and Economic Reasonableness

Rain Carbon argues that "there is no technically feasible or economically reasonable method to ensure compliance with the opacity and VOM standard during start-up, or to ensure compliance with the PM standard during start-up, malfunction or breakdown events." Rain Carbon SR at 1-2, *see id*. at 22; Gares Test. at 17.

Rain Carbon stresses that it does not request alternative standards for opacity and VOM during malfunction and breakdown "because the inherently higher temperatures in the kilns during such periods negate the need for relief." Rain Carbon SR at 24; *see* Gares Test. at 14-17.

Region and Source Affected.

Rain Carbon states that its proposal applies only to its Robinson facility. Rain Carbon SR at 24. It asserts that the area subject to its proposal is Crawford County, Illinois, "which is not an area designated as Nonattainment or Maintenance for any NAAQS, including applicable PM and Ozone NAAQS." *Id*., *citing* 40 CFR 81.314.

Technical Feasibility.

Rain Carbon argues that during SMB events it complies with work practice standards, which "address the technical infeasibility of controlling the facility's emissions during SMB while ensuring that such are emissions are minimized and documented." Rain Carbon SR at 24.

Rain Carbon reviewed USEPA's RACT/BACT/LAER Clearinghouse but found no pollution control device employed at similar facilities "that will ensure compliance at all times with the applicable opacity and VOM limits during start-up and PM limits during SMB." Rain Carbon SR at 25. Rain Carbon concluded that it may be technically feasible to install new additional natural gas burners; however, it argues that these burners are integral to operating the kilns and are not pollution control equipment. *Id*. Rain Carbon adds that it "does not know the extent to which such new burners would control opacity and emission of PM and VOM." *Id*.

Rain Carbon adds that, for two reasons, these burners would not eliminate the need for the requested relief. First, "additional burners would not eliminate time periods when the pyroscrubbers operate below 1800ºF." Rain Carbon SR at 25. Instead, it reduces the start-up period or the amount of time necessary for the pyroscrubber to return to 1800ºF after a breakdown or malfunction. Also, because the estimated capital cost of installing new burners for both kilns is $10,027,718, Rain Carbon concluded that the option is not economically reasonable. *Id*.

<u>Economic Reasonableness.</u>

Rain Carbon asserts that the primary way for it to control opacity and reduce emissions of PM and VOM during SMB events "is to maintain a minimum operating temperature of 1800ºF at its pyroscrubbers." Rain Carbon SR at 24. Rain Carbon argues that it is implementing measures such as increasing the burner capacity of the kilns "that will help ensure that the operating temperature increase more quickly following SMB events and, thus, will aid in controlling opacity and emissions of PM and VOM." *Id.* The estimated cost of these measures is $1,290,000. *Id*. at 25.

<u>IEPA's Request for More Information</u>

<u>Opacity.</u>

In its October 23, 2023 comment, IEPA argued that the term "non-consecutive" in proposed subsection (e)(1) "is not necessary." PC5 at 10. Although the term intends to acknowledge that there may be time between opacity readings, IEPA states that this is inherent in USEPA Test Method 9, which provides that sets of consecutive observations "need not be consecutive in time." *Id*. IEPA adds that it is "not aware of any other regulations, state or federal, that contain language that includes the term 'non-consecutive' as a clarification." *Id*.

In the same comment, IEPA argued that "Rain Carbon did not sufficiently demonstrate why a 3-hour averaging period would be necessary to comply with the opacity standard." PC5 at 11. Citing Rain Carbon's TSD, IEPA asserts that "opacity readings were only in excess of 30% for approximately 11 minutes, and never exceeded 50%." *Id., citing* Rain Carbon TSD, Source Emissions Test Report Appendix C-3 (VE Field Data). While IEPA acknowledges that this is longer than the eight minutes allowed by 35 Ill. Adm. Code 212.123(b), "a 3-hour average is likely not necessary, as the average for that 1-hour block of testing was only 13.9%, the opacity readings declined sharply after the first 30 minutes of observations, and no readings greater than 5% are recorded for the rest of the testing that was conducted." PC5 at 11. IEPA concluded that Rain Carbon should justify the length of the proposed averaging period or amend its proposal. *Id*.; *see* PC 11 at 2.

Modeling Approach.

Additionally, IEPA argued that Rain Carbon's modeling demonstration "does not adequately represent a 'worst-case' scenario analysis, as the greatest hourly emission rates were not used as the basis." PC5 at 9. IEPA further argued that "[t]his modeling approach is novel in the context of assessing impact on a NAAQS, and not likely determinative in evaluating whether emissions during SMB events would result in a NAAQS violation." *Id*. IEPA recommended modeling based on worst-case emissions from data obtained through start-up testing "rather than just excess emissions beyond the applicable standards." *Id*.; *see* PC 11 at 2. IEPA reported that it had communicated with Rain Carbon to address alternative modeling strategies. PC5 at 9.

VOM During Start-Up.

IEPA also argued that testing to support the AEL does not indicate that the requested relief is necessary. PC5 at 9-10. IEPA stresses that the maximum emission rate measured during testing was 2.41 lb/hr, "well within the applicable standard of 8 lb/hr," and declined over the course of testing. *Id*. at 10.

IEPA concluded that, if testing accurately represented total hourly VOM emissions, then "there is no need for relief and thus no need for further information." PC5 at 10. If it is not accurate or if Rain Carbon wishes to continue pursuing AELs, IEPA sought "information as to the representative and worst-case emissions of VOM so that the air quality impacts can be assessed properly." *Id*.; *see* PC 11 at 2. IEPA added that "it would also be appropriate for Rain Carbon to provide a justification for the requested 24-hour VOM emissions averaging period." PC5 at 10; *see* PC 11 at 2.

PM During Malfunction/Breakdown.

Lastly, IEPA argues that neither the proposal nor testimony justified the 720 hours per kiln. PC5 at 9. "Rain Carbon only argues that because their submitted modeling demonstrates a lack of NAAQS exceedances under the proposed language, 720 hours is permissible." *Id*. IEPA stated that it required an updated modeling demonstration, and that demonstration must address the proposed AEL timeframe of 720 hours." *Id*.; *see* PC 11 at 2.

Rain Carbon's Response to IEPA's Request

Opacity.

In response to IEPA's argument that "non-consecutive" is not necessary, Rain Carbon agrees that the term "non-consecutive" is not necessary and removes it from its revised proposed Section 212.124(e). PC14 at 3-4; Rain Carbon Rev. Prop. at 5.

Rain Carbon stressed that "[o]pacity levels are highest shortly after green coke is first introduced into the kiln, when kiln temperature (and, thus, the inlet temperature to the pyroscrubber) is lowest." PC14 at 4; PC20 at 4. Although "[g]reen coke is typically introduced into the kiln after the inlet temperature reaches approximately 400 ºF," it was first introduced during the July 2023 engineering study when the inlet temperature to the kiln measured approximately 600 ºF. PC14 at 4, *citing* Rain Carbon SR at 12, Rain Carbon TSD at 2-1; *see* PC 20 at 4. Rain Carbon argues that, if the study had observed opacity at lower temperatures typical of startup, "even higher opacity readings for a longer duration would have been expected." PC14 at 4; *see* PC20 at 4. While Rain Carbon acknowledges that opacity observations exceeding 30 percent "were not observed for a 3-hour average, the proposed averaging period remains necessary because future startup conditions will include periods when green coke is introduced into the kiln at temperatures far lower than those observed during the July 2023 engineering study." *Id*. at 4-5.

Rain Carbon reports that it discussed this reasoning with IEPA in November 2023. It believes that IEPA found that this reasoning supported its original requested relief. PC14 at 5. Rain Carbon asserts that IEPA "did not suggest any changes to Rain Carbon's proposed AEL for opacity," and it has not proposed any substantive change to its proposed opacity limitations. *Id*.

<u>Modeling Approach.</u>

In response to IEPA's request for modeling based on worst-case emissions from data obtained through start-up testing, Rain Carbon reports that it completed supplemental modeling to respond to IEPA. PC14 at 13, *citing* Supp. Rain Carbon TSD, Higgins Test. 12. Rain Carbon intended that the supplemental modeling would assure that the prevised proposed AELs represent a worst-case analysis for SMB events. PC14 at 13. Rain Carbon reports that, since IEPA received supplemental modeling in January 2024, it "has not identified any necessary revisions to that modeling or asked that Rain Carbon conduct any additional modeling." *Id*. Rain Carbon concludes that it has satisfactorily addressed EIEPA's comments on this point. *Id*.

<u>VOM During Start-Up.</u>

Rain Carbon's response proposed a more stringent standard providing that "compliance with the VOM emission standard in Section 215.301 during any period of startup at Kiln 1 or Kiln 2 may be determined over a 12-hour averaging period (reduced from the 24-hour averaging period initially proposed)." PC14 at 9; Exh. 1 at 14-15; *see* PC20 at 7.

Rain Carbon argues that the 2023 engineering study supports the need for a 12-hour averaging period. In that study, two conservative measures underestimated potential VOM emission during startup. PC14 at 9, *citing* Rain Carbon TSD at 3-1 – 3-5. First, reporting VOM results "as carbon" and not "as propane" as initially reported "entails an approximate three-fold increase in measured VOM emissions during the July 2023 engineering study, with a maximum

VOM concentrations during the startup period of 7.23 lb/hr." PC14 at 9-10; *see* Higgins Test. 2 at 2; Supp. Rain Carbon TSD at 3-1 – 3-2; PC20 at 7. Also, this approach significantly increased "the annualized VOM emission rate use to compare the worst-case VOM emissions during startup to the Modeled Emission Rates for Precursors (MERPs) for the secondary formation of ozone form precursor pollutants (in this Case, VOM)." Higgins Test. 2 at 2.

Second, the engineering study occurred during a startup with higher than typical pyroscrubber inlet temperatures, lowering the maximum measured VOM concentrations compared to potential occurrences. PC14 at 10; *see* PC20 at 7. If feed had begun with inlet pyroscrubber temperatures closer to 400 ºF, Rain Carbon asserts that VOM concentrations would likely have been two to three times higher and closer to14-21 lb/hr. PC14 at 10; *see* Supp. Rain Carbon TSD at 3-3 (Figure 3-2).

Rain Carbon argues that, although VOM concentrations are projected to fall below the 8 lb/hr limit when the pyroscrubber inlet reaches sufficient temperature, "substantial time is need for the average VOM concentration during startup" to comply with that limit. PC14 at 11. Rain Carbon applied the correlation curve derived from VOM testing during the 2023 engineering study to obtain a representation of the likely worst-case VOM emissions during startup. *Id.* at 11-12. Rain Carbon argues that, "because of the high VOM concentrations experienced during the initial hours of startup, a substantial number of additional hours were necessary before the average VOM emission rate came into compliance with the 8 lb/hr regulatory limit." *Id.* at 12. It concludes that its proposed 12-hour is "both necessary and supported by available data." *Id.; see* PC20 at 7-8.

Mr. Higgins' supplemental testimony states that the more conservative emissions used in the supplemental TSD demonstrate that "the potential contribution to ozone from VOM emissions from Rain Carbon's kilns during start-up is orders of magnitude less than what constitutes a significant contribution." Higgins Test. 2 at 2. He argues that the modeling confirms that the proposed 12-hours averaging period will not interfere with the ozone NAAQS under Section 110(l) of the CAA. *Id.* at 3; *see* PC20 at 8.

PM During Malfunction/Breakdown.

In response to IEPA's request for an updated modeling demonstration addressing the proposed AEL timeframe of 720 hours, Rain Carbon responded that it proposes "a revised PM AEL that allows Kiln 1 or Kiln 2 to emit PM in excess of the allowable emission rates under Section 212.322(c) for up to 300 hours per kiln per year during periods of startup, malfunction, and breakdown when the temperature at the pyroscrubber servicing the kiln in below 1800 ºF." PC14 at 5.

Rain Carbon argues that historic and potential future operations justify the requested relief. From the past ten years, Rain Carbon used representative years to determine "the total number of hours Kiln 1 and Kiln 2 operated at temperatures below 1800 ºF with coke in the kiln (on a 3-hour average as measured at the inlet to the pyroscrubber), which includes periods of both startup and malfunction/breakdown." PC14 at 6. Rain Carbon then "extrapolated actual historic SMB hours to account for the possibility of longer startup events and longer malfunction breakdown events." *Id*. "[T]o project what the potential SMB hours might have been had the kilns operated year-round, Rain Carbon normalized the values for a full year." *Id*. at 7. Based on these historic operations, Rain Carbon projects that "the average number of hours that Kiln 1 and Kiln 2 may experience startup or malfunction/breakdown events if operated year-round in the future is approximately 300 hours per kiln per year." *Id*. Rain Carbon relied on this projection for its revised proposed AEL. *Id.; see* PC20 at 6.

In its questions pre-filed for the third hearing, the AG noted that Rain Carbon's calculation of its AEL for PM included a variable for "Malfunction Remainder Hours" defined a "the difference between 24 hours and the actual duration of each malfunction/breakdown event." AG Questions at 2, *citing* PC4 at 5-6. The AG notes Rain Carbon's statement that malfunction and breakdowns typically occur for shorter periods of 4-5 hours. AG Questions at 2, *citing* Rain Carbon SR. The AG asked Rain Carbon why these malfunction remainder hours should be defined as "the difference between 24 hours and the actual duration of each malfunction or breakdown event rather than the difference between 4-5 hours and the actual duration of each malfunction or breakdown event." AG Questions at 2.

Mr. Higgins that malfunctions and breakdown can last up to 24 hours and testified that Rain Carbon used the correct approach "to ensure that the proposed limit accommodates potential future malfunction and breakdown events." Tr.3 at 31. He added that Rain Carbon's permit allows it to operate up to 24 hours while the temperature at the pyroscrubber inlet is below 1800 ºF on a three-hour rolling average. *Id*. at 31-32.

Rain Carbon reports that IEPA also requested that it justify including both startup and malfunction/breakdown in the 300 hours of relief in the revised proposed AEL for PM. PC14 at 8. Rain Carbon states that "PM emissions are generally greater at lower pyroscrubber inlet temperatures, which is more often experienced during startup than during malfunction/breakdown events." *Id.; see* PC20 at 6. Rain Carbon argues that emissions during startup are generally higher than during malfunction/breakdown events because startups on average occur for longer durations, generally have more gradual temperature increases, and generally begin at lower temperatures. Rain Carbon concludes that including both startup and malfunction/breakdown events "does not reduce the overall stringency of the proposed AEL for PM." PC14 at 8, *citing* Revised Rain Carbon TSD at 4-2 – 4-4; *see* PC20 at 6.

In its second supplemental response, Rain Carbon noted that IEPA had requested sample pyroscrubber data from malfunction and breakdown events to support including those events with startup events in the revised proposed AELs. PC17 at 1. Rain Carbon stressed that during startup events, it introduces green coke into the kilns at approximately 400 ºF. "Similar lower temperatures are not generally experienced during malfunction/breakdown events because the kilns are kept in a 'slow roll' to maintain temperature in the kiln." *Id* at 1-2. Rain Carbon submitted a summary of typical malfunction/breakdown events from 2020. *Id*. at 2 (Table 1). Rain Carbon argues that these data demonstrate that "malfunction/breakdown events are of shorter duration and more narrow temperature range as compared to startup events." *Id*. It concludes that including both types of events in the total hours of relief in the proposed AEL. "does not reduce the stringency" of its proposal. *Id*.

Rain Carbon modeled the impact of 300 hours per year of startup emissions to evaluate the impact of its proposal on the PM_{10} 24-hours NAAQS, and the $PM_{2.5}$ 24-hour and Annual NAAQS. PC14 at 8. Rain Carbon concluded that its revised proposal "will not interfere with any NAAQS in accordance with Section 110(l)." *Id*., *citing* Supp. Rain Carbon TSD; *see* PC20 at 6-7.

IEPA Testimony

Before the second hearing, IEPA generally requested "emissions data from previous startup at the affected sources that would indicate what worst-case emissions could be expected during SSM events, and modeling demonstrations or monitoring data that would demonstrate that these events would not interfere with maintenance of the applicable NAAQS. IEPA Test. at 2.

In its pre-filed testimony, IEPA reports that "Rain Carbon provided startup data from emissions testing, to the extent that it was available, a modeling report, and modeling files to the Agency. IEPA Test. at 3. IEPA notes that Rain Carbon's most recent filing included this startup data (*see* PC14), and its supplemental TSD included an additional modeling report. IEPA Test. at 3.

IEPA notes that Rain Carbon supported its original proposal by performing emissions testing during a startup of its Kiln 1 and then performing modeling based on that testing. IEPA Test. at 9. To address the extent to which the methodology represented a worst-case analysis, IEPA requested that Rain Carbon perform modeling based on total worst-case emissions from its kilns. *Id*.; *see* PC5 at 8-11. After discussions with IEPA, Rain Carbon "developed an updated modeling technology." IEPA Test. at 10.

IEPA reports that Rain Carbon's updated modeling used "maximum emissions determined from the startup testing as the SSM worst-case emissions scenario" using procedures IEPA considers appropriate. IEPA Test. at 10. IEPA "agrees that the calculated maximum emission rate is sufficiently conservative for use as an input for the modeling demonstration." *Id*. at 10-11.

To model the potential for ozone NAAQS nonattainment from VOM emission scenarios, IEPA states that Rain Carbon relied on the concept of MERPs developed by USEPA. IEPA Test. at 12. IEPA reports that Rain Carbon conservatively calculated a VOM emission rate form its kilns. Comparing this rate to the appropriate MERP value, "Rain Carbon effectively demonstrates that the contribution from the kilns' startup VOM emissions to the potential for ozone NAAQS exceedance is very small, even given very conservative assumptions." *Id*.

Rain Carbon performed dispersion modeling analysis based on the maximum interpolated PM emission rate form the kilns of 57.1 lbs/hr. IEPA Test. at 12. Based on its methodology, Rain Carbon concluded that "the modeled first high ambient concentration from the Kilns SSM events are no higher than 0.1% of the relevant NAAQS ambient concentrations for each of the PM_{10} 24-hour, $PM_{2.5}$ 24-hour, and $PM_{2.5}$ annual NAAQS." *Id*. at 13.

IEPA had questioned using modeling to support Rain Carbon's proposed alternative PM standard of 720 hours per kiln per year. IEPA Test. at 9; *see* PC 5 at 9. IEPA requested that Rain Carbon "consider whether fewer allowable annual operating hours in excess of the PM standard were feasible based on past operating data, and further requested that Rain Carbon justify the number of allowable excess hours in the updated modeling." IEPA Test. at 9. Rain Carbon responded by reducing "the annual allowable excess PM hours in its proposal to 300 hours per kiln. *Id*. at 10; *see* PC14 at 6-7, PC20 at 5. IEPA reports that Rain Carbon used operating record to develop this voluntary reduction as it had requested. *Id*.

IEPA questioned VOM emission rates from startup emissions testing. IEPA noted that "the maximum rate from the original TSD for all test runs performed was 2.41 lbs/hr," below the standard of 8 lbs/hr in 35 Ill. Adm. Code 215.301. IEPA Test at 9; *see* PC5 at 9-10. IEPA argued that this indicated "no startup relief was necessary." IEPA Test. at 9.

IEPA reports that "Rain Carbon similarly used data extrapolation to estimate the maximum VOM emission rate from the startup testing measured data." IEPA Test. at 11. Rain Carbon obtained maximum VOM emission rate of 4.82 lbs/hr. *Id.; see* PC20 at 6. IEPA recommended that Rain Carbon convert this from "as propane" to "as carbon" to estimate the maximum potential VOM emissions from startup. Doing so increases the maximum rate to 14.47 lbs.hr. IEPA Test. At 11. IEPA asserts that "[u]sing this value as the maximum emission rate in the modeling is conservative, and it eliminates the Agency's prior concern that the startup testing data reported to the Agency suggests that no startup VOM relief is necessary." *Id*.

IEPA also requested that Rain Carbon provide technical justification for its proposed 24-hour averaging period for VOM. *Id*.; *see* PC5 at 10. IEPA requested that "Rain Carbon use prior operating data to determine what minimum averaging period would be feasible for the rolling VOM emission rate average to comply with the 8 lb/hr standard." IEPA Test. at 10. Rain Carbon responded by reducing the averaging period in the VOM AEL to 12 hours. *Id*. IEPA reports that Rain Carbon used operating record to develop this voluntary reduction as it had requested. *Id*.

Finally, Rain Carbon addressed IEPA's questions about justifying the three-hour averaging period to comply with the opacity standard at 35 Ill. Adm. Code 212.123(a). IEPA Test. at 14; *see* PC5 at 11; PC20 at 5. Rain Carbon asserted that, "because the maximum opacity value observed from the startup emissions testing occurred at a Kiln temperature of approximately 600 ºF, there is potential for higher values closer to the 400 ºF temperature at which green coke is permitted to be introduced to the Kilns." IEPA Test. At 14. IEPA states that the "potential for opacity values greater than 50% at the beginning of startup periods necessitates an averaging period of greater than one or two hours." *Id*.

IEPA concludes based on the additional technical support Rain Carbon submitted that it "does not object to adoption of the rule proposal as set forth in Rain Carbon's March 15, 2024 filing with the Board." IEPA Test. at 14; *see* PC20 at 5.

<u>Questions at the Third Hearing</u>

In its questions pre-filed for the third hearing, the AG noted that USEPA had strengthened the PM NAAQS, "lowering the primary annual $PM_{2.5}$ standard down to 9 µg/m." AG Questions at 1 (¶3), *citing* 89 Fed. Reg. 16202 (Mar. 6, 2024). The AG asked whether this new, more stringent PM NAAQS affects any determination IEPA made in its testimony "that the proposed AEL will not interfere with any NAAQS, either now or in the future." AG Questions at 1 (¶3).

Mr. Davis testified that IEPA had considered the revised $PM_{2.5}$ NAAQS when evaluating impacts of the AELs proposed in this subdocket. He testified that "[t]he new standard should not impact any determinations that have been conveyed to the Board." Tr.3 at 14. He added that states are assessing their obligations under the revised NAAQS. While it may be necessary to revise Illinois' rules to meet this or any later NAAQS revision, "it should not have any impact on the current proceeding." *Id*.

Opacity.

In its questions pre-filed for the third hearing, the AG noted IEPA's comment that Rain Carbon had not sufficiently demonstrated why a three-hour averaging period would be necessary to comply with the opacity standard. AG Questions 2 at 2, citing PC5 at 11. Although Rain Carbon noted the difference between typical startup conditions and conditions during its July 2023 engineering study, the AG states that Rain Carbon had not provided any other demonstration. The AG asked Rain Carbon whether it believed that additional justification is need for its proposal AEL for opacity. AG Questions at 2.

Mr. Higgins testified that additional demonstration was not needed to support Rain Carbon's proposal. Tr.3 at 28. He stated that "startups can begin at temperatures lower than what occurred during the engineering study." Because opacity levels are higher at those lower temperatures, he cited Rain Carbon's supplemental TSD and stated that it may take hours to comply with the opacity standard. He concluded that the proposed three-hour averaging period "is necessary to accommodate reasonably likely future startup scenarios." *Id*. at 28-29.

VOM.

In its questions pre-filed for the third hearing, the AG noted that Rain Carbon's July 2023 engineering study differed from typical operating conditions. AG Questions 2 at 2. The AG asked Rain Carbon to discuss why it conducted the study under atypical conditions. The AG also asked Rain Carbon whether the differences between the conditions of the July 2023 engineering study and typical operating conditions justified performing a new study under typical conditions. If not, the AG asked Rain Carbon to explain. *Id*.

Mr. Higgins testified that it is not correct to characterize the July 2023 engineering test as atypical. Tr.3 at 29. He asserted that it "was conducted under a representative startup." *Id*. Citing Rain Carbon's supplemental TSD, he stated that "the data collected during the engineering test was sufficient to develop a strong correlation between temperature and volatile organic matter emissions. That allowed extrapolation of that data to determine representative emission rated at 400 degrees Fahrenheit." *Id*. He added that the data was also sufficient to develop “a strong correlations between temperature and particulate matter that allowed interpolation between known emission rates at known temperatures to determine representative emission rates between 1370 and 1800 degrees Fahrenheit.” *Id*. at 29-30. He argued that these correlations allowed Rain Carbon to use “emissions data from one representative startup to determine emissions that would occur during all reasonably likely startup events.” *Id*. at 30. He concluded that “further testing is not necessary to support any of the proposed alternative emissions limits.” *Id*.

Post-Hearing Comments

Rain Carbon (PC20).

Rain Carbon states that before the first hearing it began “a series of productive technical discussions” with IEPA to address its comments on the proposed AELs. PC20 at 2, *citing* PC5. These discussions led to a revised proposal and a supplemental TSD that refined modeling based on the July 2023 engineering study. PC20 at 3. Rain Carbon argues that IEPA did not request that it perform revised modeling or any additional modeling. It adds that IEPA determined that Rain Carbon had sufficiently demonstrate that the revised proposal would not interfere with the NAAQS. *Id*., *citing* IEPA Test. at 10. Rain Carbon stresses Mr. Davis’ testimony that IEPA does not object to adoption of the proposal in Rain Carbon’s March 15, 2024 filing with the Board. PC20 at 3, *citing* IEPA Test. at 14.

Rain Carbon concludes by asserting that the record supports it revised proposed AELs and requesting that the Board submit the proposal for second-notice review. PC20 at 1-2, ,11.

AG (PC21).

The AG notes that Rain Carbon revised its proposed AEL to allow exceeding the PM emission limit for up to 300 hours per kiln per year. PC21 at 5, *citing* PC14 at 5-8. The AG questions the assumptions on which Rain Carbon based its revised proposal. PC21 at 5.

First, the AG notes that, in reviewing historic operation sand SMB events at its facility, Rain Carbon emphasized representative years in which its kilns operated 50% or more of the year. PC21 at 5. By doing so, the AG argues that “Rain Carbon treat 35% of the last ten years of operations as outlier data.” *Id*. The AG states that “fewer operating hours presumably means fewer SMB events. By excluding these purported non-representative years, the average SMB hours per kiln increase and therefore appears to justify a more lenient AEL.” *Id*. The AG concludes that “Rain Carbon’s AEL for PM is unsupported and should not be adopted as proposed.” *Id*. The AG indicates that AELs consistent with average SMB hours during representative years would be 94.29 hours for kiln 1 and 82.33 hours for kiln 2. *Id*.

Second, the AG notes that Rain Carbon considered “the number of hours the facility could exceed the PM emission limits during SMB events under its CAAPP permit.” PC21 at 5. Rain Carbon stated that its permit had allowed it to exceed PM emission limitation “during the entirety of a malfunction or breakdown event, and up to 24 hours during a startup event.” PC21 at 5, *citing* PC14 at 5-8. The AG states that “Rain Carbon adds in the difference between each actual SMB event and 24 hours." PC21 at 5. The AG provides an example that, if a malfunction event took five hours to resolve, then Rain Carbon adds the remaining 19 hours to remainder hours. *Id*. at 5-6. The AG argues that "[t]he effect of this approach is to treat each SMB event as a worst-case scenario." PC 21 at 6. The AG questions relying on a baseline of 24 hours because Rain Carbon testified that it typically resolves malfunction events in 4-5 hours and its proposal shows that the average malfunction or breakdown event lasted 5.85 hours. *Id*., *citing* PC14 at 2; Rain Carbon SR at 15. The AG concludes that "Rain Carbon's AEL for PM is unsupported and should not be adopted as proposed." PC21 at 6. The AG indicates that, even if Rain Carbon requested AELs consistent "average SMB hours during representative years plus remainder hours, the averages would 207.42 hours and 251 hours for Kilns 1 and 2, respectively." *Id*.

Third, the AG states that Rain Carbon supported its proposed AELs "by estimating how many additional SMB hours the kilns would have if they operated year-round." PC21 at 6. The AG notes that on average kiln 1 operated 7,422 hours per year, and kiln 2 operated 6,329 hours per year. *Id*. The AG argues that "[e]stimating additional hours as if the kilns operated 8,760 hours further pads the company's proposed AEL and appears to justify a more lenient AEL." *Id*. The AG concludes that "Rain Carbon's AEL for PM is unsupported and should not be adopted as proposed." *Id*.

<u>Rain Carbon (PC26).</u>

As noted above under "Preliminary Matters," the Board granted Rain Carbon's unopposed motion for leave to file additional comment and accepted its comment into the record. *Supra* <u>at 7-8. Rain Carbon's comment addresses assertions about its proposal made in the AG's post-hearing comment. PC26 at 1; *see* PC21 at 5-6.</u>

Rain Carbon contends that the AG disagrees with its approach to developing its proposed PM AEL based on 300 hours per kiln per year. PC26 at 2. Rain Carbon asserts that it addressed the AG's comments at the third hearing. *Id*., *citing* Tr. 3 at 31-33. It adds that its proposal is supported by the record in this proceeding, consistent with the requirements of the Act, and the result of extensive communication with IEPA. *Id*. at 1.

Rain Carbon argues that the AG "misrepresents the data used by Rain Carbon to carefully develop an appropriate AEL for PM. PC26 at 2, *citing* PC14 at 5-8. Rain Carbon asserts that its proposal is not required by any authority to mirror historic operations and that its followed IEPA's recommendation to use operating records to support if proposed AEL. PC26 at 3, *citing* IEPA Test. At 10.

First, Rain Carbon addresses relying on representative years in which its kilns operated 50% or more of the year. PC26 at 3; *see* PC21 at 5. Rain Carbon stresses that its operating permit allows it to operate 8760 hours per year. It argues that years with less than 50% operation do not reflect the number of SMB hours that could occur and would results in an unnecessary and arbitrary limit on its facility. PC26 at 3. Rain Carbon stresses that its modeling demonstrates that its revised proposal will not interfere with the NAAQS. *Id*. at 4. It argues that the AG has cited no authority for its position, which could prevent it from operations for its entire permitted 8760 hours per year. *Id*. at 3. On this point, Rain Carbon concludes that it is neither necessary nor appropriate to place any further limit on its proposed limit of 300 hours per kiln per year. *Id*. at 4.

Second, Rain Carbon addresses using remainder hours. It notes the AG's characterization of these calculations as "an improper extrapolation of historic data to 'treat each SMB event as a worst-case scenario'" justifying a more lenient AEL. PC26 at 4. Rain Carbon asserts that IEPA required evaluating worst-case scenarios to model the impact of proposed AELs on ambient air quality. *Id*., *citing* PC5 at 9. It argues that its modeling demonstrates that its proposal is protective of air quality. PC26 at 4. Rain Carbon argues that the AG seeks arbitrarily to impose a more stringent limit without justifying it. *Id*. at 5.

Rain Carbon concludes by stressing that IEPA does not oppose adopting its proposal and requesting that the Board submit it to second-notice review. PC26 at 5.

<u>Board Findings</u>

The Board is not persuaded that the AG's questions about Rain Carbon's proposal cast significant doubt on its request for a 300-hour AEL. While the AG contends that Rain Carbon's AEL for PM is unsupported, the Board finds that Rain Carbon has shown that the 300 hour per kiln limit is justified by its worst-case scenario modeling. As IEPA noted in its testimony, the potential for ozone NAAQS exceedance from VOM emissions from the kilns' startup is very small. IEPA Test. at 12.

Upon its own review, the Board agrees with IEPA and finds that the proposal meets USEPA's seven criteria for AELs, is technically feasible and economically reasonable, and does not harm human health or the environment. The Board includes Rain Carbon's revised proposal in its proposal for second-notice.

<u>Dynegy and MWG</u>

Dynegy and MWG propose AELs for periods of SMB at their remaining coal-fired boilers. The proposal includes an alternative averaging period and a limit on the maximum opacity level to allow operations exceeding the applicable opacity level during SMB events. Dynegy and MWG report that they presented the same proposal in the main docket R23-18. Dynegy/MWG SR at 1.

The Board first discusses the affected units, then the applicable standards, then Dynegy and MWG's proposal, then USEPA's seven criteria for AELs, then the projected environmental impact of the proposal, then the Section 110(I) anti-backsliding demonstration, then human health and the environment, then technical feasibility and economic reasonableness, then IEPA's comment requesting additional information, then Dynegy and MWG's response, then IEPA's testimony, and finally post-hearing comments.

<u>Affected Units</u>

In the following subsections of the opinion, the Board reviews the record on the four affected Dynegy and MWG units.

The AG asked both Dynegy and MWG, since the joint proposal applies to a subset of Illinois plants, why it proposes a generally-applicable rule and not site-specific rules. AG Questions at 2 (¶9), 3 (¶11).

Ms. Vodopivec testified that Dynegy and MWG filed their joint proposal in this sub-docket at the direction of the Board in its July 6, 2023 order. Tr.1 at 112. She added that, because the main docket R23-18 had addressed the joint proposal, Dynegy and MWG agreed that the sub-docket is a proper forum in which to submit it. *Id*. Ms. Shealey affirmed her response for MWG. *Id*.

Permits Generally.

Dynegy and MWG assert that the CAAPP permits for the affected units include opacity standards under the Illinois rules and also address opacity during SMB events. Dynegy/MWG SR at 9, citing Exh. 3 at 7; Exh. 4 at 3-6.

Dynegy and MWG also assert that the stations' CAAPP permits also include a CAM plan. Dynegy/MWG SR at 9, *citing* Exh. 3 (Vodopivec testimony), Exh. A at 81-88 (Baldwin), Exh. B at 92-97 (Kincaid), Exh. C at 79-83 (Newton); Exh. 4 (Shealey testimony), Exh. A at 100-104 (Powerton). They characterize the purpose of a CAM as providing "a reasonable assurance of compliance with applicable requirements under the Clean Air Act (CAA) for large emission units that rely on pollution control device equipment to achieve compliance." Dynegy/MWG SR at 9 (citing 1998 USEPA guidance).

Baldwin.

Dynegy operates the Baldwin Energy Complex, which is located at 10901 Baldwin Road in Baldwin, Randolph County. Dynegy/MWG SR at 7, Exh. 3 at 4. "Dynegy currently plans to cease operating and retire the Baldwin Affected Units on or before December 31, 2025." *Id*. at 7, Exh. 3 at 5.

At Baldwin, Dynegy operates two permitted coal fired boilers designated as Boilers 1 and 2, which are served by separate stacks. Dynegy/MWG SR at 7, Exh. 3 at 4. "In addition to coal, these units fire fuel oil as auxiliary fuel during startup and for flame stabilization, and they have the capability to fire a combination of coal and/or fuel oil as their principal fuel." Dynegy/MWG SR Exh. 3 at 4. Dynegy uses COMS to monitor opacity emissions from the stacks. *Id*. at 7.

Under its CAAPP permit, the affected units at Baldwin are subject to a 30% opacity limit based on 35 Ill. Adm. Code 212.123(a) with specified exceptions. Dynegy/MWG SR at 10, Exh. 3 at 7-10, Exh. A at 16. The permit also includes SMB provisions in Conditions 7.1.3(b) and (c). Dynegy/MWG SR at 11, Exh. 3 at 8-10, Exh. A at 49-50.

At Baldwin, Dynegy controls emission from the affected units through various measures, including ESPs and baghouses to control PM emissions, OFA and SCR systems to control NO_x emissions; FGD systems to control SO_2 emissions; and ACI systems or burning refined coal to control mercury emissions. Dynegy/MWG SR at 7-8, Exh. 3 at 5; *see* Exh. 8 at 1; Tr.1 at 123-24. At Baldwin, Dynegy also uses baghouses to control PM emissions and FGD systems to control SO_2 emissions. *Id*. at 8, Exh. 3 at 5. Ms. Vodopivec testified that baghouses at Baldwin have been effective in preventing exceedances of the opacity limit, although she added that "there's no guarantee that they will be effective for those periods of startup and breakdown and malfunction." Tr.1 at 105.

Kincaid.

Dynegy operates the Kincaid Power Station, which is located on Route 104 four miles west of Kincaid, Christian County. Dynegy/MWG SR at 7; Exh. 3 at 4. "Dynegy currently plans to cease operating and retire the Kincaid Affected Units on or before December 31, 2025." *Id*. at 7, Exh. 3 at 6.

At Kincaid, Dynegy operates two permitted coal fired boilers designated as Boilers 1 and 2, which are served by a single stack. Dynegy/MWG SR at 7, Exh. 3 at 4. "In addition to coal, "these units fire natural gas during startup and for flame stabilization." Dynegy/MWG SR Exh. 3 at 5. Dynegy uses COMS to monitor opacity emissions form the stacks. *Id*. at 7.

Under its CAAPP permit, the affected units at Kincaid are subject to a 30% opacity limit based on 35 Ill. Adm. Code 212.123(a) with specified exceptions. Dynegy/MWG SR at 10, Exh. 3 at 7-10, Exh. B at 13. The Kincaid affected units are also subject to a consent decree entered in 2013 which includes requirements for operating ESPs. The construction permit and CAAPP permit for Kincaid include these requirements. Dynegy/MWG SR Exh. 8 at 1. The permit also includes SMB provisions in Conditions 7.1.3(b) and (c). Dynegy/MWG SR at 11, Exh. 3 at 8-10, Exh. B. at 54.

At Kincaid, Dynegy controls emissions from the affected units through various measures, including an ESP to control PM emissions, OFA and SCR systems to control NO_x emissions; and ACI systems to control mercury emissions. Dynegy/MWG SR at 7-8., Exh. 3 at 6; *see* Tr.1 at 124. At Kincaid, Dynegy also uses low-sulfur sub-bituminous coal and a DSI FGD system to control SO_2 emissions. *Id*. at 8.

Newton.

Dynegy operates the Newton Power Station, which is located at 6725 North 500th Street in Newton, Jasper County. Dynegy/MWG SR at 7, Exh. 3 at 4. Dynegy intends to cease operating and retire the Newton Affected Unit on or before July 17, 2027. *Id*. at 7, Exh. 3 at 7.

At Newton, Dynegy operates a single permitted coal-fired boiler designated as Boiler 1, which is served by a single stack. Dynegy/MWG SR at 7, Exh. 3 at 4. "The unit has the capability to fire a combination of coal and fuel oil as its principal fuel. It also fires fuel oil as auxiliary fuel during startup and for flame stabilization. Periodically, small amounts of used oil may be fired with the coal." *Id*. at Exh. 3 at 6. Dynegy uses COMS to monitor opacity emissions form the stack. *Id*. at 7.

Under its CAAPP permit, the affected units at Newton are subject to a 20% opacity limit based on 35 Ill. Adm. Code 212.122(a) with specified exceptions. Dynegy/MWG SR at 11-12, Exh. 3 at 10-12, *citing* Exh. C at 16. Newton is also subject a 20% opacity limit based on NSPS Subpart D: "[o]pacity from the affected boiler shall not exceed 20 percent, as measured on a six minute average, except for one 6 minute period per hour of not more than 27 percent pursuant to NSPS, 40 CFR 60.42(a)(2)." Dynegy/MWG SR at 28, Exh. 3 at 11, Exh. C at 49 (Condition 7.1.4(a)(iii). The permit also includes SMB provisions in Conditions 7.1.3(b) and (c). Dynegy/MWG SR at 11-12, Exh. 3 at 11. These provisions are largely the same as those in the Baldwin and Kincaid CAAPP permits. *Id*.

At Newton, Dynegy controls emissions from the affected units through various measures, including an ESP equipped with FGC to control PM emissions, a DSI FGD system to control SO_2 emissions, low-NO_x burners and OFA systems to control NO_x emissions, and an ACI system to control mercury emissions. Dynegy/MWG SR at 8, Exh. 3 at 7; *see* Tr.1 at 124. Dynegy may periodically apply calcium bromide to the coal fired in the boiler to further reduce mercury emissions. *Id*.

Dynegy Permits.

The AG sought Dynegy's and MWG's opinion on whether Condition 7.1.3 of the CAAPP permits for Baldwin, Kincaid, Newton, and Powerton "authorizes opacity exceedances and/or violations" and, if so, the basis for its conclusion. AG Questions at 1 (¶1).

Ms. Vodopivec testified that it is her own opinion and Dynegy's position that these permit conditions "authorize the opacity of emissions from the permittee's operation of coal fired boilers in these plants to exceed the applicable opacity standards set forth in the Illinois State Implementation Plan during periods of startup, malfunction, and breakdown, subject to the terms and conditions" in the permit conditions. Tr.1 at 94-95, *citing* Dynegy/MWG SR at 11-18.

The AG noted the assertion that the joint proposal is "intuitively and demonstrably more stringent than the current SMB authorization in the Stations' CAAPP permits and the Illinois SIP, which allow operations in excess of the applicable opacity standards during SMB events." AG Questions at 1 (¶2), *citing* Dynegy/MWG SR at 3. The AG asked Dynegy, "[i]f Condition 7.1.3 of the CAAPP permits only authorizes *continued operation* during startup, shutdown, and malfunction events, how is the Joint Proposal more stringent than the conditions of these current CAAPP permits?" AG Questions at 1 (¶2a) (emphasis in original).

Ms. Vodopivec testified that Dynegy understands Condition 7.1.3 to mean that opacity exceeding applicable standards is authorized during periods of startup, malfunction, and breakdown, subject to the terms of that condition. Tr.1 at 96, 97. She further testified that the joint proposal is more stringent because it includes a limit on the percent value and duration of the opacity and includes work practice requirements. "Those limits and work practice requirements are not required by the current CAAP permits "or the SIP. *Id*. at 97.

Powerton.

MWG operates the Powerton Generating Station, which is located at 13082 East Manito Road in Pekin, Tazewell County. Dynegy/MWG SR at 8. MWG intends to cease operating and retire the Powerton Affected Units on or before December 31, 2028. *Id*.

At Powerton, MWG operates four permitted coal-fired boilers, which supply steam to two electrical generators. Dynegy/MWG SR at 8. "In addition to burning coal, the Affected Boilers have the capability to fire natural gas as an auxiliary fuel during startup and shutdown, and for flame stabilization." *Id*., Exh. 4 at 2. "Boilers 51 and 52 serve one generator (Unit 5), and boilers 61 and 62 power the other generator (Unit 6)." *Id*., Exh. 4 at 1. Units 5 and 6 exhaust through a common stack, and a COMs monitors the opacity of the emissions. *Id*. at 9, Exh. 4 at 2.

Under its CAAPP Permit, the affected units at Powerton are subject to a 30% opacity limit based on 35 Ill. Adm. Code 212.123 with specified exceptions. Dynegy/MWG SR at 12, *citing* Exh. 4 at 3, Exh. C at 16, 49. Under a consent decree entered in 2018, MWG performed upgrades to ESPs for Units 5 and 6. *Id.*, Exh. 9 at 1. The decree also includes operational requirements for those ESPs. *Id*. While the decree includes other condition requirements, MWG reports that those requirements have not been triggered. *Id*. Ms. Shealey testified that the consent decree "does not require installation of baghouse to avoid exceedances of the opacity standard. Tr.1 at 117. The permit also includes SMB provisions in Conditions 7.1.13(b) and (c). These provisions are largely the same as those in the Dynegy CAAP permits. Dynegy/MWG SR at 12, *citing* Exh. 3 at 3-6, Exh. 4 at 3-5.

At Powerton, MWG controls emissions from the affected units through various measures, including ESPs to control PM emissions, DSI and burning low-sulfur coal to control SO_2 emissions, OFA systems, rich reagent injection systems, and selective non-catalytic reduction systems to control NO_x emissions, and activated carbon injection to control mercury emissions. Dynegy/MWG SR at 9, Exh. 4 at 2.

The AG sought MWG's opinion on whether Condition 7.1.3 of the Powerton CAAPP permit "authorizes opacity exceedances and/or violations" and, if so, the basis for its conclusion. AG Questions at 2 (¶¶1, 2).

Ms. Shealey testified that it is her own opinion and MWG's opinion that Powerton's CAAPP permit "authorizes the opacity of emissions from its operation of the Powerton coal fired boilers to exceed the applicable opacity standards set forth in the Illinois State Implementation Plan during periods of startup, malfunction, and breakdown, subject to the terms and conditions" in the permit conditions. Tr.1 at 113.

The AG noted MWG's assertion that "opacity exceedances still occur when using a longer averaging period." AG Questions at 2 (¶3), citing <u>Amendments to 35 Ill. Adm. Code 201, 202, and 212</u>, R23-18 (Mar. 1, 2023) (MWG responses). The AG asked MWG how a longer averaging period addresses the opacity exceedances at issue? AG Questions at 2 (¶3).

Ms. Shealey testified that the examples MWG provided in an earlier response are "actual monitoring data supporting the need for a proposed averaging period." Tr.1 at 115.

Attainment Status. Dynegy and MWG argue that none of the units is "located in an area of Illinois that is designated as Nonattainment for any NAAQS." Dynegy/MWG SR at 9, citing 40 CFR 81.314. They further argue that "no area in Illinois is classified as Nonattainment for any current NAAQS for PM." *Id*.

EJ. Dynegy and MWG assert that none of the four affected units is located in an area that IEPA's mapping tool designates as an EJ area. Dynegy/MWG SR at 40. They state that the distance from each station's stack to the nearest boundary of an EJ area is more than eight miles form Baldwin, more than 12 miles from Kincaid, more than 15 miles from Newton, and between one and two miles from Powerton. *Id*. Dynegy and MWG also argue that, because their proposal will not result in any effect on human health or the environment, it "will not have any disproportionate impacts or create any EJ concerns for Illinois EJ communities." *Id*..

The AG asked MWG whether it was aware that IEPA's EJ Start tool showed that Powerton is located in an EJ area. AG Questions at 2-3 (¶8), *citing* Dynegy/MWG SR at 40.

Ms. Shealey testified that, shortly before filing the statement of reasons, IEPA's EJ Start tool confirmed that Powerton was outside of any EJ area. Tr.1 at 119. At that time, "the stack serving Powerton's coal fired boilers was more than one mile from the nearest EJ area." *Id*. Ms. Shealey further testified that on August 1, 2023, IEPA updated EJ Start to reflect 2022 data. Based on those data, "the Powerton stack is located within a buffer area for an EJ area based on low income." *Id*. at 119-20.

The AG further asked whether MWG had "analyzed how this area will be impacted by the Joint Proposal." AG Questions at 3 (¶9).

Ms. Shealey testified that the record shows that the joint proposal "will not result in any impacts too human health or the environment anywhere; and so it will not have any disproportionate impact or create any EJ environmental justice concern." Tr.1 at 122. She added that the conclusion is the same "whether Powerton is inside or outside the EJ area." *Id*

Applicable Standards

Section 212.122 of the Board's air pollution rules, entitled Visible Emissions Limitations for Certain Emission Units For Which Construction or Modification Commenced On or After April 14, 1972, includes a subsection (a) providing in its entirety that:

> [n]o person shall cause or allow the emission of smoke or other particulate matter into the atmosphere from any fuel combustion emission unit for which construction or modification commenced on or after April 14, 1972, with actual heat input greater than 73.2 MW (250 mmbtu/hr), having an opacity greater than 20 percent. 35 Ill. Adm. Code 212.122(a).

Section 212.123 of the Board's air pollution rules, entitled Visible Emissions Limitations for All Other Emission Units, includes a subsection (a) providing in its entirety that:

> [n]o person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to Section 212.122 of this Subpart. 35 Ill. Adm. Code 212.123(a).

Section 212.124 of the Board's air pollution rules entitled "Exceptions" provides in its entirety that:

a) Sections 212.122 and 212.123 will not apply to emissions of water or water vapor from an emission unit.

b) An emission unit that has obtained an adjusted opacity standard in compliance with Section 212.126 will be subject to that standard rather than the limitations of Section 212.122 or 212.123.

c) Compliance with the particulate regulations of this Part will constitute a defense.

   1) For all emission units that are not subject to Chapters 111 or 112 of the CAA and Sections 212.201, 212.202, 212.203 or 212.204 but are subject to Sections 212.122 or 212.123: the opacity limitations of Sections 212.122 and 212.123 will not apply if it is shown that the emission unit was, at the time of emission, in compliance with the applicable particulate emissions limitations of Subparts D through T.

   2) For all emission units that are not subject to Chapters 111 or 112 of the CAA but are subject to Sections 212.201, 212.202, 212.203 or 212.204:

      A) An exceedance of the limitations of Section 212.122 or 212.123 will constitute a violation of the applicable particulate limitations of Subparts D through T. It will be a defense to a violation of the applicable particulate limitations if, during a subsequent performance test conducted within a reasonable time not to exceed 60 days, under the same operating conditions for the unit and the control devices, and in accordance with Method 5, 40 CFR 60, incorporated by reference in Section 212.113, the owner or operator shows that the emission unit is in compliance with the particulate emission limitations.

B) It will be a defense to an exceedance of the opacity limit if, during a subsequent performance test conducted within a reasonable time not to exceed 60 days, under the same operating conditions of the emission unit and the control devices, and in accordance with Method 5, 40 CFR part 60, Appendix A, incorporated by reference in Section 212.113, the owner or operator shows that the emission unit is in compliance with the allowable particulate emissions limitation while, simultaneously, having visible emissions equal to or greater than the opacity exceedance as originally observed. 35 Ill. Adm. Code 212.124.

Proposed Revision

SIP Call.

Dynegy and MWG assert that, in its 2015 SIP Call, USEPA stated that "it is appropriate for states to promulgate rules that contain component applicable to different modes of operation and numerical emission limitations that have differing levels and forms for different modes of operation. Dynegy/MWG SR at 19-20, citing 80 Fed. Reg. 33840, 33977-79 (June 12, 2015). They cite USEPA to argue that SIPs may include "emission limitations that subject those emissions to alternative numerical limitations or other control requirements during startup and shutdown events or other normal modes of operation, so long as those components of the emission limitations meet applicable CAA requirements and are legally and practically enforceable." *Id*.

Dynegy and MWG note that USEPA later published its determination that 12 states including Illinois "had failed to timely address the 2015 finding of substantial inadequacy and the SIP Call for provisions addressing excess emission during SSM." Dynegy/MWG SR at 19, citing 87 Fed Reg. 1680 (Jan. 12, 2022).

Background.

Dynegy and MWG argue that their joint proposal supplements the applicability of a general rule to the affected units. Dynegy/MWG SR at 5. As amended in R23-18, Section 201.149 does not allow emission sources to operate above generally applicable standards during startup or breakdown "except as specifically provided for by such standard or limitation." Dynegy/MWG SR at 5, *citing* 35 Ill. Adm. Code 201.149; *see* Amendments to 35 Ill. Adm. Code Parts 201, 202, and 212, R23-18, slip op. at 12 (July 20, 2023); slip op. at 10-11 (Apr. 6, 2023). Dynegy and MWG state that they propose such a specific provision. Dynegy/MWG SR at 5, 29. They stress that the joint proposal would provide relief until the retirement of the four units, the last of which is now planned to take place by December 31, 2028. *Id.* at 6.

The joint proposal would provide that, "if the Affected Units could not demonstrate compliance with the applicable 20% or 30% opacity standard in Section 212.122(a) or 212.123(a) on a six-minute average basis during times of SMB, the Companies would have the option to demonstrate compliance with the same 20% or 30% opacity limitation using a three-hour averaging period." Dynegy/MWG SR at 5-6, Exh. 3 at 13-14, Exh. 4 at 6-9, citing 35 Ill. Adm. Code 212.122(a), 212.123(a). With this alternative averaging period, a source could demonstrate compliance or a six-minute period "by taking the average opacity measurement from the COMS for those six minutes and the immediately preceding 174 minutes." Dynegy/MWG SR at 6, *citing* Dynegy/MWG TSD at 4-6 (examples).

Dynegy and MWG assert that the joint proposal is based on the facilities' CAM plans based on the applicable PM limitation in their CAAPP permits. Dynegy/MWG SR at 6, Exh. 3 at 14, 19, Exh. A at 84-86, Exh. B at 96, Exh. C at 83; Exh. 4 at 7, 9, Exh. A at 104. They add that these plans rely on three-hour opacity data to address compliance with PM standards. *Id*.; Dynegy/MWG TSD at 4, citing 40 CFR 64. Dynegy and MWG argue that their joint proposal requires recordkeeping and reporting and includes "work practice requirements that are more stringent than those required by existing Illinois regulations or by the SMB provisions in the current Illinois SIP." Dynegy/MWG SR at 6, Exh. 3 at 14, Exh. 4 at 7.

Dynegy and MWG state that they submitted nearly identical proposals in the main docket. Dynegy/MWG SR at 5, *citing* Exhs. 3, 4. They state that "[t]he proposals differed only with respect to which boilers were included and which opacity standard (20% or 30%) applied." Dynegy/MWG SR at 5. Dynegy and MWG re-submit their proposals by combining them into a joint proposal. Dynegy/MWG SR at 5, *citing* Exh. 1. They state that their only change to the joint proposal was to update numbering. While the original proposals designated the proposed revision subsection (e), they re-designated it subsection (d) because amendments adopted in R23-18 re-designated Section 212.124. *Id*., n.5.

<u>Proposed 35 Ill. Adm. Code 212.124(d).</u>

Dynegy and MWG propose to revise Section 212.124 by adding a subsection (d) providing in its entirety as follows:

> [d]uring times of startup of coal-fired boiler 1 or 2 at the Baldwin Energy Complex, coal-fired boiler 1 or 2 at the Kincaid Power Station, coal-fired boiler 1 at the Newton Power Station, or coal-fired boiler 51, 52, 61, or 62 at the Powerton Generating Station, or of malfunction or breakdown of these boilers or the air pollution control equipment serving these boilers, when average opacity exceeds 20 or 30 percent for a six-minute period, as applicable pursuant to Section 212.122(a) or 212.123(a) of this Subpart, compliance with Section 212.122(a) or 212.123(a) may alternatively be demonstrated for that six-minute period as follows.
>
> 1) Alternative Averaging Period. Compliance for that six-minute period may be determined based on a three-hour average of opacity, utilizing opacity readings for those six minutes and the immediately preceding 174 minutes.
>
> 2) Recordkeeping and Reporting

A) Any person relying on the Alternative Averaging Period in Section 212.124(e)(1) of this Subpart shall maintain records of such average opacity calculations and shall report such calculations to Illinois EPA as part of the next quarterly excess emissions report for the source.

B) For periods of startup, such report shall include:

1) The date, time, and duration of the startup.

2) A description of the startup.

3) The reason(s) for the startup.

4) An indication of whether or not written startup procedures were followed. If any written startup procedures were not followed, the report shall include any departures from established procedures and any reason the procedures could not be followed.

5) A description of any actions taken to minimize the magnitude or duration of opacity that requires utilization of the Alternative Averaging Period in Section 212.124(e)(1) of this Subpart.

6) An explanation whether similar incidents could be prevented in the future and, if so, a description of the actions taken or to be taken to prevent similar incidents in the future.

7) Confirmation of fulfillment of the requirements of Section 212.124(e)(3) of this Subpart.

C) For periods of malfunction and breakdown, such report shall include:

1) The date, time, duration (i.e., the length of time during which operation continued with opacity in excess of 20 or 30 percent, as applicable, on a six-minute average basis) until corrective actions were taken or the boiler was taken out of service.

2) A description of the incident.

3) Any corrective actions used to reduce the magnitude or duration of opacity that requires utilization of the Alternative Averaging Period in Section 212.124(e)(1) of this Subpart.

4) Confirmation of fulfillment of the requirements of Sections 212.124(e)(2)(D) and (e)(3) of this Subpart.

D) Any person who causes or allows the continued operation of a coal-fired boiler during a malfunction or breakdown of the coal-fired boiler or related air pollution control equipment when such continued operation would require reliance on the Alternative Averaging Period in Section 212.124(e)(1) of this Subpart to demonstrate compliance with Section 212.122 or 212.123 of this Subpart, as applicable, shall immediately report such incident to the Agency by telephone, facsimile, electronic mail, or such other method as constitutes the fastest available alternative, except if otherwise provided in the operating permit. Thereafter, any such person shall comply with all reasonable directives of the Agency with respect to the incident.

3) Work Practices

Any person relying on the Alternative Averaging Period in Section 212.124(e)(1) of this Subpart must comply with the following Work Practices.

A) Operate the coal-fired boiler and related air pollution control equipment in a manner consistent with good engineering practice for minimizing opacity during such startup, malfunction or breakdown.

B) Use good engineering practices and best efforts to minimize the frequency and duration of operation in startup, malfunction and breakdown. Dynegy/MW SR, Exh. 1, Exh. 3 at 14-16, Exh. 4 at 7-9.

Noting Ms. Vodopivec's testimony on units equipped with both an ESP and baghouses (SR at 22), the Board requested comment on whether "the Joint Proposal could be further narrowed by limiting the proposed alternative emission standards to apply to the boilers equipped with only ESP. Alternatively, could boilers equipped with both ESPs and baghouses have a shorter averaging time than the proposed 3 hours?" Board Questions at 3 (¶12b).

Ms. Vodopivec testified that, although "Dynegy needs an alternative emission standard for the Baldwin coal-fired boilers because it cannot ensure compliance with a 30 percent opacity standard on a six-minute basis 100 percent of the time during periods of SMB," it agrees that Baldwin has a lower risk of exceedances than boilers not equipped with both an ESP and a baghouse. Tr.1 at 124-25. She further testified that, although Dynegy believes it has justified a three-hour averaging period for Baldwin, it is willing to accept a one-hour averaging period there. *Id*. at 125. Ms. Vodopivec testified that this one-hour period "would not result in any difference in opacity levels as the company has already taken numerous steps to minimize opacity." *Id*.

In its first post-hearing comment, Dynegy and MWG submitted a revision of its proposed Section 212.124(d)(1):

1) Alternative Averaging Period.

For Baldwin Energy Complex coal-fired boilers 1 and 2, compliance for that six-minute period may be determined based on a one-hour average of opacity, utilizing opacity readings for those six minutes and the immediately preceding 54 minutes.

For Kincaid Power Station coal-fired boilers 1 and 2, Newton Power Station coal-fired boiler 1, and Powerton Generating Station coal-fired boilers 51, 52, 61, and 62, compliance for that six-minute period may be determined based on a three-hour average of opacity, utilizing opacity readings for those six minutes and the immediately preceding 174 minutes. PC7 at 2.

USEPA Criteria

Dynegy and MWG note that USEPA recommends seven criteria as considerations for developing emissions limitations in SIP revisions. Dynegy/MWG SR at 20, *citing* 80 Fed. Reg. 33840, 33980 (June 12, 2015). They argue that USEPA has encouraged states to consider approaches based on NSPS standards. *Id*. They also note that USEPA's recommendation admonish states that AELs "cannot allow an inappropriately high level of emissions or an effectively unlimited or uncontrolled level of emissions." *Id*., *citing* 88 Fed. Reg. 39210, 39212 (June 15, 2023) (proposing approval of Washington SIP revisions). Dynegy and MWG argue that these criteria "are not legal requirements," but they state that they drafted their joint proposal to satisfy them. Dynegy/MWG SR at 21, Exh. 3 at 19, Exh. 4 at 9; PC24 at 11.

Criterion 1. The first criterion is that "[t]he 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)." 80 Fed. Reg. 33840, 33980 (June 12, 2015); *see* Dynegy/MWG SR at 21.

Dynegy and MWG suggest that their joint proposal is defined more narrowly than required because it applies to nine identified coal-fired boilers at four stations. Dynegy/MWG SR at 21-22; *see id*. Exh. 3 at 16-17, *supra* at 43-48. They argue that USEPA can determine which emission units may benefit from the proposal and how it may affect each unit. Dynegy/MWG SR at 21. Dynegy and MWG conclude that their joint proposal satisfies this criterion and that it weighs in favor of adopting the proposal. *Id*. at 22.

Criterion 2. The second criterion is that "[u]se of the control strategy for this source category is technically infeasible during startup or shutdown periods." 80 Fed. Reg. 33840, 33980 (June 12, 2015); *see* Dynegy/MWG SR at 22-23.

Dynegy and MWG assert that their testimony and responses to Board questions show that "it is technically infeasible to ensure compliance with opacity 100% of the time during SMB." Dynegy/MWG SR at 22, Exh. 3 at 17, Exh. 4 at 6 (¶15); *see* Exh. 8 at 1. Ms. Vodopivec's testimony attributed some opacity events to ESP malfunctions. Dynegy/MWG SR at 22, Exh. 3 at 17-18. She testified that there is a risk of exceeding the opacity standard even at units controlled by ESPs and baghouses. Dynegy/MWG SR at 22-23, Exh. 3 at 18; Exh. 5. MWG stresses that its consent decree does not require installing baghouses to avoid exceedances of the opacity standard. *Id*. Exh. 9 at 3.

The AG noted the assertion that it is technically infeasible to avoid all opacity exceedances during SMB events and that Baldwin boiler 2, equipped with ESP and a baghouse, "came precariously close to exceeding the standard." AG Questions at 1 (¶4), *citing* Dynegy/MWG SR at 22-23. The AG questioned whether it was Dynegy's understanding that "the boiler in this example did not ultimately exceed the opacity standard at that time." AG Questions at 1 (¶4a). The AG also asked on how many occasions from January 2020 to September 2023 the Baldwin plant exceeded the applicable opacity standard. AG Questions at 1 (¶4b).

Ms. Vodopivec testified that that she understood the boiler in this example did not ultimately exceed the opacity standard. Tr.1 at 102. She further testified that, from January 2020 to September 26, 2023, the coal-fired boilers at Baldwin had not exceeded the opacity standard. *Id*. at 102-03, *citing* 35 Ill. Adm. Code 212.123.

The AG asked both Dynegy and MWG whether they had considered using baghouses or other pollution control technologies to avoid opacity exceedances? If so, the AG asked why they had determined not to install them. AG Questions at 2 (¶5).

Dynegy and MWG assert that, even if adding baghouses achieved 100% compliance with the opacity standard, it would take approximately three years to design, procure, and install baghouses to units that are not now equipped with them. Dynegy/MWG SR at 23; *see* Exh. 8 at 2, Exh. 9 at 2; Tr.1 at 104, 116-17. They add that "each baghouse would cost in the tens of millions of dollars." Dynegy/MWG SR at 23, *citing* Exh. 8 at 2, Exh. 9 at 2; *see* Tr.1 at 104. Dynegy and MWG argue that this time and expense must be considered in light of their plans to retire each of the four units. Dynegy/MWG SR at 23, *citing* Exh. 3 at 6-7, Exh. 8 at 2, Exh. 9 at 2-3; *see* Tr.1 at 104, 117; *see* PC24 at 6-7. Dynegy and MWG conclude that their joint proposal satisfies this criterion and that it weighs in favor of adopting the proposal. *Id*. at 24.

Also, Ms. Vodopivec testified that, although installing baghouses a Kincaid and Newton might potentially reduce opacity, "Dynegy believes it would not eliminate the risk of opacity exceedances during startup, malfunction, and breakdown events." Tr.1 at 103-04; *see id*. at 115-16 (Shealey testimony).

Criterion 3. The third criterion is that "[t]he alternative emission limitation requires that the frequency and duration of operation in startup or shutdown mode are minimized to the greatest extent practicable." 80 Fed. Reg. 33840, 33980 (June 12, 2015); *see* Dynegy/MWG SR at 24.

Dynegy and MWG argue that their joint proposal includes new work practice standards that satisfy this criterion. Dynegy/MWG SR at 24. They cite proposed subsection (d)(3)(B), which requires a source seeking to rely on the alterative averaging period to comply with the following: [u]se good engineering practices and best efforts to minimize the frequency and duration of operation in startup, malfunction and breakdown." *Id.* Dynegy and MWG conclude that their joint proposal satisfies this criterion and that it weighs in favor of adopting the proposal. *Id.*

Criterion 4. The fourth criterion is that, "[a]s 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." 80 Fed. Reg. 33840, 33980 (June 12, 2015); *see* Dynegy/MWG SR at 24.

Dynegy and MWG assert that "IEPA has already determined that compliance with the Alternative Averaging Period would assure compliance with applicable NAQQS and State PM limitations." Dynegy/MWG SR at 24. First, they cite their TSD concluding that "the proposed AELs will assure compliance with the applicable State SIP PM standards and will not negatively impact air quality in relation to the PM NAAQS or any other NAAQS." *Id.* at 25, citing Dynegy/MWG TSD at 12-13; *see infra* at 59-62 (addressing Section 110(l) of the CAA).

Second, Dynegy and MWG argue that the TSD's conclusion is consistent with earlier determinations by IEPA. They assert that the Alternative Averaging Period is based on the CAM plans incorporated into the stations' CAAPP permits. Dynegy/MWG SR at 25. These enforceable CAM plans intend "to provide a reasonable assurance of compliance with the PM standard to ensure compliance with the PM NAAQS." *Id.* at 25-26, *citing* Exh. 3, Exh. A at 84, 85, 87 (Baldwin), Exh. B at 96, 97 (Kincaid), Exh. C. at 83 (Newton); Exh. 4, Exh. A at 104 (Powerton). They assert that these plans use opacity as an indicator of PM and indicator levels over a three-hour period. Dynegy/MWG SR at 25.

Third, Dynegy and MWG argue that using the Alternative Averaging Plan would ensure that the opacity at the affected units during SMB events does not exceed or risk exceeding applicable state PM limitations. They conclude that the proposal is consistent with Illinois' SIP for PM emissions. Dynegy/MWG SR at 26.

Finally, Dynegy and MWG assert that their joint proposal is more stringent than requirements under Illinois' SIP and the stations' CAAPP permit. Dynegy/MWG SR at 26. They argue that these requirements "do not include any limit on the duration of opacity events or the maximum level of opacity during such events." *Id.* They conclude that allowable opacity under their proposal would be no higher – and possibly lower – than under the SIP. *Id.*

Dynegy and MWG add that these factors show that their joint proposal would not "allow an inappropriately high level of emissions or an effectively unlimited or uncontrolled level of emissions." Dynegy/MWG SR at 26, *citing* 80 Fed. Reg. 33840, 33980 (June 12, 2015)

Dynegy and MWG conclude that their joint proposal satisfies this criterion and that it weighs in favor of adopting the proposal. Dynegy/MWG SR at 26.

Criterion 5. The fifth criterion is that "[t]he alternative emission limitation requires that all possible steps are taken to minimize the impact of emissions during startup and shutdown on ambient air quality." 80 Fed. Reg. 33840, 33980 (June 12, 2015); *see* Dynegy/MWG SR at 27, Exh. 3 at 18.

Dynegy and MWG cite their TSD to argue that their joint proposal "would have no negative impact on ambient air quality and would not interfere with any applicable requirement concerning attainment and reasonable further progress." Dynegy/MWG SR at 27, *citing* Dynegy/MWG TSD at 12-13; *see infra* at 59-62 (addressing Section 110(l) of the CAA). Dynegy and MWG conclude that their joint proposal satisfies this criterion and that it weighs in favor or adopting the proposal. Dynegy/MWG SR at 27.

Criterion 6. The sixth criterion is that the "[t]he alternative emission limitation requires that, at all times, the facility is operated in a manner consistent with good practices for minimizing emissions and the source uses best efforts regarding planning, design, and operating procedures." 80 Fed. Reg. 33840, 33980 (June 12, 2015); *see* Dynegy/MWG SR at 27.

Dynegy and MWG argue that their proposal imposes new work practice standards intended to minimize opacity. Dynegy/MWG SR at 27, Exh, 3 at 18, Exh. 4 at 9. They cite subsection (d)(3)(A), which requires a source seeking to rely on the alterative averaging period to comply with the following: [o]perate the coal-fired boiler and related air pollution control equipment in a manner consistent with good engineering practice for minimizing opacity during such startup, malfunction or breakdown." *Id*. Dynegy and MWG conclude that their joint proposal satisfies this criterion and that it weighs in favor or adopting the proposal. *Id*.

The AG asked both Dynegy and MWG what the joint proposal means by "good engineering practices." AG Questions at 1 (¶3), 2 (¶6), *citing* Dynegy/MWG SR at 24. The AG also sought an explanation of "how a standard of 'good engineering practices' is 'legally and practically enforceable.'" AG Questions at 1 (¶3), 2 (¶6), *citing* 80 Fed. Reg. 33978 (June 12, 2015).

Ms. Vodopivec testified that Dynegy based this proposed requirement on USEPA recommendation for AELs in the 2015 SIP Call. Tr.1 at 100; *see* PC24 at 12. She further testified that CAA regulations and Dynegy's CAAPP permits use similar terms and that NESHAP provision use the term "good engineering practices." Tr.1. at 100-01; *see* PC24 at 12. On behalf of MWG, Ms. Shealey affirmed Dynegy's response and added that Powerton's CAAPP permit includes similar language. Tr.1 at 101. Dynegy and MWG assert that "good engineering practices" refer generally to "practices commonly observed in the United States and performed by competent, qualified operators performing management, operation, maintenance, repair or preplacement services; they are not specific standards." PC24 at 12. They argue that their analyses in the TSD demonstrating that "the AELs will have no negative environmental impact, did not rely on the use of any specific work practice." *Id*. Based on these factors, Dynegy and MWG assert that "there is neither a legal nor a practical need to include any further specificity or 'standard' concerning 'good engineering practices' in this rule." *Id* at 13. It further argues that the SIP Call does not suggest that it requires this additional specificity and stresses that IEPA does not object to adopting their revised proposal. *Id*. Dynegy and MWG conclude that "a reference to a specific standard is not necessary. *Id*.

The AG also cited JCAR's request to incorporate by reference the standard to be enforced and asked Dynegy and MWG whether they had suggestions on how to respond to that request. Tr.1 at 99-100, 101, citing PC2 at 3 (¶30).

The AG asked MWG "[h]ow, if at all, these work practices measurably impact elevated opacity levels during startup, shutdown and malfunction events." AG Questions at 2 (¶7).

Ms. Shealey testified that MWG already operates its boilers in a manner that would comply with these proposed practices, so it does not expect any increase in opacity during startup, malfunction, or breakdown events. Tr.1 at 118-19. She added that "the joint proposal does not address shutdown events except as it's related to breakdowns." *Id*. at 119.

In its questions pre-filed for the third hearing, the AG noted that the joint proposal from Dynegy and MWG relies in part on complying with work practice as a condition to using an alternative averaging period. AG Questions at 1, 2. The AG asked both Dynegy and MWG what specifically they mean by "good engineering practices. *Id*.

At the third hearing, Dynegy and MWG responded that the same question had been asked for the first hearing and answered then. Tr.3 at 25. The AG noted that JCAR has asked the Board to incorporate by reference the standard to be enforced. *Id*. at 26. Dynegy and MWG stated that they would respond in post-hearing comments. *Id*..

Criterion 7. The seventh criterion is that "[t]he 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." 80 Fed. Reg. 33840, 33980 (June 12, 2015); *see* Dynegy/MWG SR at 28.

Dynegy and MWG argue that their proposed subsection (d)(2) "would impose detailed recordkeeping requirements as a condition to relying on the Alternative Averaging Period *and* require that those records be reported to IEPA." Dynegy/MWG SR at 28 (emphasis in original), *see* Exh. 3 at 18, Exh. 4 at 9. They further argue that this is based on recordkeeping now included in the SMB provision of the CAAPP permits for these stations. *Id*. Dynegy and MWG conclude that their joint proposal satisfies this criterion and that it weighs in favor of adopting the proposal. *Id*.

NSPS Standards. In addition to the seven criteria above, Dynegy and MWG assert that USEPA encouraged states to consider approaches similar to NSPS standards. Dynegy/MWG SR at 20-21, 28, *citing* 80 Fed. Reg. 33840, 33916 (June 12, 2015). They name the Newton CAAPP permit as an example. In addition to the 20% opacity limit under Board rules, it is also subject to a 20% opacity limit based on NSPS Subpart D: "[o]pacity from the affected boiler shall not exceed 20 percent, as measured on a six minute average, except for one 6 minute period per hour of not more than 27 percent pursuant to NSPS, 40 CFR 60.42(a)(2)." Dynegy/MWG SR at 28, citing Exh. 3 Exh. C at 49 (Condition 7.1.4(a)(iii). Dynegy and MWG also cite the permit's SSM provision providing that under 40 CFR 60.8(c) and 60.11(c), the "emission limitations do not apply during startup, shutdown, and malfunction, as defined by 40 CFR 60.2," although exceedances during startup, shutdown and malfunction are still subject to NSPS recordkeeping and reporting requirements. *Id*.

Dynegy and MWG that this SSM provision is less stringent than their joint proposal because it applies to all shutdowns and not only to breakdowns and malfunction. Dynegy/MWG SR at 29, Exh. 3 at 18. They also stress that "the NSPS SSM exception imposes no opacity limit." *Id*. They conclude that the Board should approve their joint proposal because it is more stringent than the NSPS provision for startup, shutdown, and malfunction. *Id*.

Projected Environmental Impact of Joint Proposal

The joint proposal addresses opacity. Dynegy and MWG assert that opacity is not a pollutant but may be used as an indicator or surrogate for determining compliance with PM standards. Dynegy/MWG SR at 29, 30, *citing* Sierra Club v. Tennessee Valley Auth., 592 F. Supp. 2d 1357, 1362 (N.D. Ala. 2009); Dynegy/MWG TSD at 6. Dynegy and MWG assert that their proposed AELs for opacity during SMB events "would not excuse . . . any exceedance of any applicable emission standard or limitation for any pollutant." Dynegy/MWG SR at 31; *see id*. at 29-30.

Section 110(l) Anti-Backsliding

Section 110(l) of the CAA provides that USEPA cannot approve a SIP revision that "would interfere with any applicable requirement concerning attainment and reasonable further progress . . . or any other applicable requirement of this chapter." Dynegy/MWG SR at 31, *citing* 42 USC 7410(l); *see* Dynegy/MWG TSD at 12.

Dynegy and MWG note that their TSD correlates opacity to PM emissions for each unit to determine whether proposed AELs would increase PM emissions. Dynegy/MWG SR at 31, *citing* Dynegy/MWG TSD at 7-9. They cite the TSD's projection that, when operating under proposed AELs on a three-hour average, "correlated PM emissions would be lower than 80% of the applicable Illinois SIP PM standard for the Powerton Affected Units, lower than 50% of the applicable standard for the Newton and Kincaid Affected Units, and lower than 25% of the applicable standards for the Baldwin Affected Units." Dynegy/MWG SR at 31-32, *citing* Dynegy/MWG TSD at 10 (Table 1: Estimated PM Emissions at Opacity Limit). Dynegy and MWG assert that projection is consistent with CAM plans for the Affected units, "which conclude that operation with 20% or 30% opacity, as applicable, on a three-hour average provides a reasonable assurance of compliance with the applicable Illinois SIP PM standards." Dynegy/MWG SR at 32; PC24 at 14.

Dynegy and MWG emphasize a three-hour averaging period for opacity. They argue that IEPA has supported three-hour averages to demonstrate compliance with the one-hour PM standards. Under 35 Ill. Adm. Code 212.110 "compliance with the applicable PM standard is based on emissions testing. Since emissions testing for PM includes at least three test runs, each nominally one hour in duration, this indicates that a three-hour averaging period is an appropriate averaging time for purposes of CAM." Dynegy/MWG SR at 32 (*citing* Statement of Basis for Newton Station); *see* Dynegy/MWG TSD at 9-10. Dynegy and MWG assert that, based on correlations in the TSD and IEPA determinations to approve CAM plans, short-term changes in opacity do not affect the corresponding expected PM emission rate and mass emissions "so long as the three-hour opacity average remains at or below 20% or 30%, as applicable." Dynegy/MWG SR at 32, *citing* Dynegy/MWG TSD at 12. Dynegy and MWG conclude that, when their units operate at the applicable opacity limit for three-hour periods, "their PM emission will be lower than (and compliant with) the applicable Illinois SIP PM limits on a lb/MMBtu basis." Dynegy/MWG TSD at 12.

Noting the assertion that short-term changes will not make a difference to the PM emission rate, the AG requested that Dynegy provide the basis for it. AG Questions at 2 (¶6).

Ms. Vodopivec testified that these short-term changes make no difference "under Mr. Northey's correlations or the correlations that Illinois EPA relied upon in approving these plans, so long as the three hour opacity average remains at or below 20 percent or 30 percent as applicable." Tr.1 at 106, *citing* Dynegy/MWG TSD at 9, 10, 12.

The AG questioned whether a longer averaging period allows "for more variability in terms of meeting the opacity standard?" AG Questions at 2 (¶7).

Ms. Vodopivec testified that the joint proposal addresses certain six-minute exceedances of the applicable opacity standard, but "it would not result in more variability in actual performance." Tr.1 at 108-09. She further testified that the joint proposal is narrower than the SMB provision in the stations' CAAPP permits because the permits do not include a numerical opacity limit during SMB events or a numeric limit on the duration of those events. She added that the permits include fewer work practice requirements. *Id*. at 109, *citing* Dynegy/MWG SR at 13-19.

The AG questioned how a longer period of allowed variability for opacity, and indicator for PM, avoids negative effects on air quality. AG Questions at 2 (¶8).

Ms. Vodopivec testified that current opacity limits allow a source to have 20 percent or 30 percent opacity, as applicable, for each six-minute period. Tr.1, *citing* 35 Ill. Adm. Code 212.122(a), 212.123(a). "A source operating at 20 percent or 30 percent for every six-minute period during the day will have a daily average of 20 percent or 30 percent respectively." That daily average "would correlate with the daily PM emissions rate, which is in turn a point of reference for evaluating air quality under the PM NAAQS." Tr.1 at 110-11. She added that the joint proposal allows six-minute opacity values "to exceed 20 percent or 30 percent under certain circumstances, but only if a three hour average does not exceed 20 percent or 30 percent respectively. If opacity is no higher than 20 percent or 30 percent on a three hour average basis then it cannot be higher than 20 percent or 30 percent on a 24-hour bases." *Id*. at 111. Ms. Vodopivec concluded that the 24-hour and annual NAAQS for PM matter for purposes of assessing air quality. On a 24-hour basis, both the current opacity rules and the joint proposal "allow the same average opacity on a 24-hour basis." *Id*.

Dynegy and MWG assert that "[a]ll areas of Illinois are designated as either attainment or unclassifiable with the 24-hour or annual PM NAAQS." Dynegy/MWG SR at 32, Exh. 3 at 18. They argue that, because "there is no impact on allowable PM on a one-hour basis" as determined through the correlations, "let alone on a 24-hour or annual basis, the proposed AELs will have no impact on the State's continued ability to remain in attainment" with the 24-hour and annual PM NAAQS. *Id*. at 32-33, *citing* Dynegy/MWG TSD at 12-13.

Dynegy and MWG cite their TSD to assert that there is no correlation between opacity and any gaseous pollutant. Dynegy/MWG SR at 33, *citing* Dynegy/MWG TSD at 12-13. They argue that their proposed AELs "cannot affect any NAAQS for any gaseous pollutant." *Id*. Although lead is the only non-gaseous criteria pollutant other than PM, "[t]he lead NAAQS is based on three-month averages of data." *Id*. They add that their proposed AELs "would not affect the proportion of lead to total PM." *Id*. Dynegy and MWG assert that, because AELs will not increase PM emissions, "they will not result in any increase in lead emissions and will not affect the three-month average lead NAAQS." Dynegy/MWG SR at 33, *citing* Dynegy/MWG TSD at 14.

Dynegy and MWG conclude that their proposed AELs "will not affect the emissions of any pollutant, will not negatively impact air quality in relation to any NAAQS, and will not negatively affect compliance with any other Clean Air Act requirement." Dynegy/MWG SR at 33, Exh. 3 at 18, Exh. at 9.

The AG asked both Dynegy and MWG how, if at all, their joint proposal avoids backsliding under Section 110(l) of the CAA. AG Questions at 1 (¶2b), 2 (¶4).

On behalf of both Dynegy and MWG, Ms. Vodopivec testified that it is fully approvable under Section 110(l) because it "would not affect the emission of any pollutant, would not negatively impact air quality in relation to" any NAAQS, and "would not negatively affect compliance "with any other CAA requirement." Tr.1 at 98-99, *citing* Dynegy/MWG SR at 31-33; *see* Tr.1 at 99 (MWG affirming and agreeing); PC24 at 13.

In its questions pre-filed for the third hearing, the AG noted that USEPA had strengthened the PM NAAQS, "lowering the primary annual $PM_{2.5}$ standard down to 9 μg/m." AG Questions at 1 (¶3), citing 89 Fed. Reg. 16202 (Mar. 6, 2024). The AG asked whether this new, more stringent PM NAAQS affects any determination IEPA made in its testimony "that the proposed AEL will not interfere with any NAAQS, either now or in the future." AG Questions at 1 (¶3).

Mr. Davis testified that IEPA had considered the revised $PM_{2.5}$ NAAQS when evaluating impacts of the AELs proposed in this subdocket. He testified that "[t]he new standard should not impact any determinations that have nee conveyed to the Board." Tr.3 at 14. He added that states are assessing their obligations under the revised NAAQS. While it may be necessary to revise Illinois's rules to meet this or any later NAAQS revision, "it should not have any impact on the current proceeding." *Id*.

Human Health and Environment

Dynegy and MWG argue that the Board recognizes NAAQS as appropriate standards to evaluate potential risks to health and the environment associated with increased emissions of pollutants for which USEPA established NAAQS. Dynegy/MWG SR at 33-34, *citing* Amendments to 35 Ill. Adm. Code225.233, Multi-Pollutant Standards (MPS), R 18-20 (Oct. 4, 2018). Although opacity may be an indicator of PM, it is not a pollutant, and there is no NAAQS for opacity. Dynegy/MWG SR at 34; *see* Dynegy/MWG TSD at 6. They argue that their joint proposal "will not result in any negative impact on air quality in relation to the PM NAAQS or any other NAAQS." Dynegy/MWG SR at 34; *see* Exh. 3 at 18, Exh. 4 at 9.

Dynegy and MWG also argue that their joint proposal "will not affect the State's compliance with the federal Regional Haze Program." Dynegy/MWG SR at 34. They argue that Illinois meets the requirements of that program and that a 2018 progress report determined that it the regional haze SIP needed no substantive revision. *Id*., *citing* 83 Fed. Reg. 15744 (Apr. 12, 2018). They add that the regional haze SIP incorporates the Kincaid CAAPP permit including SMB provisions. Dynegy/MWG SR at 34, *citing* 83 Fed. Reg. 15745 (Apr. 12, 2018), 77 Fed. Reg. 39943 (July 6, 2012). Dynegy and MWG conclude that, because their joint proposal is more stringent than the Kincaid CAAPP permit and will not result in increasing actual or allowable PM emissions, "it will not impact the State's compliance with the Regional Haze Program." Dynegy/MWG SR at 34.

Dynegy and MWG acknowledge that their joint proposal "would allow for greater short-term variability in opacity." Dynegy/MWG SR at 33. However, they argue that the proposed three-hour averaging period would offset any six-minute increase above the applicable standard. *Id*. They conclude that transient increases in allowable short-term opacity, when offset as allowed by their joint proposal, "do not affect human health of the environment." *Id*.

Technical Feasibility and Economic Reasonableness

Sources Affected

Above under "Affected Units," the Board summarized the record on the four affected Dynegy and MWG units. *Supra* at 44-48.

Technical Feasibility

Dynegy and MWG argue that it is not feasible for them to comply with the opacity limits 100% of the time during SMB events. Dynegy/MWG SR at 34-35; *see supra* at 55-56 (discussing second USEPA Criterion). They argue that their proposed AELs would apply "narrowly tailored standards during periods of SMB when they otherwise could not comply."

Dynegy/MWG SR at 40-41. They assert that those proposed AELs include "numeric opacity limits and work practices designed to minimize the frequency, duration, and level of opacity during periods of SMB." *Id*. at 41.

Economic Reasonableness

Dynegy and MWG assert that, while they address discrete issues that result in opacity exceedances, they cannot take any additional steps to minimize those exceedances generally other than installing baghouses at units not already using them. Dynegy/MWG SR at 35, *citing* Exh. 8 at 2, Exh. 9 at 2-3. They argue that installing baghouses would take approximately three years and costs tens of millions of dollars. *Id*. They further argue that even coal-fired boilers equipped with both ESP and a baghouse cannot guarantee 100% compliance with opacity standards. Dynegy/MWG SR at 35; *see infra* at 55-56 (addressing second USEPA criterion). They also stress that these factors must be considered with the approaching retirements of the affected units. Dynegy/MWG SR at 35, *citing* Exh. 3 at 5-7, Exh. 9 at 3. Dynegy and MWG conclude that the possibility of adding baghouses does not eliminate the need for their proposed AELs. Dynegy/MWG SR at 35.

Dynegy and MWG argue that, without the proposed AELs, they may need to shutdown units to address any opacity exceedances that cannot be addressed through other means. Dynegy/MWG SR at 36. They further argue that this would require a new startup with longer operation with higher emissions in that mode and also risk enforcement actions based on "unavoidable opacity exceedances." *Id*., *citing* Dynegy/MWG TSD at 13-14. Dynegy and MWG also suggest that these factors could cause them to reevaluate retirement dates for the affected units. Dynegy/MWG SR at 36, *citing* Exh. 8 at 2, Exh. 9 at 2-3.

IEPA Comment and Request for Information

IEPA first notes Dynegy's and MWG's statement that their proposed alternative averaging period is based on the affected units' CAM plans, which are included in the CAAPP permits. PC5 at 19, *citing* Dynegy/MWG SR at 6. IEPA asserts that CAM plans intend to provide "a reasonable assurance of compliance" with regulations for which they are established to assurance, which in this case are PM rules at 35 Ill. Adm. Code 212.202, 212.203, and 212.204. PC5 at 19-20, *citing* 40 CFR 64; 415 ILCS 5/39.5 (2022). IEPA argues that the rules for which these CAM plans provide this assurance "relate to PM emissions in general, not PM_{10} or $PM_{2.5}$ for which there are specific NAAQS." PC5 at 20. IEPA further argues that "these CAM plans do not address whether there could be near-source NAAQS violations during SMB events." *Id*., *citing* Dynegy/MWG SR at 32-33.

IEPA stresses that Sections 212.202, 212.203, and 212.204 were last revised in 1996. IEPA argues that, although those rules "were all adopted to protect air quality with respect to PM, they were certainly not adopted to be protective of the current 2012 $PM_{2.5}$ or PM_{10} NAAQS (or even the 2006 or 1997 standards)" and do not directly regulate either pollutant. PC5 at 20. IEPA further argues that the "Part 212 PM emission standards have never been quantitatively evaluated in order to demonstrate that compliance with them would prevent a violation of the current NAAQS." *Id*. IEPA concludes that Dynegy and MWG should provide data and estimates "regarding worst-case emissions of PM_{10} and $PM_{2.5}$ during SMB events in terms of lb/hr for each pollutant." *Id.* While Dynegy and MWG argue that their proposal would provide relief limited in duration, IEPA states that any potential for exceedances would continue for the four stations until MWG's planned Powerton retirement on or before December 31, 2028. *Id.* at 21, *citing* Dynegy/MWG SR at 6.

IEPA notes Dynegy's and MWG's argument that their proposal establishes work practices that, with the proposed AEL, ensures compliance with the Board's PM rules and the PM NAAQS. PC5 at 21-22, *citing* Dynegy/MWG SR at 27. IEPA also notes their argument that the joint proposal will not allow "an effectively unlimited or uncontrolled level of emissions." PC5 at 22, *citing* Dynegy/MWG SR, Exh. 7.

IEPA notes that the proposal relies on PM emissions correlations, "which are based on PM emissions rates and concurrent opacity values measured during performance tests for each of the sources." PC5 at 23, *citing* Dynegy/MWG SR at 7-8. IEPA acknowledges that "correlations might be helpful to demonstrate compliance with the PM standards *below the level of the standard*, *i.e.*, for measured values of opacity less than 20% or 30%, depending on the source and the applicable opacity standard." *Id.*

IEPA argues that opacity can be correlated or associated with PM emissions but cannot be equated to quantitative PM emissions. PC5 at 23. IEPA asserts that Dynegy and MWG "should provide evidence that at opacity values up to 100% (allowed under the proposed AEL language if the three-hour average does not exceed the standard), emissions do not increase enough to potentially violate near-source $PM_{2.5}$ or PM_{10} NAAQS values." *Id.* IEPA further asserts that allowing six-minute opacity values without a numerical limit means that "there is no way to identify or evaluate emissions during the worst-case three-hour operating period allowed under the AEL." *Id.* Based on these factors, IEPA argues that it "cannot confirm a lack of any air quality impacts." *Id.* IEPA concludes that Dynegy and MWG should provide CEMS data and COMS date "to provide context about what worst-case PM, PM_{10}, and $PM_{2.5}$ emissions typically occur during SMB periods. *Id.* at 24.

Dynegy/MWG Responses

In response to IEPA's comments (*see* PC5 at 23), Dynegy and MWG submitted a Supplemental Technical Support Document providing an updated correlation analysis for two of the stations using data from PM CEMS during periods of elevated opacity. PC16 at 2, Exh. A; *see* Norfleet Test. at 1. The correlations predict that PM emissions would be the same regardless of whether opacity values are steady or fluctuate above and below applicable limits as long as average opacity meets the applicable AEL. PC16, Exh. A at 6. The supplemental TSD asserts that short-term variability would have no impact on 24-hour or annual NAAQS and no impact on compliance with state PM limitations. *Id.* Dynegy and MWG assert that, with the initial TSD, the supplemental TSD demonstrates that their proposal "will provide a large margin of compliance with applicable Illinois SIP PM standards and will raise no concerns with respect to 'attainment and reasonable further progress' or compliance with other CAA requirements under Section 110(l) of the Clean Air Act." PC16 at 2, Exh. A at 7.

Dynegy and MWG anticipated filing a final comment responding to IEPA and providing modeling analysis of PM emissions during SMB events and using worst-case assumptions. PC16 at 2. On March 22, 2024, Dynegy and MWG submitted their final comment (PC17), attached to which was its second supplemental TSD (PC17, Exh. 1; Norfleet Supp. Test.). The supplemental TSD comprehensively updates the original TSD, reflects changes to the proposed AELs, and summarizes the results or worst-case air dispersion modeling. PC17 at 2.

Although Dynegy and MWG performed modeling at IEPA's request, they "do not believe that air dispersion modeling is legally or practically necessary in order for the Companies' proposed AEL's to be promulgated under State law or to be successfully incorporated into the State SIP." PC17 at 2. Nonetheless, Dynegy and MWG performed this modeling. PC17, Exh. A. They assert that modeling demonstrates that "the worst-case impacts from operating the Companies' coal-fired boilers represent a very small fraction" of the PM_{10} and $PM_{2.5}$ NAAQS. *Id.*; Exh. 1 at 17-18, Exh. A at 3-1 – 3-2. They further assert that the proposed AELs "will provide a large margin of compliance with applicable State PM standard and will raise no concerns with respect to 'attainment and reasonable further progress'" or other CAA requirements under Section 110(l). *Id.*; Exh. 1 at 18.

Dynegy and MWG submitted revisions to their proposed Section 212.124(d). Their primary proposed change "is that the proposed Alternative Averaging Period is now prospective rather than retrospective." PC16 at 2. They comment that IEPA suggested this revision "for greater clarity and simplicity." *Id.*; *see* PC24 at 6. Dynegy and MWG submitted versions of their revised proposal, including the Board's proposed edits. *Id.*, Exhs, B, C. As revised, Dynegy and MWG propose subsection (d) providing that,

> [f]or coal-fired boiler 1 or 2 at the Baldwin Energy Complex, coal-fired boiler 1 or 2 at the Kincaid Power Station, coal-fired boiler 1 at the Newton Power Station, or coal-fired boiler 51, 52, 61, or 62 at the Powerton Generating Station, during times of startup or of malfunction or breakdown of these boilers or the air pollution control equipment serving these boilers, when average opacity exceeds the limitations as applicable under Section 212.122(a) or 212.123(a) for a six-minute period, compliance with Section 212.122(a) or 212.123(a) may alternatively be demonstrated as follows.
>
> 1) Alternative Averaging Period.
>
> For Baldwin Energy Complex coal-fired boilers 1 and 2, compliance for that six-minute period may be determined based on opacity readings averaged over a period of up to one hour beginning with the six-minute period in excess of the applicable standard.
>
> For Kincaid Power Station coal-fired boilers 1 and 2, Newton Power Station coal-fired boiler 1, and Powerton Generating Station coal-fired boilers 51, 52, 61, and 62, compliance for that six-minute period may be determined based on opacity readings averaged over a period of up to

three hours beginning with the six-minute period in excess of the applicable standard.

2) Recordkeeping and Reporting

A) Any owner or operator complying with the Alternative Averaging Period in subsection (d)(1) must maintain records of the average opacity calculations necessary to demonstrate compliance and must report the calculations to Illinois EPA as part of the next quarterly excess emissions report for the source.

B) For periods of startup, the report must include:

i) The date, time, and duration of the startup.

ii) A description of the startup.

iii) The reason(s) for the startup.

iv) An indication of whether written startup procedures were followed. If not, the report must include any departures from established procedures along with any reason the procedures could not be followed.

v) A description of any actions taken to minimize the magnitude or duration of opacity that requires utilization of the Alternative Averaging Period in subsection (d)(1).

vi) An explanation whether similar incidents could be prevented in the future and, if so, a description of the actions taken or to be taken to prevent similar incidents in the future.

vii) Confirmation of compliance with the requirements of subsection (d)(3).

C) For periods of malfunction and breakdown, such report shall include:

i) The date, time, duration (i.e., the length of time during which operation continued with opacity in excess of 20 or 30 percent, as applicable, on a six-minute average basis) until corrective actions were taken or the boiler was taken out of service.

ii) A description of the incident.

iii) Any corrective actions used to reduce the magnitude or duration of opacity that requires utilization of the Alternative Averaging Period in subsection (d)(1).

iv) Confirmation of compliance with the requirements of subsections (d)(2)(D) and (d)(3).

D) Any person who causes or allows the continued operation of a coal-fired boiler during a malfunction or breakdown of the coal-fired boiler or related air pollution control equipment when continued operation would require compliance with the Alternative Averaging Period in subsection (d)(1) must immediately report such incident to the Agency by telephone, facsimile, electronic mail, or other method as constitutes the fastest available alternative, except as otherwise provided in the operating permit. After reporting to the Agency, the person must comply with all reasonable directives of the Agency regarding the incident.

3) Work Practices

Any person complying with the Alternative Averaging Period in subsection (d)(1) must comply with the following work practices.

A) Operate the coal-fired boiler and related air pollution control equipment in a manner consistent with good engineering practice for minimizing opacity during such startup, malfunction or breakdown.

B) Use good engineering practices and best efforts to minimize the frequency and duration of operation in startup, malfunction and breakdown. PC16, Exhs. B, C; *see* PC24 at 5-6.

<u>IEPA Testimony</u>

Before the second hearing, IEPA generally requested "emissions data from previous startup at the affected sources that would indicate what worst-case emissions could be expected during SSM events, and modeling demonstrations or monitoring data that would demonstrate that these events would not interfere with maintenance of the applicable NAAQS. IEPA Test. At 2.

In its pre-filed testimony, IEPA states that Dynegy and MWG provided it with "startup data, a modeling report, and modeling files." IEPA Test. at 3. It reports that Dynegy and MWG submitted this data and the modeling report to the Board. *Id*. IEPA reports that "Dynegy/MWG have completely and effectively responded" to its October 23, 2023 comments and requests for information, data, and modeling. IEPA Test. at 18; *see* PC24 at 15.

IEPA had first questioned whether individual six-minute opacity exceedance will lead to disproportionate short-term increases in PM emissions compared to six-minute operating periods that comply with the applicable 20% or 30% opacity standard. IEPA Test. at 18. The original TSD provided opacity correlations based on data collected during previous emissions testing at the four plants. *Id*. at 19. In response to IEPA's October 23, 2023 comment, the supplemental TSD collected all one-minute PM emissions CEMS data from 2022 that exceeded the applicable 30% opacity standard at Kincaid and Powerton. *Id*. at 20. IEPA agrees that "the CEMS data correlations are sufficiently similar to the testing method correlations to justify their consideration as evidence of estimated PM emission under the proposed AEL." *Id*. IEPA further agrees that "the 'roughly linear' relationship between the opacity an PM CEMS measurements shown on the CEMA data correlations provides strong evidence that the PM emissions from short-term six-minute operating periods in excess of the 20% opacity standard do not increase in a non-linear (*e.g.*, exponential) manner." *Id*. at 20-21; *see* PC24 at 15. IEPA concludes that this resolves its concern that "total PM emissions from three-hour averaging periods under its proposed AEL could increase beyond the relevant PM standards is such three-hour periods include one or more six-minute periods far in excess of 30%." IEPA Test. at 21. IEPA asserts that this evidence for Kincaid and Powerton also provides evidence that of the likelihood that Baldwin and Newton would exceed their relevant PM standards. *Id*.; *see* PC24 at 15.

IEPA had also questioned whether operating under the AELs will lead to non-compliance with any applicable PM emission standard or PM NAAQS considering all possible three-hour operating scenarios under the AEL and the worst-case PM emissions that could occur under the AELs. IEPA Test. at 18-19. IEPA requested using CEMS data for this analysis. *Id*. at 19. Dynegy and MWG performed dispersion modeling, the results of which showed a "low potential for an exceedance of any of the applicable $PM_{2.5}$ or PM_{10} NAAQS standards. For each of the four sources, the maximum modeled impact considering separate worst-case scenarios is less than 2% of the NAAQS standard. *Id*. at 23; *see* PC24 at 16.

IEPA also notes the comment proposing to make the averaging period prospective rather than retrospective. IEPA Test. at 23, *citing* PC16, Exhs. B, C. IEPA states that, under this revision, "once any measured six-minute opacity value exceeds the standard, the source must use the following 174 minutes to get the average opacity under the value of the standard, rather than potentially using several hours of compliant six-minute period data not in excess of the opacity standard before any individual six-minute period of excess opacity occurs." IEPA Test. at 23-24.

Based on this additional support and justification, IEPA concludes that it "does not object to adoption of the rule proposal as set forth in Dynegy/MWG's March 15, 2024 filing with the Board." IEPA Test. at 24; *see* PC24 at 17.

<u>Post-Hearing Comments</u>

<u>AG (PC21).</u>

The AG asserts that the Dynegy's and MWG's joint proposal relies in part on complying with work practices to demonstrate compliance with the opacity limitation using an alternative averaging period. PC21 at 4. The AG notes that Dynegy's witness testified that requiring work practices is based on a recommendation in USEPA's 2015 SIP Call. MWG's witness affirmed this testimony. *Id.*, *citing* Tr.1 at 100, 101. The AG notes that JCAR had questioned whether the proposal could "incorporate by reference the standard to be enforced." PC21 at 2, *citing* PC2 at 2. At the third hearing, the AG questioned whether Dynegy and MWG could propose an enforceable standard of "good engineering practices." PC21 at 4, *citing* Tr.3 at 25-26.

While the AG acknowledges that Dynegy and MWG intended to address this issue in post-hearing comments, it argued that participants "will not have an adequate opportunity to question their witnesses about that definition and its impact on the propose AELs." PC21 at 5. The AG argues that, if Dynegy and MWG do not sufficiently address this, "the Board should disapprove the proposed Alternative Averaging Period." *Id*.

Board Findings

The AG argues that "good engineering practices" should be defined; however, the Board agrees that the federal rules do not define this term and there is nothing in the record to support creating its own definition. Additionally, Dynegy and MWG fully responded to IEPA's request for information; the data and modeling they submitted showed that total PM emissions from three-hour averaging periods would not increase beyond the PM standards and that there is a low potential for an exceedance of any relevant PM NAAQS standards. IEPA Test. at 21-23.

Upon its own review, the Board agrees with IEPA and finds that the proposal meets USEPA's seven criteria for AELs, is technically feasible and economically reasonable, and does not harm human health or the environment. Therefore, the Board includes Dynegy and MWG's revised proposal in its proposal for second notice.

API

API asserts that removing SMB provisions from Part 201 affects petroleum refinery operations that include FCCUs, which will be unable during SMB events to comply with CO limits at 35 Ill. Adm. Code 216.361. API SR at 2; *see id.* at 15, API TSD at 3. Consequently, API proposes to revise the CO standards applicable to petroleum and petrochemical processes to establish AELs applicable during periods of startup and hot standby. API SR at 2, 42. API proposes to incorporate by reference specific provisions of the NESHAP for petroleum refineries at 40 CFR 63 Subpart UUU. API SR at 2, 42; *see* API TSD at 3. API asserts that its proposal meets federal and state requirements, protects air quality, and allows continuous compliance by affected sources. API TSD at 3.

API is a national trade association of approximately 600 members representing various aspects of the oil and natural gas industries. API SR at 1; API TSD at 4; Reese Test. at 1. API reports that the rules adopted in R23-18 affect four refineries in Illinois: the ExxonMobil Joliet Refinery in Will County, the WRB Refining Wood River Refinery in Madison County, the CITGO Petroleum Refinery in Will County, and the Marathon Petroleum Refinery in Crawford

County. API SR at 2, 43; API TSD at 4-5; Reese Test. at 3. Although its members include only Exxon Mobil, Marathon, and Phillips 66 of WRB, API states that all four refineries support its proposal. API SR at 43, 45.

The Board first discusses background on FCCUs, then current emissions limits, then API's proposed AELs, then USEPA's seven criteria for AELs, then CAA requirements, then the technical feasibility and economic reasonableness of the proposal, then IEPA's request for more information, then API's response to IEPA's request, then IEPA's testimony, and finally post-hearing comments.

FCCUs

API reports that the four Illinois refineries have five FCCUs, which may be referred to as "cat crackers." API TSD at 14.

Background. API describes fluid catalytic cracking as "a refining process used to convert heavier and higher boiling point hydrocarbons from crude oil into gasoline, diesel, jet fuel, heating oil, and other useful products." API TSD at 14. FCCUs use technology that circulates catalyst through transfer lines between a stripper/reactor and a regenerator. *Id*. The process feeds heavier hydrocarbons into the reactor, where it mixes with the catalyst. *Id*. The cracking reaction occurs as the hydrocarbon and catalyst move up the reactor riser. *Id*. At the top, the process separates cracked hydrocarbon vapors from the catalyst and any unreacted hydrocarbon. *Id*. "The hydrocarbon vapors are sent to the main distillation column or fractionator to be separated into the useful product streams. The separated catalyst and heavier hydrocarbon flow back to the regenerator." *Id*.

A layer of carbon or "coke" forms on the catalyst during the cracking reaction. API TSD at 14. The regenerator burns coke off of the surface of the catalyst to clean it for reuse and also to provide heat for operating the unit. *Id*. The process sends regenerated catalyst back to the reactor to repeat the cracking cycle. *Id*.

However, burning coke off of the catalyst creates flue gas containing CO as a result of incomplete combustion. API TSD at 15; *see* API SR at 30-31. Factors including time, temperature, and turbulence influence complete combustion. API SR at 30-31. API asserts that, during normal operations, "good combustion is achievable and CO emissions can be minimized." *Id*. at 31. During startup, however, API argues that "there is no feed to the unit and no coke combustion." *Id*. For safe operation, API states that the unit must first be brought to operating temperature by combusting torch oil, which results in elevated CO emissions. *Id*. Depending on how long the FCCU had been shut down and cooled, API argues that the startup process can take hours or days to safely reach operating temperature. *Id*. API asserts that "[i]t is not feasible to meet the CO standard during this startup period." *Id*.

From the regenerator, the flue gas flows to a system that removes any catalyst particles present. API TSD at 15. "The regenerator and the flue gas system comprise the air side of the FCCU." *Id*. On the air side, flue gas treatment removes sulfur compounds such as SO_2 and removes any entrained catalyst with equipment such as an electrostatic precipitator. It also provides combustion of CO to CO_2. *Id*. Combustion generally takes place in a CO boiler, which can generate steam to support process units at the refinery. *Id*.

FCCUs are characterized as either full-burn or partial-burn units. API TSD at 15. Partial-burn units complete flue gas combustion downstream in a CO boiler. API reports that "the FCCUs in Illinois use CO boilers to control CO." API SR at 31. API asserts that, for safety and reliability reasons, FCCUs startup in full burn mode and bypass the CO boiler. *Id*. at 31-32, *citing* 80 Fed. Reg. 75178, 75220-21 (Dec. 1, 2015). API indicates that refineries cannot reliably startup an FCCU with boilers in service and meet CO standards. *Id*. API adds that, because of high levels of CO when the CO boiler is not available, averaging is not an effective way of addressing startup and shutdown emissions for partial-burn units. API TSD at 15.

A full-burn unit "operates with excess oxygen to ensure complete combustion and has CO levels of about 10-100 ppm out of the regenerator during normal operation." API TSD at 15. Full-burn units generally do not include CO boilers. *Id*.

Monitoring. API notes that these FCCUs operate with extensive CEMS for SO_2, NO_x, and CO, which are maintained and tested under USEPA standards. API TSD at 15. API adds that "[t]heir performance is reported to the USEPA and IEPA semi-annually, including periods of excess emissions due to startup, shutdown, and malfunctions." *Id*.

SSM Operating Conditions. API states that USEPA has considered whether AELs or work practice requirements are warranted for the petroleum refinery sector. API TSD at 17, *citing* Sierra Club v. EPA, 551 F.3d1019 (D.C. Cir. 2008). API reports that USEPA concluded that three emission sources that may need specific startup and shutdown provisions: startup for FCCUs equipped with electrostatic precipitators, startup for FCCUs using CO boilers, and Sulfur Recovery Units. API TSD at 17, *citing* 80 Fed. Reg. 36880, 36943 (June 30, 2014); *see* API SR at 27.

For FCCU startup generally, the reactor and regenerator train temperature must be raised 1000-1200 ºF, the range at which the reaction occurs for catalytic cracking. API TSD at 17; Reese Test. at 4. If the refinery performed refractory repairs, dry-out is required, and the regenerator temperature must be increased slowly at a rate of 50-100 ºF per hour to prevent refractory damage. API TSD at 17-18; Reese Test. at 4. Refineries use hot air to heat the regenerator before introducing feed into an FCCU. Hot air is typically supplied by a natural gas-fired preheater used only for startup. *Id*. "Emission from the regenerator vent during this time are from the air heater." *Id*.

Noting testimony on refractory dry-outs, the Board asked API to comment on "how frequently refractory repairs are done on cracking units. Board Questions at 4 (¶15a).

Mr. Reese testified that "[e]very refinery startup is unique," and each company decides the extent of repairs and maintenance taken during downtime. Tr.1 at 73. He added that "[r]efractory inspection is a typical task during downtime or when vessel entry occurs. Inspection findings identify the type of refractory repairs to be executed." *Id*.

The Board also asked "[w]hat would be typical rate of regenerator temperature increase under normal startup condition when no refractory repair is involved?" Board Questions at 4 (¶15b). Mr. Reese testified that there is no typical rate. The rate of increase depends on the particular vessel and the extent of the refractory work conducted. Tr.1 at 73.

API states that these auxiliary heaters and regenerator internals are not designed to heat the regenerator to temperatures required to start the cracking reaction. API TSD at 18; Reese Test. at 4. During a typical startup, a refinery will add torch oil to the regenerator to heat the unit to operating temperature. *Id.*; *see* API SR at 28. With the addition of feed to the unit "catalytic coke will start to burn in the regenerator along with the torch oil." API TSD at 18; Reese Test. at 4. During normal startups, the addition of feed increases quickly, and torch oil is withdrawn. *Id.* API states that the time during which torch oil is added "results in increased CO during the startup period." *Id.*; *see id.* at 19-20, *citing* 80 Fed. Reg. 36880, 36943 (June 30, 2014); *see* API SR at 28.

For full-burn units, startup includes a short period of operation in partial burn mode resulting in higher CO emissions. API TSD at 18; Reese Test. at 5. The period of partial burn may result from heat imbalance during the transition or be necessary for safety. *Id.* API explains that "operation at regenerator temperatures high enough for complete combustion while establishing catalyst circulation or introducing feed can result in exceeding metallurgical temperature limits." *Id.* API describes introducing feed to the unit as "a balancing act" and "an extremely complex operation with numerous variables that operations must manage." API TSD at 18-19, Reese Test. at 5; *see* API TSD at 22.

For partial-burn units, CO boilers add a step to startup. API TSD at 19; Reese Test. at 5-6. API explains that CO boilers startup separately "to protect them from swings of the regenerator flue gas quality during the startup process." *Id.* API also cites industry safety practices recognizing "the potential hazard for hydrocarbon vapor to flow back to a CO boiler during startup" and recommending that the FCCU reactor is fully operational before CO boiler startup. *Id.* API states that, "[o]nce the regenerator is stable, the flue gas is added to the CO boilers, and CO emissions drop to normal levels." *Id.* Before flue gas is added to the CO boiler, the unit operates with high CO emissions. *Id.*

API argues that "USEPA recognized that a low level of CO in exhaust gas could be consistently achieved if the oxygen concentrations in the exhaust gas exceeded 1-percent by volume." API TSD at 20, *citing* 80 Fed. Reg. 36880, 36943 (June 30, 2014); Reese Test. at 6. API further argues that requiring this level ensures an oxygen concentration maximizing combustion and minimizing CO and HAP emissions. *Id.*; *see* API SR at 28.

Hot Standby. API notes the regulatory definition of "hot standby" as "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." API TSD at 21, n.3, *citing* 40 CFR 63.1579.

API describes "hot standby" as "a mode of FCCU operation which is implemented in response to a malfunction or breakdown situation." API SR at 25, 33; *see id*. at 7; API TSD at 21; Reese Test. at 6. It reports that a source might use hot standby "when there is a unit upset that takes another unit down and the FCCU can be paused without having to shut the unit completely down." *Id*.

API also describes "hot standby" as "the use of torch oil to maintain the reactor and regenerator temperature as well as catalyst recirculation." API TSD at 20, Reese Test. at 6; *see* API SR at 33. API states that refineries use this operating condition "for limited duration during unplanned events which require removal of feed from FCCU." *Id*. It argues that hot standby is functionally similar to start up and that "[i]t is not technically feasible to control CO emissions during hot standby operations." API SR at 33. API adds that "[h]ot standby avoids a subsequent cold start, which can have higher CO emissions and has more associated safety risks." *Id*.; *see* Reese Test. at 6-7. API states that, in the transition to full refinery operation, the risk of igniting uncombusted hydrocarbons is a serious safety issue. *See* API SR at 33.

API asserts that source operations other than startup and shutdown may make it appropriate to establish AELs. It argues that USEPA has recognized that the same criteria apply to establishing AELs for those operations as to startup and shutdown. API SR at 7 (listing seven criteria), *citing* 80 Fed. Reg. 33840, 33914 (June 12, 2015). API argues that hot standby, which responds to a breakdown or malfunction, is one of those operations. *Id*. It further argues that "USEPA recognized hot standby as another mode of source operation by including provisions applicable during hot standby periods in NESHAP Subpart UUU." API SR at 7; *see* API TSD at 21.

<u>Emissions Limitations</u>

Part 216 of the Board's air pollution rules addresses CO emissions, and it is organized into Subparts by categories of sources. 35 Ill. Adm. Code 216; *see* API SR at 14. Subpart N addresses petroleum refining and chemical manufacture. 35 Ill. Adm. Code 216.361, 216.362. Under the heading "Petroleum and Petrochemical Processes," Section 216.361 provides in its entirety that:

> 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. 35 Ill. Adm. Code 216.361; *see* API SR at 15; API TSD at 16.

API states that Part 216 contains only CO standards and does not include monitoring, testing, recordkeeping, or reporting requirements. API SR at 14; *see* 35 Ill. Adm. Code 216.

API notes that this limitation does not include alternative standards for periods of SMB, although it argues that "it is generally understood that CO emission for FCCUs can vary widely during startup due to the complex procedures needed to eventually bring a unit and its air pollution controls to a steady-state operating condition." API TSD at 7, *citing* 80 Fed. Reg. 75178, 75211 (Dec. 1, 2015). API asserts that, if the Board does not adopt its proposal, FCCUs cannot startup in compliance with the 200 ppm standard in 35 Ill. Adm. Code 216.361. API TSD at 20. It adds that FCCUs may not be able to operate in hot standby in response to various disruptions. *Id*.; *see* Reese Test. at 8.

API also notes that "the federal standard is 500 ppm on a one-hour average basis." API TSD at 16, *citing* 40 CFR 60.103, 63.1565. This standard reflects the most recent 2016 Risk and Technology Review of the Parts 60 NSPS and Part 63 NESHAP standards for petroleum refineries. API TSD at 16. Mr. Reese testified that "all U.S. refineries and catalytic cracking units are subject to Part 63 NESHAP standards." Tr.1 at 71. API asserts that states generally have incorporated the Part 60 and 63 standards. API TSD at 16; *see* Reese Test at 9. Others require combusting CO during normal operation of a catalytic cracker without adding a numeric concentration limit. API TSD at 16; *see* Reese Test. at 8-9; Tr.2 at 8. Others set a higher concentration limit and also allow for startups. *Id*.; *see* Tr.2 at 8-9. API asserts that some state standards exempt units subject to either an NSPS, a NAQQS, or both. API TSD at 16; *see* Tr.1 at 70-71 (Reese testimony). API argues that "Illinois' limitation of 200 ppm is a unique problem with respect to FCCU startup and shutdown events when compared to other states." API TSD at 16; *see* Reese Test. at 8; Tr.1 at 70; Tr.2 at 8, 9.

Proposed Limitations

API proposes to amend 35 Ill. Adm. Code 216.103, 216.104, and 216.361. API SR at 14; *see* API Prop., Reese Test. at 2, 7-8. Under its proposal, existing standards in Section 216.361 would continue to apply during normal, steady-state operation. API SR at 24; *see* Reese Test. at 8. API's proposed amendments intend to provide affected sources the option to comply with Subpart UUU provisions during period of startup and hot standby. API SR at 24; *see* Reese Test. at 2. API argues that its proposed AELs are "required in order for refineries to maintain continuous compliance with Section 216.361." API SR at 14.

"API acknowledges that the prior SMB provision in 35 Ill. Adm. Code 201 did not address hot standby." API SR at 24-25. It argues that USEPA recognizes hot standby as a mode of operation by including provision addressing it in Subpart UUU. *Id*. at 7, 25. It concludes that its proposed AELs appropriately address both startup and hot standby. *Id*.; *see* Reese Test. at 8.

API asserts that it developed its proposal "to satisfy USEPA's criteria for developing AELs." API SR at 14. If the Board adopts its proposal, API expects that IEPA would submit the adopted amendments to USEPA as a SIP revision. *Id*.

35 Ill. Adm. Code 216.103. Section 216.103 entitled "Definitions" provides in its entirety that "[t]he definitions contained in 35 Ill. Adm. Code 201 and 211 apply to this Part." 35 Ill. Adm. Code 216.103.

API proposes to incorporate by reference provisions of NESHAP Subpart UUU that include the terms "catalytic cracking unit," "hot standby," and "startup." API notes that neither Part 201 nor Part 211 defines "catalytic cracking unit" or "hot standby." API SR at 25. It proposes to amend Section 216.103 by referring to the definitions of these two terms in Subpart UUU. *Id*. at 26. Although Part 211 defines "start-up," that definition differs from the Subpart UUU definition. *Id*., *citing* 35 Ill. Adm. Code 211.6310. API proposes to amend Section 216.103 by referring to the definition of this term in general provisions at NESHAP Subpart A. API SR at 26.

API proposes to amend Section 216.361 as follows:

> The definitions contained in 35 Ill. Adm. Code 201 and 211 apply to this Part. <u>The definitions for "catalytic cracking unit" and "hot standby" in 40 CFR 63.1579 apply to Section 216.361(d) of this Part. The definition of "startup" in 40 CFR 63.2 applies to Section 216.361(d) of this Part</u>. API SR at 25; API Prop. at 2; *see* Reese Test. at 8.

API proposes to refer to the Subpart UUU definition providing that

> [c]atalytic 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. 40 CFR 63.1579; *see* API SR at 26.

API also proposes to refer to the Subpart UUU definition providing that

[h]ot 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. 40 CFR 63.1579; *see* API SR at 26.

In addition, API proposes to refer to NESHAP general provision providing that "[s]tartup means the setting in operation of an affected source or portion of an affected source for any purpose." 40 CFR 63.2; *see* API SR at 26.

35 Ill. Adm. Code 216.104. Section 216.104 entitled "Incorporations by Reference" provides in its entirety that "[t]he following materials are incorporated by reference: non-dispersive infrared method, 40 CFR 60, Appendix A, Method 10 (1982)." 35 Ill. Adm. Code 216.104. API's proposed amendments to Section 216.361 refer to NESHAP Subparts N and UUU, and it proposes to incorporate these Subparts by reference. API SR at 27.

API proposes to amend Section 216.104 as follows: "[t]he following materials are incorporated by reference: non-dispersive infrared method, 40 CFR 60, Appendix A, Method 10 (1982)<u>; 40 CFR Part 63, Subpart A (2022); 40 CFR Part 63, Subpart UUU (2022)</u>. API SR at 25; API Prop. at 2; *see* Reese Test. at 8.

35 Ill. Adm. Code 216.361. API proposes to amend Section 216.361 to include alternative CO standards applicable during startup and hot standby. API SR at 15. It proposes to add a subsection (d) providing in its entirety that,

> [n]otwithstanding subsections (a) through (c), during periods of startup and hot standby, any new or existing petroleum catalytic cracking units can elect to comply with subsections (a) through (c) 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). API SR at 16; API Prop. at 2; *see* Reese Test. at 8.

API states that its proposed AELs incorporate work practice standards from 40 CFR 63, Subpart UUU. API SR at 16-17.

MACT Background. API states that its proposed AELs are based on NESHAP Subpart UUU, which USEPA promulgated in 2015 and refineries have since successfully implemented. API SR at 27, *citing* 80 Fed. Reg. 75178 (Dec. 1, 2015); API TSD at 4. API argues that SSM provisions addressed a petition filed by the Sierra Club and reflected USEPA's position regarding SSM exemptions. API SR at 27; *see* 80 Fed. Reg. 33840, 33851 (June 12, 2015). API argues that USEPA replaced SSM exemptions with alternative emission standards. *Id*.

Compared to Part 216 CO standards, API argues that Subpart UUU standards "are more comprehensive" and include requirements for monitoring, testing, recordkeeping, and reporting. API SR at 14. API adds that, under Subpart UUU, "CO is regulated as a surrogate for organic

HAP species, as low CO is an indication of good combustion, the mechanism for eliminating organic HAPs." *Id*. at 14-15; *see* API TSD at 16.

<u>40 CFR 63.1565(a)(5).</u> This provision "provides the requirements for organic HAP emissions from catalytic cracking units during periods of startup, shutdown, and hot standby." API SR at 17. Under the heading "What emissions limitations and work practice standards must I meet?" subsection (a)(5) provides that,

> [o]n 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:
>
> * * *
>
> (ii) You can elect to maintain the oxygen (O_2) 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 63.1565(a); *see* API SR at 17.

API proposes to incorporate this provision to provide sources with FCCUs the option of complying with this oxygen concentration standard in place of the CO standards at 35 Ill. Adm. Code 216.361. API SR at 17.

<u>40 CFR Part 63, Subpart UUU, Table 9.</u> This provision "provides the operating limits for organic HAP emissions from catalytic cracking units." API SR at 17; *see* 40 CFR 63, Subpart UUU Table 9. Row 3 of this table "governs periods of startup, shutdown, or hot standby" and requires meeting the requirements in 40 CFR 63.1565(a)(5). *Id*. API asserts that it proposed to incorporate this table "to provide the sources with FCCUs the option of complying with the oxygen concentration standard in 40 CFR 63.1565(a)(5)(ii) during startup or hot standby" in place of the CO standards at 35 Ill Adm. Code 216.361. API SR at 18.

<u>40 CFR 63.1570(c).</u> This provision "provides the requirement to operate and maintain the source and associated air pollution equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions." API SR at 18. Under the heading "What are my general requirements for complying with this subpart?" subsection (c) provides in its entirety that,

> [a]t 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(c); *see* API SR at 18.

API proposes to incorporate this requirement "to mirror the SMB permit conditions concerning the duty to minimize emissions during SMB periods." API SR at 18. API adds that this requirement is intended to meet USEPA's third and sixth criteria for considering AELs. *Id*. at 18-19; *see infra* at 83, 86.

<u>40 CFR 63.1570(f).</u> This provision requires submitting a report for each instance that does not meet SSM requirements. API SR at 19. Under the heading "What are my general requirements for complying with this subpart?" subsection (f) provides in its entirety that

> [y]ou 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 63.1570(f); *see* API SR at 19.

API proposes to incorporate this requirement so that affected facilities will be required to submit to IEPA a report of "each instance om which the facility did not meet the oxygen concentration standard in 40 CFR 63.1656(a)(5)(ii) and Table 9 during startup or hot standby." API SR at 19.

<u>40 CFR 63.1572 (c).</u> This provision requires installing and operating a continuous parameter monitoring system. API SR at 19-20, *citing* 40 CFR 63.1572(c). Under the heading "What are my monitoring installation, operation, and maintenance requirements" subsection (c) provides in its entirety that,

> [e]xcept 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 colormetric 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. 40 CFR 63.1572(c); *see* API SR at 19-20.

API reports that each of the four refineries identified in its proposal operates "a continuous parameter monitoring system, an oxygen content sensor, which demonstrates compliance with the oxygen concentration limit in 40 CFR 63.1565(a)(5)(ii) and Table 9 during periods of startup or hot standby." API SR at 20.

<u>40 CFR Part 63, Subpart UUU, Table 10.</u> Under the heading "Continuous Monitoring Systems for Organic HAP Emissions from Catalytic Cracking Units," Table 10 requires these systems for organic HAP emissions from these units. During periods of startup, shutdown, or hot standby for units electing to comply with 40 CFR 63.1565(a)(5)(ii), the unit must install, operate and maintain a "[c]ontinuous 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)." 40 CFR 63, Subpart UUU Table 10; *see* API SR at 20-21.

API reports that each of the four refineries identified in its proposal operates "a continuous parameter monitoring system, an oxygen content sensor, which demonstrates compliance with the oxygen concentration limit in 40 CFR 63.1565(a)(5)(ii) and Table 9 during periods of startup or hot standby." API SR at 21.

<u>40 CFR Part 63, Subpart UUU, Table 14.</u> Under the heading "Continuous Compliance With Operating Limits for Organic HAP Emissions from Catalytic Cracking Units," Table 14 establishes "how the sources will demonstrate continuous compliance with the oxygen concentration in 40 CFR 63.1565(a)(5)(ii)." API SR at 22. During periods of startup, shutdown, or hot standby for units electing to comply with 40 CFR 63.1565(a)(5)(ii), Row 3 requires that the unit must demonstrate compliance by "[c]ollecting 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)." 40 CFR 63, Subpart UUU table 14; *see* API SR at 21-22.

<u>40 CFR 63.1576(d).</u> Under the heading "What records must I keep, in what form, and for how long?" subsection (d) refers to continuous compliance requirements during startup, shutdown, and hot standby. API SR at 22. It provides in its entirety that

> [y]ou 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. 40 CFR 63.1576(d); *see* API SR at 22.

"API proposes to incorporate this provision in order to incorporate the continuous compliance requirements of Table 14, Row 3." API SR at 22.

<u>40 CFR Part 63, Subpart UUU, Table 41.</u> Under the heading "Requirements for Installation, Operation, and Maintenance of Continuous Parameter Monitoring Systems" addresses these various systems. API SR at 22, 23. Row 10 addresses oxygen content sensors and provides in its entirety that the unit must:

> 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 ±1 percent of the range of the sensor or to a nominal gas concentration of ±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. 40 CFR 63, Subpart UUU Table 41.

Row 10 also provides that it "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, Subpart UUU Table 41, n.2.

40 CFR 63.1576(a)(2). Under the heading "What records must I keep, in what form, and for how long?" subsection (a)(2) addresses maintaining records of SSM events. It requires that the unit must keep the following records specified in subsections (i) through (iv):

> (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(a)(2); *see* API SR at 23-24.

API incorporates these recordkeeping requirements to meet USEPA's seventh criterion that "the owner or operator's actions during startup or shutdown periods are documented by properly signed, contemporaneous operating logs or other relevant evidence." API SR at 24; *see infra* at 86.

USEPA Criteria

API argues that USEPA has "recognized that there are approaches to address emissions during SSM events that are consistent with the requirements of the CAA." API SR at 5, 29, *citing* 80 Fed. Reg. 33840, 33844 (June 12, 2015). USEPA recommended and clarified seven criteria for developing AELs applicable during SSM events. API SR at 6-7; API TSD at 8-9 (listing seven criteria). API argues that USEPA recognizes 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." API SR at 29, *citing* 33840, 33913 (June 12, 2015). API asserts that its proposed rule-specific SMB provision satisfies these criteria. API TSD at 8-9, citing 80 Fed. Reg. 33840, 33980 (June 12, 2015); *see* Reese Test. at 9.

Criterion 1. The first criterion is that "[t]he 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)." 80 Fed. Reg. 33840, 33980 (June 12, 2015); API SR at 29.

API asserts that "Section 216.361 applies specifically to 'petroleum and petrochemical processes,' so it is a source-specific emissions standard and not the type of generally applicable standard that USEPA disfavors." API TSD at 10. It adds that its proposed amendments are limited to FCCUs as defined by the MACT standard, of which there are four in Illinois. Each of the four is controlled by CO boilers or CO furnaces during steady-state operation. API SR at 30; *see* Reese Test. at 9.

Subpart UUU allows a source during periods of startup, shutdown, or hot standby to comply with an alternative to the generally applicable CO standard of 500 ppmv (dry 1-hour basis). API SR at 30, *citing* 40 CFR 63,1565(a)(5). API states that, under its proposal, Illinois' more stringent generally applicable CO standard of 200 ppm corrected to 50% excess air would continue to apply during normal operation. API SR at 30. API concludes that its proposal appropriately includes AELs from Subpart UUU for periods of startup and hot standby. *Id.*

Criterion 2. The second criterion is that "[u]se of the control strategy for this source category is technically infeasible during startup or shutdown periods." 80 Fed. Reg. 33840, 33980 (June 12, 2015); API SR at 30.

Above under "FCCUs," the Board addresses operations of and emissions from those units during startup and hot standby and the feasibility of meeting generally applicable standard during those periods. *See supra* at 70-73. API argues that Section 216.361 "imposes numeric CO emissions limitations that have been demonstrated not to be achievable by affected sources." API TSD at 10; *see* API SR at 33-34; Reese Test. at 9. It further argues that USEPA's Subpart UUU demonstrates that "alternative numeric CO standards covering at least periods of startup are needed and appropriate for FCCUs and related equipment." API TSD at 10. API asserts that refineries have been safely implementing those standards and procedures since 2016. API SR at 34.

API adds that, after it filed its rulemaking proposal, Marathon filed a petition for an adjusted standard that included data demonstrating that complying with NESHAP Subpart UUU should not impact attainment of the CO NAAQS. API reports that Marathon collected ambient monitoring data for two temporary monitors that operated over three years from 2017 to 2019. Those data showed that CO emissions from Marathon's refinery, which was complying with NESHAP Subpart UUU, "were well below and did not result in an exceedance of the CO NAAQS." Reese Test. at 10, *citing* Petition of Marathon Petroleum Company, LP for an Adjusted Standard from 35 Ill. Adm. Code Part 201 and Section 216.361, AS 24-3 Technical Support Document at 6-7, 14-15 (Aug. 14, 2023); *see* Tr.2 at 6. API also noted that, during the monitoring period, there were five startups of Marathon's FCCU.

Noting Mr. Reese's testimony, the Board asked him to clarify "whether one or two startups per year are typical for FCCU." Board Questions at 4 (¶16a).

Mr. Reese testified that the number of startups varies based on the reason the unit is down. He added that unexpected events such as a power outage, weather issues, or an equipment breakdown may necessitate a shutdown and subsequent startup. Tr.1 at 74.

The Board also asked whether it would be possible "to provide startup information like Marathon's for FCCUs at the other refineries covered in API's proposal." Board Questions at 4

(¶16b). Mr. Reese's testimony noted that the AG had requested this information for Marathon's startup events. Tr. 1 at 75. He added that, although current refinery rules require CEMS for CO, API was not aware of whether the other Illinois refineries had similar monitors in their areas in recent years. *Id*. at 74-75.

Criterion 3. The third criterion is that "[t]he alternative emission limitation requires that the frequency and duration of operation in startup or shutdown mode are minimized to the greatest extent practicable." 80 Fed. Reg. 33840, 33980 (June 12, 2015); API SR at 34.

API argues that "FCCU startups and shutdowns are infrequent events. FCCUs typically have run lengths between 5-7 years between major maintenance activities." API SR at 35. It characterizes unplanned shutdowns and startups as rare but attributable to known causes such as weather, power failure, or unexpected equipment failures. *Id*. "It would be unusual for a refinery to experience more than a single FCCU startup/shutdown sequence in a given year." *Id*.

API stresses that it proposes to incorporate from Subpart UUU the general duty to minimize emissions. API SR at 35, *citing* 40 CFR 63.1570(c) ; *see* Reese Test. at 10. API argues that because the FCCU is the crucial operating unit, refineries have an incentive to minimize startup time as much as safely practicable, which minimizes emissions. API SR at 35.

Noting Mr. Reese's testimony on this criterion, the Board asked him to comment on whether "the affected refineries maintain information on the frequency and duration of FCCUs in hot standby mode on monthly or yearly basis." Board Questions at 4 (¶17a). Mr. Reese testified that these CEMS data for CO are reported semi-annually to IEPA and USEPA. Tr.1 at 74, 76; Tr.2 at 6.

The AG noted ExxonMobil's statement in its petition for an adjusted standard that it had used AERMOD to perform screening modeling. Tr.1 at 76, *citing* Petition of ExxonMobil Oil Corporation for Adjusted Standard from 35 Ill. Adm. Code 216.361, 35 Ill. Adm. Code 216.103, and 35 Ill. Adm. Code 216.104, AS 24-1, Petition at 34 (Aug.14, 2023). The AG questioned whether "API could submit more detail about the AERMOD screening that ExxonMobil performed, including the inputs and then more detail on the results." Tr.1 at 76. In its first post-hearing comment, API submitted "additional information concerning the CO dispersion modeling performed at the ExxonMobil refinery." PC3 at 3, Exh. 2.

The Board also requested comment on whether hot standby falls within the SSM SIP Call. Board Questions at 4 (¶17b). Mr. Reese testified that "[h]ot standby is specifically noted as an opt-in scenario for the alternative emission standard in the federal language." Tr.1 at 77.

Criterion 4. The fourth criterion is that, "[a]s 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." 80 Fed. Reg. 33840, 33980 (June 12, 2015); API SR at 36.

API cites USEPA's position that it does not agree that "'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 . . . 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." API SR at 36, *citing* 80 Fed. Reg. 33840, 33867 (June 12, 2015).

API states its understanding that "other states either do not have CO standard for FCCUs or they exempt units subject to federal regulations." API SR at 36 (citations omitted). API first argues that Illinois' CO limit of 200 ppm at 35 Ill. Adm. Code 216.361 is "unique," suggesting that it is uniquely stringent. *Id*.

API also argues that all Illinois petroleum refineries now have in their operating permits and rely upon SMB provisions. API SR at 36. API adds that all petroleum refineries are now subject to Subpart UUU, including the requirement that that these facilities have CEMS that collect emissions data during all periods of operation. *Id*. at 38. API concludes that, as Illinois transitions from the SMB provisions in its SIP to the AELs in Subpart UUU, "there should be no impact on allowable emissions relative to today." *Id.* at 39. API adds that facilities rely on CEMS to collect and report emissions data, including data for periods that bypass CO boilers, so worst-case emissions are already captured in Illinois' emission inventory. *Id*. at 38-39.

API cites other factors relating to CO emissions. API SR at 39 (*citing* 2021 Illinois Air Quality Report). Among those factors, it argues that "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 NAAQS. API SR at 39; *see* Tr.2 at 6 (Reese testimony). API also argues that "[m]ost recent data show the highest monitor's worst daily high 1-hour and 8-hour CO NAAQS readings are dramatically below the NAAQS." API SR at 39. Mr. Reese testified that Illinois "publishes an annual monitoring network plan, which takes into account the highest concentration of pollution in a given are as well as pollution resulting from significant sources or source categories." Tr.2 at 6-7. He added that, to API's knowledge, IEPA has never recommended in any of its annual updates "that any CO monitor be relocated nearer to one of the refineries." *Id*. at 7. API adds that CO emission from petroleum refineries "are a small fraction of Illinois' point source inventory, only 4%." *Id*. Including mobile sources and other sectors, API argues that refineries account for "an extremely small fraction of the Illinois inventory, only 0.2%." API SR at 39. (citation omitted). It concludes that its proposal would not affect worst-case emissions reported today. *Id*.; *see* Reese Test. at 9-10.

API reports that a refinery recently modeled impacts from recent startup events to estimate their ambient impacts. API SR at 40. It states that "incremental emission impacts during startups were less than 3% and 6% of the 1-hour and 8-hour standards, respectively." *Id*.

The AG asked API whether this assertion refers to data summarized in Marathon's TSD submitted with its petition for an adjusted standard. AG Questions at 5 (¶1), *citing* <u>Petition of Marathon Petroleum Company, LP for an Adjusted Standard from 35 Ill. Adm. Code Part 201 and Section 216.361</u>, AS 24-3 (Aug. 14, 2023) (TSD at 14).

Mr. Reese testified that it refers instead to "modeling conducted by ExxonMobil and describer in their petition or an adjusted standard." Tr.1 at 64-65; *see* <u>Petition of ExxonMobil</u>

Oil Corporation for Adjusted Standard from 35 Ill. Adm. Code 216.361, 35 Ill. Adm. Code 216.103, and 35 Ill. Adm. Code 216.104, AS 24-1 (Aug 14, 2023).

The AG questioned why Marathon was required to operate two monitoring stations from 2017 to 2019 and when the stations were first installed. AG Questions at 5 (¶2). The AG also asked whether the monitoring stations have operated at any time since the end of calendar year 2019. *Id*.

Mr. Reese testified that Marathon was required to operate two monitoring station under a 2015 consent order with the state as part of an SEP. Tr.1 at 65. "The purpose of the SEP was to undertake an ambient air modeling and monitoring project at and around the Robinson refinery to evaluate emissions from the refinery for baseline purposes and to compare them, then recently revised as of two NAAQS." *Id*. at 65-66. He testified that the project operated from January 1, 2017, through December 31, 2020. *Id*. at 66.

The AG asked what parameters the two monitoring stations monitored and requested "the location of the two monitoring stations relative to both the Marathon refinery's fence line" and the refinery's FCCU, including both distance and direction. *Id*. (¶¶3, 4). Mr. Reese testified that the stations monitored CO, NO_2, total reduced sulfur, PM_{10}, and VOC. *Id*. at 66. He also described the fence line location of the stations and testified that "[m]onitoring station number one is approximately 2000 feet north of the FCCU," and "[m]onitoring station two is located at approximately 1900 feet southwest of the FCCU." *Id*. at 67.

The AG asked API to provide "the date and time of each of the five FCCU startups at the Marathon refinery during calendar years 2017 through 2019" as described in its TSD. AG Questions at 5 (¶5). Mr. Rees's testimony included this information (Tr.1 at 68), and API included it in its first post-hearing comment. PC 3 at 2.

The AG also asked API to provide monitoring data available from the two monitoring stations from the dates of the five startups at the Marathon refinery during the calendar years 2017 through 2019. AG Questions at 5 (¶6). API's first post-hearing comment includes "excerpts from Marathon's Completion Report prepared pursuant to the Consent Order, which includes summary CO data from Marathons monitoring stations from 2017 through 2019." PC 3 at 2, Exh. 1. API objected to the AG's request to provide data for pollutants other than CO. API asserted that it proposes amendments only to Part 216 CO rules and that emissions of other pollutants are no relevant. PC 3 at 2-3.

Mr. Reese provided the date and time on which each of the five events began and ended. Tr.1 at 68. In response to the AG's question, he agreed to provide in post-hearing comments "all monitoring data available from the two monitoring stations from the dates of those five FCCU startups at the Marathon refinery that were just summarized." *Id*.

Criterion 5. The fifth criterion is that "[t]he alternative emission limitation requires that all possible steps are taken to minimize the impact of emissions during startup and shutdown on ambient air quality." 80 Fed. Reg. 33840, 33980 (June 12, 2015); API SR at 40.

API notes the position taken by USEPA during the Subpart UUU rulemaking that "[l]ow 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 HAP emissions. API SR at 40, *citing* 79 Fed. Reg. 36880, 36943 (June 30, 2014). API notes USEPA's position that "the 1-percent minimum oxygen limit should be more broadly applicable to FCCU startup and shutdown regardless of the control device configuration." API SR at 40, *citing* 80 Fed. Reg 75178, 75221 (Dec. 1, 2015).

API suggests that its proposal satisfies this criterion by incorporating the MACT 1-percent by volume emission limitation for periods of startup and hot standby into Section 216.361. API SR at 41; *see* 40 CFR 63 1565(a)(5); Reese Test. at 10; *supra* at 76-81.

Criterion 6. The sixth criterion is that the "[t]he alternative emission limitation requires that, at all times, the facility is operated in a manner consistent with good practices for minimizing emissions and the source uses best efforts regarding planning, design, and operating procedures." 80 Fed. Reg. 33840, 33980 (June 12, 2015); API SR at 41.

API suggests that its proposal satisfies this criterion by incorporating from Subpart UUU "the general duty to minimize emissions." API SR at 41, *citing* 40 CFR 63.1570(c); *see* Reese Test. at 10, *supra* at 76-81.

Criterion 7. The seventh criterion is that "[t]he 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." 80 Fed. Reg. 33840, 33980 (June 12, 2015); API SR at 41.

API asserts that it satisfies this criterion by proposing to incorporate from Subpart UUU the requirement to operate in the FCCU regenerator exhaust a CPMS for oxygen meeting specified requirements. API SR at 41, citing 40 CFR 63.1572(e); Tables 10, 41; *see* Reese Test. at 10; *supra* at 80-81. API adds that it proposes to incorporate recordkeeping provisions, including the requirement that it "record the date, time, and duration of each startup period for which the source elected to comply with 40 CFR 63.1565(a)(5)(ii)." API SR at 41-42, *citing* 40 CFR 63.1576(a)(2)(i); *see supra* at 81.

CAA Requirements

SIP revisions must comply with Section 110(l) and 193 of the CAA. API TSD at 9, *citing* 80 Fed. Reg. 33840, 33975 (June 12, 2015). API asserts that USEPA has addressed these determinations. API argues that, when a state revises its SIP by replacing an exemption for excess emissions during startup and shutdown with an appropriate AEL, it "should not entail a complicated analysis." API TSD at 9, *citing* 80 Fed. Reg. 33840, 33975-75 (June 12, 2015). API notes USEPA's SSM guidance stating that NESHAPs may assist states in developing AELs. API TSD at 10-11, *citing* 80 Fed. Reg. 33840, 33980 (June 12, 2015). API suggests that relying on Subpart UUU standards "will provide a high degree of assurance that USEPA will approve the alternative standards, especially because USEPA in its 2015 review of the petroleum refinery

NESHAP carefully examined the rule-specific SSM provisions and adjusted them as necessary to comport with current law and policy governing SSM provisions." API TSD at 11, *citing* 80 Fed. Reg. 75178, 75182 (Dec. 1, 2015).

Section 110(l). API states that, under Section 110(l) "USEPA is prohibited from approving any SIP revision that would interfere with any applicable requirement concerning attainment and reasonable further progress or any other requirements of the CAA." API TSD at 9, *citing* 80 Fed. Reg. 33840, 33975 (June 12, 2015); *see* 42 USC § 7410(l). API asserts that "USEPA should be expected to presume that replacing the current generally applicable SMB provisions with rule-specific SMB provisions will be acceptable." API TSD at 11.

API states that it is the primary purpose of Section 110(l) to ensure that "SIP revisions do not result in adverse impacts on air quality." API TSD at 13. API argues that its rule-specific proposal "should by definition be more protective of air quality than generally applicable exemptions because such rule-specific provisions target particular source types and would comprise tailored alternative standards that are more constraining than the current generally applicable SMB provision." *Id*. at 13. API adds that "there is no evidence that the prior SMB provisions have resulted in NAAQS violations or significant deterioration related to CO emissions governed by Section 216.361." *Id*. API also cites USEPA's approval of a Washington SIP revision that "(1) requires compliance with AELs during transient modes of FCCU operation, including startup and hot standby . . . and (2) retains the pre-existing emission limits for non-transient modes of FCCU operation." *Id*. at 12, *citing* 88 Fed. Reg. 39210, 39212 (June 15, 2023).

In its questions pre-filed for the third hearing, the AG noted that USEPA had strengthened the PM NAAQS, "lowering the primary annual $PM_{2.5}$ standard down to 9 µg/m." AG Questions at 1 (¶3), *citing* 89 Fed. Reg. 16202 (Mar. 6, 2024). The AG asked whether this new, more stringent PM NAAQS affects any determination IEPA made in its testimony "that the proposed AEL will not interfere with any NAAQS, either now or in the future." AG Questions at 1 (¶3).

Mr. Davis testified that IEPA had considered the revised $PM_{2.5}$ NAAQS when evaluating impacts of the AELs proposed in this subdocket. He testified that "[t]he new standard should not impact any determinations that have nee conveyed to the Board." Tr.3 at 14. He added that states are assessing their obligations under the revised NAAQS. While it may be necessary to revise Illinois's rules to meet this or any later NAAQS revision, "it should not have any impact on the current proceeding." *Id*.

Section 193. API states that "Section 193 prohibits states from modifying regulations in place prior to November 15, 1990, unless the modification ensures equivalent or greater reductions of the pollutant." API TSD at 9, *citing* 80 Fed. Reg. 33840, 33983 (June 12, 2015). API asserts that prohibition "applies only to air pollutants for which the area was in nonattainment as of the date of the enactment of the 1990 Clean Air Act amendments. API TSD at 9, *citing* 42 USC § 7515. API notes that it is "not aware that any area within the State of Illinois was nonattainment for CO as of enactment of the 1990 Clean Air Act Amendments."

API TSD at 11. API conclude that Section 193 of the CAA "would not apply to changes made in this rulemaking to Section 216.361." *Id.*

<u>Technical Feasibility and Economic Reasonableness</u>

<u>Sources and Regions Affected.</u> API states that its proposed amendment affects petroleum and petrochemical processes because Section 216.361 applies only to these processes. API SR at 43. To API's knowledge, these processes include only four petroleum refineries in Illinois. *Id*.

First, API reports that it would affect the Joliet Refinery of ExxonMobil Oil Corporation located at 25915 South Frontage Road in Channahon, Will County. API SR at 43. "This refinery has a capacity of >250,000 barrels per day and operates a single fluid catalytic cracker." *Id*.

Second, API reports that the proposal would affect the Wood River Refinery of WRB Refining LP located at 900 South Central Avenue in Roxana, Madison County. API SR at 43. "This refinery has a capacity of >350,00 barrels per day and operates two fluid catalytic crackers." *Id*.

Third, API reports that it would affect the Lemont Refinery of CITGO Petroleum Corporation located at 135th Street and New Avenue in Lemont, Will County. API SR at 43. "This refinery has a capacity of >179,000 barrels per day and operates a single catalytic cracker." *Id*.

Fourth, API states that the proposal would affect the Robinson Refinery of Marathon Petroleum Company located at 100 Marathon Avenue in Robinson, Crawford County. API SR at 43. "This refinery has a capacity of >250,000 barrels per day and operates a single fluid catalytic cracker." *Id*.

API states that three of these four refineries are not located in EJ areas, although it does not identify the refinery located within one. API SR at 43 (*citing* IEPA mapping tool). Citing the 2015 SIP call, API argues that "human health or environmental risk addressed by this action will not have potential disproportionately high and adverse human health or environmental effects on minority, low-income or indigenous populations." *Id*., *citing* 80 Fed. Reg. 33985 (June 12, 2015). API asserts that adopting its proposed AELs "would not adversely impact EJ communities." API SR at 44.

<u>Technical Feasibility.</u> API argues that the amended SMB provision in Part 201 leave the affected petroleum refineries with "no technically feasible option for compliance" with the CO standards in Part 216 during periods of startup and hot standby. API SR at 42. API asserts that it "is not aware of any control equipment options available" that would allow the refineries to comply with the Section 216.361, as applicable, during periods of startup and hot standby. *Id*., *citing* API TSD at 17-22.

API asserts that its proposed AELs are based on NESHAP Subpart UUU, which USEPA promulgated in 2015. API SR at 44, *citing* 80 Fed. Reg. 75178 (Dec. 1, 2015). It states that USEPA found during that rulemaking process that the alternative standard applicable during periods of SSM was technically feasible. It argues that USEPA found the oxygen concentration limit appropriate because "air blast rates can be directly controlled to ensure adequate oxygen supply on a short-term basis." API SR at 44, *citing* 79 Fed. Reg. 36880, 36943 (June 30, 2014). API adds that it understands that "each of the four refineries already utilize the alternate standards incorporated in API's proposed amendments and do not have any issues with maintaining compliance with those alternate standards." API SR at 44.

Economic Reasonableness. API argues that, when USEPA adopted the Subpart UU rules on which its proposed AELs are based, it found them to be economically justified with a total capital investment cost of $283 million. API SR at 44, *citing* 80 Fed. Reg. 75178, 75225 (Dec. 1, 2015). API reports USEPA's estimate that "all petroleum refiners would incur annual compliance costs of less than 1% of their sales." API SR at 44, *citing* 80 Fed. Reg. 75178, 75226 (Dec. 1, 2015). API again stresses that the four affected Illinois refineries are already subject to Subpart UUU and rely on the AELs incorporated in its proposal, so "API's proposed amendment to Section 216.361 should not have any additional economic impact." API SR at 44.

IEPA Comment and Request for Information

IEPA commented that, although API's proposal affects four refineries, the emissions impact of the proposal will vary because each of the four is "differently sized, configured and operated." PC5 at 12. Before addressing each of the four refineries, IEPA provided generally applicable comments on API's proposed AELs.

First, IEPA commented that API's proposal "does not include any ceiling or limits on emission in terms of number of events, duration of events, or emissions during startup and hot standby events." PC5 at 12. IEPA asserted that, without enforceable limitations of this nature than can be modeled to show the potential to exceed the 1-hour or 8-hour CO NAAQS, "there is no way to confirm that the proposed language will not result in air quality impacts that violate the CAA." *Id*.

Second, IEPA commented that the sources had not "provided modeling to demonstrate the proposal will not result in an air quality impact from their startup and hot standby events." PC5 at 12. IEPA asserted that "[d]emonstrations of this sort will be necessary to submit any revisions adopted by the Board to USEPA as a SIP revision." *Id*. at 13.

In addition, IEPA requested specific information from each of the four refineries. IEPA asserts that API's proposal and the petitions for adjusted standards separately filed by Marathon and ExxonMobil raise "questions about the nature of startup events and how they may vary from source to source." PC5 at 13; ***see*** Petition of ExxonMobil Oil Corporation for Adjusted Standard from 35 Ill. Adm. Code 216.361, 35 Ill. Adm. Code 216.103, and 35 Ill. Adm. Code 216.104, AS 24-1 (Aug. 14, 2023); Petition of Marathon Petroleum Company, LP for an Adjusted Standard from 35 Ill. Adm. Code Part 201 and Section 216.361, AS 24-3 (Aug. 14, 2023).

ExxonMobil. IEPA noted API's testimony that ExxonMobil had conducted modeling of its startup emissions. PC5 at 13, *citing* Tr.1 at 64-65. IEPA acknowledges that API had provided a summary of ExxonMobil's modeling. PC5 at 13, **citing** PC3 at 3, Exh. 2; Tr.1 at 76. IEPA stated that it needed to review the data in detail "to confirm that the maximum concentration of 2000 parts per million (ppm) that was modeled is indeed the worst-case emissions scenario during SMB events." PC5 at 13. IEPA also sought "to confirm that other aspects of the modeling performed are appropriate for the purpose for which it was conducted." *Id*. IEPA argued that this is necessary if it is to submit the proposed AELs as a SIP revision and is consistent with the scrutiny USEPA would apply to a SIP revision. *Id*.

IEPA asserted that it is appropriate for API to provide additional information concerning ExxonMobil. To address the worst-case CO emissions scenario during startup or hot standby events, IEPA first requested that API provide the "date and duration of the last two startups involving refractory repair," including specified CEMS data. PC5 at 14. Second, IEPA requested an "analysis of worst-case CO emissions from malfunction and breakdown events, including hot standby, FCCU Regenerator breakdown (including "Behind in Burning" scenarios), and CO Boiler trips." *Id*. IEPA asserted that this analysis should demonstrate whether "the worst-case CO emissions scenario occurs during startups involving refractory repair or during other scenarios." *Id*.

IEPA also asserted that it is appropriate for API to provide a "description of ExxonMobil's FCCU operation with respect to the definitions of "full burn unit" and "partial burn unit" and the scenarios in which the FCCU operates in each mode. PC5 at 14, *citing* API SR at 15. IEPA also requested four specific items of information. *Id*. at 14-15.

CITGO. IEPA asserted that, "[w]ithout data confirming the number of, the duration of, and the quantity of emissions from startup and hot standby events," there is no way to assess air quality impacts either quantitatively or qualitatively. PC5 at 15. IEPA argued that it is appropriate for API to submit both these data and air quality modeling "to assess the potential for near-source NAAQS violations of the proposed revisions during startup and hot standby periods." *Id*.

IEPA asserted that it is appropriate for API to provide additional information concerning CITGO. To address the worst-case CO emissions scenario during startup or hot standby events, IEPA first requested that API provide the "date and duration of the last two startups involving refractory repair," including specified CEMS data. PC5 at 15. Second, IEPA requested an "analysis of worst-case CO emissions from malfunction and breakdown events, including hot standby, FCCU Regenerator breakdown (including "Behind in Burning" scenarios), and CO Boiler trips." *Id*. IEPA asserted that this analysis should demonstrate whether "the worst-case CO emissions scenario occurs during startups involving refractory repair or during other scenarios." *Id*.

IEPA also asserted that it is appropriate for API to provide a "description of CITGO's FCCU operation with respect to the definitions of "full burn unit" and "partial burn unit" and the scenarios in which the FCCU operates in each mode. PC5 at 14, *citing* API SR at 15. IEPA also requested three specific items of information. PC5 at 14-15.

<u>Marathon.</u> IEPA notes API's testimony that Marathon has ambient CO monitoring data for the years 2017 to 2019. PC5 at 16, *citing* Tr.1 at 65. IEPA argues that it would be appropriate also to provide hourly CEMS data from SMB events during that time. PC5 at 16. IEPA acknowledges that API has provided the Board a "Completion Report containing summary CO concentrations data," but IEPA argues that the additional requested information is appropriate for assessing worst-case emissions scenarios. *Id*., *see* PC 3.

IEPA asserts that "[t]he monitoring data is not determinative of the air quality impacts of the source's SMB events." PC5 at 16. IEPA argues that it is appropriate for API to provide "the ambient monitoring data and CEMS data correlated to startup and hot standby events during the period of ambient monitoring, and to further provide the relation to more recent startup and hot standby events." *Id*. at 16-17. Specifically, IEPA requests five items of CEMS data and analysis to determine the "worst-case CO emissions scenario (in terms of maximum quantity and duration of CO emissions) that takes place during startup or hot standby events." *Id*. at 17-18.

<u>WRB.</u> IEPA asserted that, "[w]ithout data confirming the number of, the duration of, and the quantity of emissions from startup and hot standby events," there is no way to assess air quality impacts either quantitatively or qualitatively. PC5 at 18. IEPA argued that it is appropriate for API to submit these data and air quality modeling "to assess the potential for near-source NAAQS violations of the proposed revisions during startup and hot standby periods." *Id*.

IEPA asserted that it is appropriate for API to provide additional information concerning WRB. To address the worst-case CO emissions scenario during startup or hot standby events, IEPA first requested that API provide the "date and duration of the last two startups involving refractory repair," including specified CEMS data. PC5 at 18. Second, IEPA requested an "analysis of worst-case CO emissions from malfunction and breakdown events, including hot standby, FCCU Regenerator breakdown (including "Behind in Burning" scenarios), and CO Boiler trips." *Id*. at 19. IEPA asserted that this analysis should demonstrate whether "the worst-case CO emissions scenario occurs during startups involving refractory repair or during other scenarios." *Id*.

IEPA also asserted that it is appropriate for API to provide a "description of WRB's FCCU units' operation with respect to the definitions of "full burn unit" and "partial burn unit" and the scenarios in which the FCCU operates in each mode. PC5 at 19, *citing* API SR at 15. IEPA also requested two specific items of information. PC5 at 19.

<u>API Response (PC15)</u>

API's supplemental response addresses IEPA's requests for data from ExxonMobil, CITGO, and Marathon. PC15 at 2, *citing* PC5 at 12-13.

<u>ExxonMobil.</u> In response to IEPA's comment (*see* PC5 at 13-14), "ExxonMobil updated its initial modeling demonstration" and then reviewed the update with IEPA. PC15 at 2, Exh. 1.

API reports that IEPA "characterized ExxonMobil's modeling demonstration as conservative. *Id*.

API asserts that initial and updated modeling show that FCCU startups at ExxonMobil's Channahon refinery have not caused exceedances of the 1-hour or 8-hour CO NAAQS PC15 at 3. Citing the result of the update modeling, API argues that "startups since 2017 with FCCU kegerator oxygen monitoring and control to comply with the startup standards on 40 CFR 63, Subpart UUU (which are proposed by API as its AEL in Section 216.361) have greatly reduced CO emissions and the ambient impacts." *Id*.

CITGO. In response to IEPA's comment (*see* PC5 at 14-15), CITGO "reviewed emissions from its FCCU startup events to determine maximum hourly CO concentrations and emission rates, which were then used to develop statistical worst-case scenarios for both the 1-hour and 8-hour CO NAAQS." PC15 at 3. CITGO also conducted atmospheric dispersion modeling of the statistical worst-case scenarios. *Id*.

CITGO submitted its narrative response to IEPA's request for additional information. PC15, Exh. 2. It also submitted its "FCCU Startup Modeling Report." PC15, Exh. 3. API asserts that "[t]he results of the modeling demonstrate that even worst-case CO emissions from the FCCU during startup do not have a significant effect on ambient air quality." PC15 at 3, Exh. 2 at 1, 15-16.

Marathon. In response to IEPA's comment (*see* PC5 at 16-17), Marathon performed additional analysis of its monitoring data. On behalf of Marathon, API submitted an FCCU Startup and CO Monitor Data Summary. PC15 at 4, Exh. 4. Marathon reported that "[t]he monitoring demonstrates that there was no instance over four years of any readings over 15% of the 8-hour CO NAAQS and that the max 1-hour was approximately 5% of CO NAAQS." PC15 at 4, Exh. 4 at 4. Marathon asserted that monitoring results show that "the short increase in CO emissions during FCCU startup events do not result in NAAQS violations nor any measurable increase in ambient CO, and therefore have little to no measurable impact on ambient air quality." *Id*., Exh. 4 at 4.

WRB. API's original proposal addressed the potential for increase CO emissions during startup and hot standby events at four refineries including WRB's. "Based on subsequent discussions, it has been determined that an AEL is not needed at this time for WRB Refining LP's FCCU located at its refinery in Wood River, Illinois." PC15 at 4.

API's Revised Proposal.

In its response to IEPA, API proposed to revise its proposed Section 216.361(d):

> [f]or the petroleum refinery facilities located in Channahon, Lemont, and Robinson Illinois, despite subsections (a) through (c), during periods of startup and hot standby, petroleum catalytic cracking units must comply either with subsections (a) through (c) or the alternate non-numerical 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), incorporated by reference in Section 216.104. PC 15 at 4-5.

API states that it proposed to add language referring to three specific refineries to limit the applicability of the AEL. *Id*. at 5. To streamline the proposal, it removed the phrase "any new or existing" from the reference to "petroleum catalytic cracking units". *Id*. AEL also argues that this revised proposal "reflects the non-substantive revisions previously proposed by the Board and JCAR. *Id*. API requests that the Board adopt this revised subsection (d) and its proposed amendments to the definitions in Section 216.103 and incorporations by reference in Section 216.104. *Id*.

IEPA Testimony

Before the second hearing, IEPA generally requested "emissions data from previous startup at the affected sources that would indicate what worst-case emissions could be expected during SSM events, and modeling demonstrations or monitoring data that would demonstrate that these events would not interfere with maintenance of the applicable NAAQS. IEPA Test. at 2.

IEPA states that Marathon provided it with "a monitoring summary that contained startup data in a graphical format." IEPA Test. at 3. IEPA adds that CIGO provided it with "startup CEMS data and modeling files and also provided the Board a modeling report. *Id*. ExxonMobil provided IEPA with modeling files, "but did not provide CEMS startup data." *Id*. API's filing "provided the methodology for how worst-case emissions were calculated, and provided a printout of the modeling outputs based on the inputs that it provides in the filing narrative." *Id*. IEPA reports that the Conoco Phillips refinery did not provide additional information, "as Conoco Phillips has indicated to the Agency that no relief is needed by its facility." *Id*.

ExxonMobil. In its pre-filed testimony, IEPA stated that API's March 15, 2024 filing had not discussed the operation of the FCCUs with respect to the definitions of partial or full urn units. IEPA Test. at 16. However, ExxonMobil performed modeling, and IEPA states that CO concentrations and emission rate data used in modeling "clearly demonstrate the effect of compliance with NESHAP Subpart UUU on the FCCU's impact on CO concentrations." *Id*. at 15, 16. "[T]he modeled ambient impacts, as a percentage of the NAAQS, decrease from 13.51% to 2.77% for the 1-hour NAAQS and from 19.75% to 5.18% for the 8-hour NAAQS." *Id*. at 16. IEPA agrees with ExxonMobil that "these low impacts to the CO NAAQS demonstrate that the worst-case SMB events from the FCCU unit will not cause significantly high ambient CO concentrations or interfere with either relevant NAAQS." *Id*.

IEPA states that, although ExxonMobil provided modeling files from its analysis, it did not include requested SMB event data. IEPA Test. at 16. However, the modeling used maximum concentrations that agree with information IEPA has on file. *Id*. Based on information provided by ExxonMobil, IEPA agrees that the maximum rates are appropriate for the modeling conducted. *Id*.

<u>CITGO.</u> In its pre-filed testimony, IEPA states that CITGO "comprehensively and effectively responded" to all of its October 23, 2023 comment. IEPA Test. at 16. CITGO described the operation of the FCCU units "that resolves the Agency's request for clarification of how the units operate with respect to the definitions of 'full burn unit' and 'partial burn unit' as provide din API's initial proposal." IEPA Test. at 15. IEPA states that this supports the demonstration that "the FCCU units' SMB events will not threaten the CO NAAQS at or near the source, because the FCCU regenerator exhaust gas 1% oxygen concentration requirement from NESHAP Subpart UUU effectively causes each source's FCCU unit to operate at full burn during startup and hot standby events." *Id*. This decreases CO concentrations and emission rates during these events so that "worst-case ambient CO emissions from these SMB events has a minimal impact on the potential for CO NAAQS exceedance." *Id*.

IEPA's testimony states that CITGO modeled the worst-case startup and hot standby event using "a very conservative emissions scenario." IEPA Test. at 17. This analysis generates CO ambient concentration impacts "that are less than 1% of both the 1-hour and 8-hour CO NAAQS." *Id*.

<u>Marathon.</u> In its pre-filed testimony, IEPA states that Marathon described the operation of the FCCU units "that resolves the Agency's request for clarification of how the units operate with respect to the definitions of 'full burn unit' and 'partial burn unit' as provide din API's initial proposal." IEPA Test. at 15. IEPA states that this supports the demonstration that "the FCCU units' SMB events will not threaten the CO NAAQS at or near the source, because the FCCU regenerator exhaust gas 1% oxygen concentration requirement from NESHAP Subpart UUU effectively causes each source's FCCU unit to operate at full burn during startup and hot standby events." *Id*. This decreases CO concentrations and emission rates during these events so that "worst-case ambient CO emissions from these SMB events has a minimal impact on the potential for CO NAAQS exceedance." *Id*.

IEPA also testified that Marathon had provided CO emissions data from ten separate startup events in 2019 and 2020, which show "a maximum CO emission rate of approximately 250 lbs/hr, which lasts for a relatively short period of several hours, as do all of the CO lb/hr emission rate spikes within the data for all ten of the startups." IEPA Test. at 17-18.

Although Marathon did not provide a requested modeling analysis, it provided the results of monitoring conducted near the source. IEPA Test. at 18. The monitoring demonstrated that "(1) the monitors never collected data indicating CO NAAQS exceedance concerns (the maximum monitored concentrations were on the order of 1-2 ppm , whereas the 1-hour and 8-hour CO NAAQS are 35 and 9 ppm, respectively, which is less than 15% of the 8-hour standard [and] 5% of the 1-hour standard) and (2) none of these maximum monitored CO concentrations occurred during any startup event of the FCCU." *Id*.

<u>Summary.</u> Based on the additional support provided by API, IEPA states that it "does not object to adoption of the rule proposal as set forth in API's March 15, 2024 filing with the Board." IEPA Test. at 15.

API noted that its March 15, 2024 filing included its revised Section 216.361(d) but did not include revisions to its proposed Section 216.103 definitions or Section 216.104 incorporations by reference. API asked whether IEPA also does not object to its proposed amendments to those provisions. API Questions at 2 (¶1).

Mr. Davis' testimony confirmed that IEPA did not object to these proposed amendments. Tr.3 at 21; *see* PC23 at 4.

API also asked IEPA to elaborate on the statement that it "does not object to adoption of the rules proposal." API Questions at 2 (¶2); *see* IEPA Test. at 15. API first asked whether this statement implies that it believes "that USEPA's criteria for AEL are met as to API's proposal?" *Id*. (¶2a).

Mr. Davis testified that IEPA "is not aware of any potential issues with USEPA approval." Tr.4 at 22.

Second, API asked whether it implies that IEPA's previous comment that API's proposal "has significant issues" has been resolved by API's March 15, 2024 filing? API Questions at 2 (¶2b); *see* PC5 at 12.

Mr. Davis responded IEPA's concern had been resolved. Tr.3 at 22.

Third, API asked whether IEPA's statement is "based in part on review and comment of API's proposal by USEPA?" If so, API asked whether IEPA could describe its interaction with USEPA on API's proposal. API Questions at 2 (¶2c).

Mr. Davis testified that, although IEPA had not discussed proposals with USEPA in detail, it did request comment on them from USEPA Region 5. Although IEPA has not received a response, "Region 5 staff are aware that the Agency believes that certain proposal and support satisfy USEPA's AEL criteria." *Id*. at 22-23.

If the Board adopts its proposal, API asked whether IEPA intends to submit it to USEPA as a SIP revision. API Questions at 2 (¶3).

Mr. Davis testified that, if the Board adopts it, IEPA intends to submit API's proposal to USEPA for approval as a SIP submission. Tr.3 at 23. However, he added that "Region 5 has not yet identified whether the proposed AEL is likely approvable. If the Agency learns that the AEL is likely not approvable, the Agency may reassess submitting it to the USEPA as a SIP revision." *Id*.

Finally, API asked whether IEPA was aware of the decision of the U.S. Court of Appeals for the D.C. Circuit in Envtl. Comm. of the Fla. Elec. Power Coordinating Group v. EPA, *et al*., No. 15-1239 (D.C. Cir. 2024). API Questions at 2 (¶4). If so, API asked whether IEPA had had any discussion with USEPA about this case and whether IEPA could summarize those discussions. API Questions at 2 (¶4a).

Responding to questions from IERG, Mr. Davis testified that IEPA had had general discussions with USEPA and that IEPA did not expect the decision to "have much impact" of the SIP revisions recently submitted to USEPA. Tr.3 at 17 at 18.

Post-Hearing Comments

API (PC19).

API stresses Mr. Davis' testimony that "the Agency does not object to adoption of the rule proposal as set forth in API's March 15, 2024 filing with the Board." PC19 at 2, *citing* IEPA Test. at 15. API also stressed Mr. Davis' testimony that IEPA believes that API's proposal meets the requirements for USEPA to approve it as alternative emission limitations. Mr. Davis also testified that IEPA believes USEPA will approve API's proposal if the Board adopts it. PC19 at 2, *citing* IEPA Test. at 21, 22. The comment concludes by requesting that "the Board move forward expeditiously with adopting API's proposal." PC19 at 3.

IEPA (PC23).

IEPA notes that Exxon Mobil has pending before the Board a petition seeking an adjusted standard "substantively similar to API's rule proposal." PC23 at 4; *see* Petition of ExxonMobil Oil Corporation for Adjusted Standard from 35 Ill. Adm. Code 216.361, 35 Ill. Adm. Code 216.103, and 35 Ill. Adm. Code 216.104, AS 24-1. IEPA notes that the Exxon Mobil objected to its request to stay the AS proceeding until the Board reached a decision in this sub-docket, and the Board's hearing officer denied its motion to stay. PC23 at 4. IEPA states that "the Board should ensure that any actions it takes in this rulemaking and the AS proceeding are consistent with one another," as relief in both "is not necessary and should not be provided. *Id*. at 5.

Board Findings

ExxonMobil's modeling demonstrated that SMB events from the FCCU unit will not interfere with the relevant NAAQS or cause significantly high ambient CO concentrations. IEPA Test. at 16. CITGO also fully responded to IEPA's request for information and showed that CO emissions during SMB events from its FCCU units has a minimal potential CO NAAQS exceedance. *Id*. at 15. Likewise, Marathon's response to IEPA's request for information confirmed that "the FCCU units' SMB events will not threaten the CO NAAQS at or near the source." *Id*.

Upon its own review, the Board agrees with IEPA and finds that the proposal meets USEPA's seven criteria for AELs, is technically feasible and economically reasonable, and does not harm human health or the environment. The Board includes API's proposal in its proposal for second notice.

EDNF

EDNF proposed to amend 35 Ill. Adm. Code 217.381 so that NO_x and visible emissions limitations for nitric acid production processes reflect both normal operations and startups and shutdowns. EDNF SR at 2.

The Board first discusses EDNF's facility and its operations, then its current monitoring and emissions limits, then its proposal for AELs, then USEPA's seven criteria for AELs, then the technical feasibility and economic reasonableness of the proposal, then IEPA's comment requesting more information, then EDNF's response to IEPA's request, then IEPA's testimony, and finally post-hearing comments.

Facility and Operations

Location

EDNF's facility is located approximately 6.5 miles west of Galena in Jo Daviess County. EDNF SR at 13; *see* Crnkovich Test. at 11. EDNF reports that it is "located in an area designated attainment or unclassifiable for all criteria air pollutants." EDNF SR at 13, *citing* 40 CFR 81.314; *see* Crnkovich Test. at 10, 11. EDNF states that the facility is "located in an area of low population density, and it is not in an identified environmental justice area" as defined by IEPA. EDNF SR at 13 (citation omitted); *see* Crnkovich Test. at 11. EDNF adds that the 2016 Statement of Basis for the most recent renewal of its CAAPP permit did not identify the location as a potential concern for environmental justice consideration. EDNF SR at 13, *citing* EDNF Exh. 6 at 12; *see* Crnkovich Test at 10.

Processes

EDNF's facility produces nitrogenous fertilizer products for agriculture and other industrial sectors. EDNF SR at 6; Crnkovich Test. at 2. It states that "the Facility produces anhydrous ammonia using natural gas and nitrogen from the air." *Id*. Other processes at its facility, including two nitric acid production processes, "upgrade anhydrous ammonia to produce nitric acid, urea, ammonium nitrate (85 aqueous solution) and urea ammonium nitrate." *Id*. "The Facility sells the nitric acid it produces for multiple industrial uses." *Id*. On average over the last three years, EDNF sold "nitrogen products equivalent to 143 million pounds of nitrogen per year into Illinois, the equivalent of fertilizing 798,000 acres of corn." *Id*. "Beverage grade liquid carbon dioxide, a byproduct of ammonia synthesis, is also sold commercially." *Id*. In addition to independent contractors, EDNF's facility employs approximately 154 persons and in 2022 paid $27.3 million in wages. *Id*.

EDNF states that its nitric acid processes convert anhydrous ammonia to nitric acid in three steps. ENDF at 7; Crnkovich Test. at 3. First, "ammonia is oxidized over a platinum catalyst gauze to form nitric acid and water. The nitric oxide is passed through a condenser and cooled." *Id*. Next, the nitric oxide is oxidized further to produce nitrogen dioxide. *Id*. In the third step, "the nitrogen dioxide is absorbed in water to yield a solution that contains 57 to 65 percent nitric acid." *Id*. Mr. Crnkovich testified that these processes "are continuous, and they continue in normal operation for as long as several months between one startup and the net shutdown." Crnkovich Test. at 3.

EDNF states that one by-product of the weak nitric acid manufacturing process is NO_x air emissions. EDNF SR at 7; Crnkovich Test. at 3. Without any control, those emissions "would be emitted to the atmosphere from the absorption tower in which the final step in nitric acid production occurs." *Id*. To control these emissions, both of ENDF's processes use SCR systems. *Id*.

EDNF reports that its nitric acid processes are "weak nitric acid manufacturing processes" as defined by 35 Ill. Adm. Code 217.381(a). EDNF SR at 6; Crnkovich Test. at 3. The facility was built after 1972, so it is "new" under that rule. *Id*. Mr. Crnkovich testified that, to the best of his knowledge. "EDNF operates the only nitric acid production processes in Illinois and, therefore, operates the only facility subject to Section 217.381." Crnkovich Test. at 3, 10; *see* PC25 at 3, n.2.

Controls

EDNF reports that its facility "already employs SCRs, which are highly effective at reducing NO_x and opacity from Nitric Acid Processes." EDNF SR at 13; *see* PC26 at 4. An SCR system "converts NO_x to diatomic nitrogen and water, in the presence of a catalyst. In addition to the catalyst, an SCR system also requires a reductant to be added to the flue gas to produce the desired action on the catalyst." EDNF uses ammonia as the reductant. EDNF SR at 7; Crnkovich Test. at 3.

During normal operation, the chemical reaction inside the SCR system occurs at an elevated temperature. EDNF reports that "[t]he hot flue gas heats the SCR as it passes through, keeping the SCR at the temperature needed for the reduction reaction." EDNF SR at 7; Crnkovich Test. at 3-4. As the nitric acid processes startup, however, EDNF states that a period as long as five hours is necessary for the SCR system to reach the required temperature. EDNF adds that ammonia cannot be introduced into the SCR until it reaches a temperature of at least 350 ºF. EDNF SR at 7-8; Crnkovich Test. at 4; *see* PC26 at 4. "If ammonia were introduced into the SCR below this temperature, ammonium nitrate solids would be produced, presenting both a risk of damage to the SCR and a fire/explosion safety risk." EDNF SR at 8; Crnkovich Test. at 4, 8.

Based on these factors, EDNF asserts that there is a short startup of the nitric acid processes during which "NO_x-containing hot flue gas flows through the SCR but ammonia is not yet introduced, so the SCR is not yet controlling the NO_x emissions." *Id*. EDNF adds that, when it shuts down a nitric acid process, "there is a short period of time of up to three hours when the SCR temperature has dropped below 350 degrees, and ammonia flow must be cut off." *Id*. This results in additional NO_x emissions. *Id*.

Mr. Crnkovich testified that "there is no way to optimize the SCRs at the Facility to allow compliance with existing Section 217.381(a)(1) and (2) during startup and shutdown." Crnkovich Test. at 8. He added that EDNF could not clearly identify a way to pre-heat its SCRs to improve NO_x control during startup and shutdown. *Id*. at 8-9.

EDNF states that, at sufficient concentration, NO_x from nitric acid processes can be visible "as a light yellow to brown plume of air (with the color depending on the NO_x concentration)" and measurable as opacity. EDNF SR at 8; Crnkovich Test. at 4. EDNF stresses that NO_x are the only visible emissions from the nitric acid processes and that "particulate matter emissions do not cause opacity" from its processes. *Id*. EDNF argues that, "[a]s a result, opacity measurements are essentially just another measure of NO_x." EDNF SR at 8, citing EDNF Exh. 2 at 4-5; Crnkovich Test. at 4.

EDNF states that normal operation of its processes results in opacity measurements that typically are zero and comply with the five percent limitation in 35 Ill. Adm. Code 217.381(a)(2). EDNF SR at 8; Crnkovich Test. at 4. During startup and shutdown, however, "the inability to introduce ammonia to the SCR and the resulting higher concentration on NO_x can also result in visible emissions that can be measured as opacity." EDNF SR at 8-9; Crnkovich Test. at 4-5.

Noting Mr. Crnkovich's testimony on NO_x emissions during startup and shutdown, the Board asked him to comment on whether "EDNF maintains records of the frequency and duration of startups and shutdowns of the two Nitric Acid processes. If so, please submit such information into the record." Board Questions at 4 (¶18).

Mr. Crnkovich testified that, as required by its CAAPP permit, EDNF maintains "records of each startup and shutdown which includes the start time and the end time of each startup or shutdown." Tr.1 at 88. He indicated that EDNF would submit this information into the Board's record. *Id*. ENDF's first post-hearing comment included a list of "the startups and shutdowns at each of the two Nitric Acid Processes at the Facility in 2022 and the first half of 2023" including the duration of each of them. PC6 at 1-2, Exhs. 1, 2. "Overall the NAP-1 process had 65 startups and 65 shutdowns over this time period. The NAP-2 process had 55 startups and 55 shutdowns over the same time period." *Id*. at 2.

EDNF argues that, because the only area in Illinois known to include a weak nitric acid manufacturing process attains all NAAQS including NO_x and ozone, "there is no need for any additional control of NO_x or opacity from this type of manufacturing process." EDNF SR at 13; *see* Crnkovich Test. at 10.

<u>Monitoring</u>

EDNF reports that it has for many years used "NO_x CEMS to monitor and record emissions continuously." *Id*. It asserts that emissions of NO_x from its startups and shutdowns are part of data regularly reported to IEPA, "and the agency has accounted for these emissions in any evaluation or modeling of NO_x or ozone levels in Illinois." *Id*.; *see* Crnkovich Test at 10, 11.

IEPA requested that EDNF provide CEMS data "for emission of NO_x on an hourly basis in terms of pounds per ton of acid produced for the previous five years." PC5 at 7. It also requested the date and duration of each startup and shutdown during that time. *Id*. IEPA argues that these data would allow it and the Board to consider worst-case emissions. *Id*.

First, ENDF reports that on January 28, 2024, it provided IEPA with hourly NO_x emissions data in pounds per ton of acid produced for calendar years 2021 to 2023. PC13 at 2. ENDF provided the data separately for each of its two plants. *Id*. EDNF states that the data for each plant generated "a spreadsheet with 26,280 rows of data," which are "too voluminous to include in the docket for this proceeding." *Id*. at 3-4. On this data, EDNF reports that it "has received no follow-up questions from IEPA." *Id*. at 4.

Second, EDNF reports that on January 28, 2024, it provided IEPA with "the dates and durations of all startup and shutdown events for calendar years 2012 to 2023. PC13 at 4. EDNF provided these data in separate spreadsheets for each of its plants. *Id*., Exh. 2, 3. On this data, EDNF reports that it "has received no follow-up questions from Illinois EPA." *Id*. at 4.

IEPA added that "[i]t would be appropriate for EDNF to provide modeling of the worst-case emission scenario using the requested data to demonstrate that these emissions would not result in a violation of the hourly or annual NO_x NAAQS." PC5 at 7.

EDNF argues that air dispersion modeling is not appropriate for its proposal because it "does not propose to change its operations or increase emissions." PC13 at 4. It adds that the main docket R23-18 "was not undertaken in response to any concern about the air quality in any location near a nitric acid manufacturing plant." *Id*. ENDF also notes that USEPA recently approved a revision to Florida's SIP that includes NO_x limitations for nitric acid plants similar to its proposal in this sub-docket. *Id*. at 4-5. ENDF stresses that USEPA's approval did not mention or discuss air dispersion modeling. *Id* at 5, *citing* 88 Fed. Reg. 51702, 51705 (Aug. 4, 2023); *see* PC26 at 7.

Despite these factors, EDNF states that it performed air dispersion modeling "using AERMOD to investigate the potential impact of startup/shutdown emissions on achievement of the one-hour NO_2 standard." PC13 at 5. EDNF reported that resulting concentration were below 5 percent of NAAQS at all modeled receptors. *Id*. END stated that on February 2, 2024, it provided IEPA with model input and output files, which are "too voluminous to include in the docker for this proceeding." *Id*. "ENDF has received no follow-up questions for Illinois EPA." *Id*.

Emissions.

EDNF states that, during normal operation, its nitric acid processes "comfortably meet the NO_x and opacity limitations in existing Section 217.381(a) and (b)." EDNF SR at 9; *see* Crnkovich Test. at 5; PC26 at 3. EDNF argues that, after the Board struck SSM provisions in R18-23, its processes cannot shutdown or, if shut down, to start up without violating 35 Ill. Adm. Code 217.381. Crnkovich Test. at 5; *see* PC26 at 4.

Noting Mr. Crnkovich's testimony on complying with Section 217.381 during startup and shutdown, the Board requested comment on whether "auxiliary heaters could be used to increase the SCR temperature to 350 ºF prior to addition of ammonia during startup and shutdown." Board Questions at 4 (¶19).

Mr. Crnkovich testified that EDNF would have to conduct an extensive engineering study to determine whether this is feasible. Tr.1 at 89. He added that this would require finding a source for the preheating energy, which would result in increased emissions. *Id*. He added that any excess emissions are included in the proposed averaging period. *Id*.

Taking startup and shutdown into account, EDNF argues that its processes can still meet the NO_x limitation as long as it includes "a reasonable averaging period." *Id*. EDNF asserts that, "with a 30-day averaging period (rolled daily), the Nitric Acid Processes can meet a significantly more stringent limitation: 1.5 pounds of NO_x per ton of acid produced, averaged over a 30-day period with calculations (rolled daily)." EDNF SR at 9; *see* Crnkovich Test. at 6. EDNF states that this averaging method is based on newer nitric acid processes under NSPS. EDNF SR at 9; *see* 40 CFR 60.70a-60.77a (Standards of Performance for Nitric Acid Plants for Which Construction, Reconstruction, or Modification Commenced After October 14, 2011). EDNF adds that it already uses CEMS to monitor emissions from its processes. EDNF SR at 9.

Emissions Limitations.

EDNF reports that the Board adopted the rules ultimately redesignated as 35 Ill. Adm. Code 217.381 in April 1972 "as part of the Board's adoption of the first regulations on sulfur dioxide, NO_x, carbon monoxide, hydrocarbons, and particulate matter to become part of Illinois' State Implementation Plan." EDNF SR at 2, *citing* Emission Standards, R71023 (Apr. 13, 1972). EDNF states that this rule established emission limits for NO_x and visible emissions from weak nitric acid manufacturing processes that have remained in effect unchanged. EDNF SR at 3.

EDNF asserts that its proposal addresses two of these provisions. First, the rule "limited NO_x emissions from a weak nitric acid manufacturing process to 1.5 kg of NO_x (expressed as nitrogen dioxide) per metric tonne of acid produced, on a 100 percent acid basis." EDNF SR at 3, *citing* 35 Ill. Adm. Code 217.381(a)(1). Second, because NO_x emissions from these processes are visible, the rule "also limited NO_x emissions indirectly by setting a visible emissions limit of 5 percent opacity." EDNF SR at 3, *citing* 35 Ill. Adm. Code 218.381(a)(2).

EDNF states that its processes are also subject to NO_x and opacity limits based on NSPS, construction permit requirements, or other sources as reflected in its CAAPP permit. EDNF SR at 9-10. EDNF asserts that "[t]hese additional permit limits are not an issue here," and it will work with IEPA to address them, "presumably during renewal of the CAAPP permit." *Id*. EDNF concludes that, "[a]s a result, the only Board rules that EDNF proposed to revise are the limits in Section 217.31(a)(1) and (2)." *Id*. at 10.

NSPS. EDNF argues that USEPA has twice issued NSPS for weak nitric acid manufacturing processes. EDNF SR at 10; Crnkovich Test. at 9; *see* PC26 at 4. USEPA adopted Subpart G, which applies to applies to facilities that commenced construction after August 17, 1971, but on or before October 14, 2011. EDNF SR at 10, *citing* 40 CFR 60.70(b). Mr. Crnkovich testified that EDNF's two processes were built in 1978 and the late 1990s. so Subpart G applies to them. Crnkovich Test. at 9.

EDNF reports that "Subpart G limits NO_x emissions to 3.0 pounds per ton of acid production, the same as the Illinois rules in Section 217.381(a)(1)." EDNF SR at 10, *citing* 40 CFR 60.72(a)(1); Crnkovich Test. at 9. It also sets a 10 percent opacity limit, which is less stringent than 35 Ill. Adm. Code 217.381(a)(2). EDNF SR at 10, *citing* 40 CFR 60.72(a)(2), 77 Fed. Reg. 48435 (Aug. 14, 2012); *see* Crnkovich Test. at 9. While EDNF acknowledges that Subpart G does not include an averaging period for these requirements, it argues that "the general NSPS requirements in Subpart A provide that opacity standards do not apply during periods of startup, shutdown, or malfunction." EDNF SR at 10, *citing* 40 CFR 60.11(c). It adds that the same general requirements also provide that emissions exceeding applicable limits during startup, shutdown, or malfunction are not a violation of the limit "unless otherwise specified in the applicable standard." EDNF SR at 10-11, *citing* 40 CFR 60.8(c); *see* Crnkovich Test. at 9.

EDNF states that USEPA in 2012 adopted Subpart G to update NSPS for nitric acid plants. EDNF SR at 11. EDNF states that Subpart G includes a new NO_x emission limit based on pounds per ton of acid produced applicable at all times. It adds that the limits are "based on an average hourly rate further averaged over the 30 prior consecutive operating days." EDNF SR at 11, *citing* 40 CFR 60.72a, 77 Fed Reg. 48435 (Aug. 14, 2012); *see* Crnkovich Test. at 10. EDNF states that Subpart Ga does not include an opacity standard, as USEPA indicated that "it was no longer needed as a surrogate for the NO_x limit." EDNF SR at 11, *citing* 76 Fed. Reg. 63885 (Oct. 14, 2011); *see* Crnkovich Test. at 10.

The AG noted EDNF's testimony that the 30-operating-day rolling average and calculation method in its proposal were based on Subpart Ga. AG Questions at 8 (¶2), *citing* 40 CFR 60.70a(b); Crnkovich Test. at 9-10. The AG asserts that both of EDNF's processes were built or modified before 2011 and are subject to Subpart G. The AG asked whether EDNF is "operationally similar to the sources to which Subpart Ga applies, particularly with respect to startups and shutdowns? What, if any, differences exist and how might they impact the effectiveness of the rolling average or calculations method?" AG Questions at 8 (¶2).

Mr. Crnkovich testified that both of EDNF's nitric acid processes are governed by Subpart G. Tr.1 at 81. He added that, since EDNF is familiar with only its own units, it cannot comment on others. *Id*. at 81-82.

EDNF also asserts that USEPA recognized startup and shutdown conditions in a consent decree it entered with EDNF in 2011. EDNF SR at 12, *citing* EDNF Exh. 5; *see* Crnkovich Test. at 10. The consent decree required that one nitric acid process must comply with two limits, the first a short-term limit specifically not applying during periods of startup, shutdown, or malfunction. EDNF SR at 12, *citing* EDNF Exh. 5 at 9. The second is a long-term limit averaged over 365 days and applicable at all times, including startup, shutdown, and malfunction. EDNF SR at 12, *citing* EDNF Exh. 5 at 7. EDNF argues that these limits recognize higher emissions during startup and shutdown and that those periods are not frequent and limited in duration. EDNF SR at 12. EDNF adds that the consent decree defines those terms to limit their duration. EDNF SR at 12, *citing* EDNF Exh. 5 at 9. EDNF states that "[t]hese consent decree requirements are already include in EDNF's CAAPP permit," and ENDF proposes to use the same definitions of "startup" and "shutdown". EDNF SR at 12.

Proposed Amendments to 35 Ill. Adm. Code 217.381

Subsection (a). Under the heading "New Weak Nitric Acid Processes," Section 217.381(a) provides in its entirety that

> [n]o person shall cause or allow the emission of nitrogen oxides into the atmosphere from any new weak nitric acid manufacturing process to exceed the following standards and limitations:
>
> 1) 1.5 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) (3.0 lbs/T);
>
> 2) Visible emissions in excess of 5 percent opacity;
>
> 3) 0.05 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) from any acid storage tank vents (0.1 lbs/T). 35 Ill. Adm. Code 217.381(a); *see* EDNF Prop. at 5.

EDNF first proposed to revise subsection (a) by setting a lower emission standard and defining an averaging period for compliance that includes startups and shutdowns. EDNF SR at 1, 16; *see* EDNF Prop. at 5-6; PC26 at 5. ENDF states that its proposed averaging period and method to calculate the average "are drawn from U.S. EPA's NSPS for newer nitric acid production processes, in Subpart Ga." EDNF SR at 17; *see* 40 CFR 60.70a-60.77a (Standards of Performance for Nitric Acid Plants for Which Construction, Reconstruction, or Modification Commenced After October 14, 2011); Crnkovich Test. at 6.

JCAR questioned whether EDNF's proposal intended to apply only to new sources or also to apply to existing sources. PC6 at 10, *citing* PC 2 at 6. EDNF presumed that JCAR refers to 35 Ill. Adm. Code 217.381(b), which applies to "existing" nitric acid processes. PC6 at 10. It explains that the rule uses the terms "new" and "existing" to refer to processes constructed or modified before or after 1972. *Id*. ENDF's processes were built after 1972 and are "new" processes. *Id*. EDNF is not aware of any other Illinois facility with nitric acid processes and concludes that there are no "existing" sources bult before 1972 and subject to subsection (b). *Id*. at 10-11. Based on these factors, EDNF proposed only changes to 35 Ill. Adm. Code 217.381(a) "because those changes would address startup and shutdown for all nitric acid processes in Illinois." *Id*. at 11. However, EDNF does not object to making similar changes to subsection (b) or to striking it and deleting the word "new" from subsection (a). *Id*.

The AG asked how EDNF determined that reducing the current NO_x emissions level to 1.5 lbs/ton was reasonable and requested that it provide any documentation supporting this limit. AG Questions at 8 (¶3), *citing* Crnkovich Test. at 6. IEPA requested that EDNF "provide justification for proposing a 30-day average of 1.5 lb/ton rather than a more stringent standard that may be attainable. PC5 at 7-8.

Mr. Crnkovich testified that EDNF analyzed its existing data to determine the pound per ton limit it could comply with on a 30 operating day average, and its proposed limit reflects that analysis. Tr.1 at 82. In its first post-hearing comment, EDNF elaborated that it reviewed the performance of its two processes from January 1, 2017, to May 31, 2023. PC6 at 4. It reviewed and summarized data from its CEMS and other sources on NO_x emissions and acid production. EDNF then calculated a 30-day rolling average, rolled daily for each day. *Id*., *citing* 35 Ill. Adm. Code 217.381(a)(1). For periods with little or no acid production, EDNF calculated "the average hourly acid production rate from the data collected over the previous 30 days of normal acid production levels." PC6 at 4, *citing* 40 CFR 60.73a(c)(3). EDNF used the daily data to identify an emissions rate that both processes consistently met. PC6 at 4. EDNF notes IEPA's comment that annual emissions at both of its processes are below 1 lb/ton of acid produced on an annual basis. *Id*. at 5, *citing* PC5 at 7; *see* PC13 at 7. ENDF argues that it does not propose an annual average but instead proposes a 30-day average. EDNF stresses that its processes did not always meet a standard of 1.0 lb/ton when averaged over 30 days. PC6 at 5; PC13 at 7.

Th AG questioned whether,

> [i]f EDNF's proposal were adopted, and a weak acid nitric manufacturing process were subsequently constructed or modified in Illinois, would EDNF's proposed generally applicable NO_x emissions limit of 1.5 lbs/ton for 'new weak nitric acid manufacturing processes' in 35 Ill. Adm. Code 27.381(a)(1), which applies to <u>any emission sources constructed or modified after April 14, 1972</u>, conflict with 40 CFR 60.72a's limit of 0.50 lbs/ton for new nitric acid production units that commence construction or modification after October 14, 2011. AG Questions at 8 (¶4) (emphasis in original).

The AG requested that EDNF provide the bases for its response. *Id*.

Mr. Crnkovich testified that a new source constructed after the applicability date for Subpart Ga would be subject to a standard of 0.5 lbs/ton under that Subpart. Tr.1 at 83-84. He added that "[i]t would also be subject to the applicable standard in Illinois, which we are proposing to be 1.5 on the same calculation basis." *Id* at 84.

Based on data available to it, IEPA noted that EDNF may be able to achieve "a standard that is less than the proposed 1.5 lb/ton of acid produce on a 30-day averaging." PC5 at 7. IEPA states that EDNF's Annual Emissions Reports emissions rates "are well below 1 lb/ton of acid produced on an annual basis." *Id*. IEPA specifically requested that justify its proposed standard "rather than a more stringent standard that may be achievable." *Id*. at 7-8.

EDNF also proposed to amend the subsection by establishing "an alternative, work practice standard for opacity that would apply during startup and shutdown, with the numerical standard continuing to apply during other periods." EDNF SR at 17; *see* EDNF Prop. at 5-6; Crnkovich Test. at 7; *see* PC26 at 5.

The AG asked EDNF whether there is any alternative to a non-numerical opacity standard during startup and shutdown. "For example, is it possible to use an averaging method like that used for NO_x emissions for opacity? AG Questions at 9 (¶6). If so, the AG asked EDNF why it chose the non-numerical standard and why it is preferable to other options. *Id*. The AG requested that EDNF provide data or information is used to reach this conclusion. *Id*.

Mr. Crnkovich testified that emitting NO_x is the cause of opacity. He added that by controlling NO_x, EDNF in turn controls opacity. Tr.1 at 85.

The AG asked EDNF whether "any other states proposed similar non-numerical opacity standards for weak nitric acid processes during startup and shutdown in response to the SIP Call." AG Questions at 9 (¶9).

Mr. Crnkovich testified that, since EDNF only operates in Illinois, it did not investigate other states' responses to the SIP Call. Tr.1 at 87.

Specifically, EDNF proposed the following revisions to subsection (a):

> [n]o person shall cause or allow the emission of nitrogen oxides into the atmosphere from any new weak nitric acid manufacturing process to exceed the following standards and limitations:
>
> 1) 0.75 ~~1.5~~ kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) (1.5 ~~3.0~~ lbs/T), 30-day rolling average, rolled daily, during all Operating Periods (including during Startup and Shutdown);
>
> 2) Visible emissions in excess of 5 percent opacity, during all Operating Periods except during Startup and Shutdown;
>
> 3 During Startup and Shutdown, as defined in subsection (e) below, visible emissions shall be controlled through:
>
> A) Operating in a manner consistent with good air pollution control practices for minimizing emissions;
>
> B) Maintaining a log of Startup and Shutdown events; and
>
> C) Operating in accordance with written Startup and Shutdown procedures that are specifically developed to minimize Startup emissions, duration of individual starts, and frequency of Startups.
>
> 4 The limitations on visible emissions in this section are in lieu of the limitations in 35 Ill. Admin. Code 212.123.
>
> 5) ~~3)~~ 0.05 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) from any acid storage tank vents (0.1 lbs/T).

6) <u>In determining compliance with paragraph (a)(1), during process operating periods where there is little or no acid production (e.g., Startup or Shutdown), the average hourly acid production rate shall be determined from the data collected over the previous 30 days of normal acid production periods.</u> EDNF Prop. at 5-6; *see* Crnkovich Test. at 6, 7.

JCAR questioned whether the reference to "good air pollution control practices for minimizing emissions" requires incorporating standard by reference. PC6 at 10, citing PC2. EDNF responded that "[i]t will not." PC6 at 10. ENDF notes that USEPA rules use this term without further incorporation or definition. *Id*., *citing* 40 CFR 60.11(d), 63.6(e). EDNF stresses that, when adopting the term into Part 63, USEPA explained that it "is intentionally broad and nonprescriptive to require sources to implement reasonable actions to minimize emissions for their particular situations." PC6 at 10; Exh. 7 (USEPA background information). Based on these authorities, EDNF concludes that the term allows regulatory agencies to require reasonable activities to minimize emissions and is appropriate to adopt in Board rules without incorporations by reference. *Id*. at 10.

The AG asked how EDNF determined that the best option for its proposal was altering the calculation method and using an averaging period. AG Questions at 8 (¶1).

Mr. Crnkovich testified that EDNF followed the method USEPA approved in Subpart Ga, which includes an averaging period and "does not have a carve-out period for startup, shutdown, and malfunction." Tr.1 at 80.

The AG noted EDNF's testimony that "it is not practicable to initiate emissions control technology sooner by increasing the temperature of the flue more quickly." AG Questions at 8 (¶1), *citing* Crnkovich Test. at 8. The AG asked EDNF to explain whether it considered alternatives other than increasing the flue heat more rapidly and the reasons those alternatives would or would not be effective or practical. *Id*. "Were any other emissions control methods considered, for example, use of a different reductant in the SCR process or hydrogen peroxide injection?" *Id*. (citations omitted).

Mr. Crnkovich first testified that "the minimum temperature requirement is independent of the reductant that is used." Tr.1 at 80. It is instead based on the catalyst, which determines the temperature necessary for the reaction that destroys the NO_2. *Id*. He asserts that "changing the reductant would not have any effect." *Id*. Mr. Crnkovich acknowledged that "hydrogen peroxide would theoretically improve the effectiveness of absorption," he testified that "it would not allow us to meet the three pounds per ton limit during startup and shutdown." *Id*.

The Board noted EDNF's position that its proposal is "more stringent than the existing rules because the 30-day rolling average, rolled daily allowable NO_x emissions limits is lower than the current single value (daily) limit." Board Questions at 5 (¶20), *citing* Crnkovich Test. at 12. The Board asked EDNF to "explain the rationale for proposing a NO_x limit based on a 30-day rolling average during normal operations." *Id*. (¶20a). The Board also requested comment on whether "the rule should include a single value NO_x limit to prevent any spikes in NO_x emissions. *Id*. (¶20b).

Mr. Crnkovich testified that the methodology in Subpart Ga includes an averaging period that prevents spikes during normal emissions. Tr.1 at 90. Since the compliance method in Subpart Ga includes startup, shutdown, and malfunction, he testified that EDNF followed USEPA methodologies because USEPA would be likely to accept it. *Id*.

Mr. Crnkovich also testified that EDNF's permit includes other limits that would "eliminate the possibility of spikes." Tr.1 at 91. He stated that an acid plant has "a separate limit on pounds per hour and pounds per ton that does not apply during startup or shutdown." *Id*. He added that the pound per hour limit has an exception for startup and shutdown, and the pounds per ton limit has an exception for startup, shutdown, and malfunction based on USEPA's consent decree. *Id*. at 91-92.

In response to the Board's request to cite those limits (Tr.1 at 19-92), EDNF's first post-hearing comment stated that "[t]he most relevant permit provisions for preventing short-term spikes in NO_x emissions are pound per hour limits" in the facility's CAAPP permit at Section 4.6.2.c.i.F. PC6 at 6, *citing* Crnkovich Test., Exh. 1. EDNF adds that Condition 4.6.2.c.i.E further limits process 1 during periods other than startup and shutdown. PC at 6. ENDF asserts that these limits ensure that neither process "would be allowed to have NO_x spikes during normal operation," even with the 30-day average proposed. *Id*.

<u>Subsection (e).</u> EDNF proposed to add definitions of the terms "operating periods," "startup," and shutdown." EDNG SR at 17; *see* EDNF Prop. at 7. EDNF states that the definitions of "startup" and "shutdown" "are drawn from a 2011 federal consent decree between EDNF and the United States and are already included in EDNF's CAAPP permit." EDNF SR at 17. EDNF argues that these definitions "serve primarily to limit the duration of startups and shutdowns." *Id*. at 1, 17; Crnkovich Test. at 7-8. Specifically, EDNF proposed adding the following:

<u>1)</u> <u>"Operating Periods" shall mean periods during which a process is producing nitric acid and nitrogen oxides are emitted. Operating Periods begin at the initiation of Startup, end at the completion of Shutdown, and include all periods of malfunction.</u>

<u>2)</u> <u>"Shutdown" shall mean the cessation of nitric acid production operations of the process for any reason. Shutdown begins at the time the feed of ammonia to the process ceases and ends the earlier of three hours later or the cessation of feed of compressed air to the process.</u>

3) “Startup” shall mean the process of initiating nitric acid production operations at a process. Startup begins one hour prior to the initiation of the feed of ammonia to the process and ends no more than five hours after such initiation of the feed of ammonia. EDNF Prop. at 7; *see* Crnkovich Test. at 7-8.

The Board noted that USEPA had approved revisions to Florida’s SIP, including NO_x limitations for Nitric Acid Plants. Board Questions at 5 (¶21), *citing* 88 Fed. Reg. 51702-10 (Aug. 4, 2023). The Board requested comment on “how the proposed NO_x limitations compare with those in the Florida SIP revisions approved by USEPA.” *Id*.

Mr. Crnkovich testified that EDNF had just begun to review this approval and respond in post-hearing comments. Tr.1 at 91. In its first post-hearing comment, EDNF stated that it has no Florida facilities and had not discussed the SIP revision with Florida officials or USEPA. PC6 at 7. EDNF had reviewed USEPA’s notice and the two relevant permits. *Id*., *citing* 88 Fed. Reg. 51702 (Aug.4, 2023). It stated that the Florida SIP revision added emission unit-specific NO_x limits for two nitric acid processes from their permits and removed from the SIP the NO_x emission limits in Florida’s rule of general applicability for nitric acid plants. PC6 at 7, *citing* Exhs. 4, 5.

EDNF states that the two permits include a NO_x emission limit of 2.6 lb/ton of production, averaged over 30 operating days or 720 operating hours. “[T]his limit applies at all times, including startup, shutdown, and malfunction.” PC6 at 7, *citing* Exh. 4 at 4, 6; Exh. 5 at 3, 6. While the two permits retain the existing 3.0 lb/ton limit, it is averaged over three hours and does not apply during startup, shutdown, and malfunction. The SIP no longer includes this limit. PC6 at 7, *citing* Exh. 4 at 6; Exh. 5 at 6; Exh. 6 (Fla. Adm. Code). EDNF adds that the SIP revision “does not appear to have considered opacity from nitric acid processes,” and it “does not appear to have incorporated the calculation method that EDNF has proposed for 35 Ill. Adm. Code 217.381(a)(6).” PC6 at 8.

Despite these differences, ENDF argues that “the Florida SIP revision shows that USEPA will accept a 30-operating-day averaging period for a NO_x emission limit that applies at all times.” PC6 at 8. ENDF stresses that “USEPA compared maximum allowable NO_x emissions under the existing and new NO_x limitations, on both an hourly and yearly basis, and found that the allowable emissions were lower with the new limits.” *Id*., *citing* 88 Fed. Reg. 51705 (Aug. 4, 2023). Florida has demonstrated that it had “developed its new source-specific emission limit in an appropriate way to ensure that the SIP is not relaxed and that increased emissions will not occur because of the SIP revision.” PC6 at 8, *citing* 88 Fed. Reg. 51705 (Aug. 4, 2023). EDNF argues that USEPA’s comparison shows that EDNF’s proposal “will not result in any increase of emission or have the potential to cause or contribute to NO_x nonattainment or backsliding.” PC6 at 9.

USEPA Criteria

EDNF reviewed USEPA's seven criteria for developing and evaluating alternative emission limitations applicable during startup and shutdown. EDNF SR at 17, 18; *see* 80 Fed. Reg. 33980 (June 12, 2015). EDNF asserts that its "proposed amendment to the NO_x limitation is not subject to the seven criteria, as it would set a single NO_x limitation that applies at all times, including startup and shutdown." EDNF SR at 18; *see* PC26 at 6.

EDNF acknowledges that "the proposed amendment to the opacity limitation in Section 217.381(a)(2) is subject to the seven criteria." EDNF SR at 17. It states that it proposes a "'special, alternative emission limitation' that would apply during startup and shutdown, and it is non-numerical." *Id*.at 17-18; *see* PC26 at 6.

The AG asked EDNF whether its proposed opacity standard during startups and shutdowns is "legally and practically enforceable" under USEPA guidance. AG Questions at 9 (¶7), *citing* 80 Fed. Reg. 33840, 33978 (June 12, 2015).

Mr. Crnkovich testified that, since opacity results from NO_x emissions, and NO_x has numerical limitations, then "all operations are subject to enforceable limits." Tr.1 at 86. He further testified that, "[s]ince Subpart Ga regulates NO_x without an opacity limit and is considered legally and practically enforceable, the same would be expected to apply to his regulation." *Id*.

The AG also asked EDNF whether it considered its proposed non-numerical standards for startup and shutdown might constitute "an inappropriately high level of emissions or an effectively unlimited or uncontrolled level of emissions: that "would constitute impermissible *de facto* exemptions for emissions" during startups and shutdowns. AG Questions at 9 (¶8), *citing* 80 Fed Reg. 33840, 33980 (Jun 12, 2015).

Mr. Crnkovich testified that the proposed NO_x limit provides an effective limit on those emissions. He added that, since opacity results from NO_x emissions, "that will also provide an effective and enforceable limit on opacity." Tr.1 at 87.

EDNF asserts that its "proposed amendment to Section 217.381 is fully consistent with these seven criteria and U.S. EPA's overall advice in the SSM SIP Call." ENDF SR at 17; *see* PC26 at 6. In the following subsections of the opinion, the Board reviews EDNF's discussion of the seven criteria.

Criterion #1. The first criterion is that "[t]he 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)." 80 Fed. Reg. 33840, 33980 (June 12, 2015); EDNF SR at 18-19.

EDNF states that its proposal addresses only the source category of weak nitric acid production, and it is not aware of any other such production facility in Illinois. EDNF SR at 18. It adds that both of its processes are controlled by SCR. *Id*. Because the proposal applies to a single source category and its facility relies on a single control strategy, EDNF suggests that the proposal satisfies the first criterion. *See id*.; PC26 at 6.

Criterion #2. The second criterion is that "[u]se of the control strategy for this source category is technically infeasible during startup or shutdown periods." 80 Fed. Reg. 33840, 33980 (June 12, 2015); EDNF SR at 18, 19.

EDNF stresses that SCRs require a temperature above 350 ºF to control NO_x. EDNF SR at 19. Because flue gas enters the SCR s to heat them, "it takes a short period of time during startup before the SCRs reach the required temperature and the ammonia can be injected into the SCRs to start NO_x control." EDNF SR at 19. During shutdown, the temperature drops below 350 ºF before the nitric acid production process stops completely. *Id*. When this occurs, "ammonia no longer can be injected into the SCRs." *Id*. EDNF suggests that its proposal satisfies the second criterion because, "[d]uring these startup and shutdown periods, use of the SCRs as a control strategy is infeasible." *Id*.; PC26 at 6.

Criterion #3. The third criterion is that "[t]he alternative emission limitation requires that the frequency and duration of operation in startup or shutdown mode are minimized to the greatest extent practicable." 80 Fed. Reg. 33840, 33980 (June 12, 2015); EDNF SR at 18, 19.

EDNF stresses that its proposed definition of "startup" limits its duration "to no more than five hours after ammonia is first fed into the nitric acid production process." EDNF SR at 19; *see* EDNF Prop. at 7. It also stresses that its proposed definition of "shutdown" limits its duration" to no more than three hours." *Id*. EDNF argues that these definitions are based on a consent decree with the U.S. EDNF SR at 19. EDNF suggests that its proposal satisfies this criterion because USEPA has had an opportunity to consider these durations and approves them. *Id*.; *see* PC26 at 6.

Criterion #4. The fourth criterion is that, "[a]s 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." 80 Fed. Reg. 33840, 33980 (June 12, 2015); EDNF SR at 18, 19-20.

EDNF states that its facility has for years used CEMS to monitor and record its NO_x emissions. EDNF SR at 19. ENDF asserts that its "CEMS records NO_x emissions during all operational periods, including during startup and shutdown." It adds that it regularly reports data to IEPA, which allows IEPA "to account for all emissions in its evaluations and modeling of NO_x and ozone levels in Illinois." *Id*. at 19-20. Because the proposal would not change its operation, EDNF suggests that it meets this criterion because IEPA "already has evaluated the 'worst case' effect of the proposal." *Id*. at 20.; PC26 at 6.

The AG asked EDNF what impact, if any, it projected that its proposal would have on overall monthly and yearly NO_x emissions compared to current rules. AG Questions at 8 (¶5). The AG asked EDNF to "include data on current monthly or yearly NO_x emissions and the maximum NO_x emissions allowable" under its proposed AELs. *Id*., *citing* 80 Fed. Reg. 33840, 33980 (June 12, 2015).

Mr. Crnkovich testified that ENDF proposes a rule with which it can demonstrate compliance and avoid a deviation with every startup or shutdown. Tr.1 at 84. He further testified that adopting the rule "is not expected to result in a change in emission from the nitric acid plants." *Id*. In its first post-hearing comment, EDNF asserted that its processes, which use SCR to reduce NO_x emissions, "have always been unable to meet a 3.0 lb/ton NO_x standard during startup and shutdown." PC6 at 2. The comment included tables showing for the two processes actual NO_x emission in pounds, acid production in tons, and NO_x emissions in pounds per ton of acid produced for January 1, 2022, to June 30, 2023. *Id*. at 3. It also included a third table showing allowable NO_x emissions for the same period under the 3.0 lb/ton limit and the proposed 1.5 lb/ton limit. *Id*. EDNF asserts that its proposal would reduce allowable emissions from its two processes. *Id*. It adds that "[t]he proposal is not cause a change in actual emissions, as the Nitric Acid Processes' actual NO_x emissions are already lower than the proposed allowable amounts because the processes are well-controlled through the use of the SCRs." *Id* at 3-4.

Criterion #5. The fifth criterion is that "[t]he alternative emission limitation requires that all possible steps are taken to minimize the impact of emissions during startup and shutdown on ambient air quality." 80 Fed. Reg. 33840, 33980 (June 12, 2015); EDNF SR at 18, 20.

EDNF states that its proposed opacity limitation requires its processes operate according to procedures "specifically developed to minimize Startup emission, duration of individual starts, and frequency of Startups." EDNF SR at 20; *see* EDNG Prop. at 6 (proposed Section 217.381(a)(3)(C)). It further states that its proposal includes procedures to minimize emissions during shutdowns. ENDF SR at 20. Based on these factors, EDNF concludes that "the proposal directly meets U.S. EPA's criterion." *Id*.; PC26 at 6.

Criterion #6. The sixth criterion is that the "[t]he alternative emission limitation requires that, at all times, the facility is operated in a manner consistent with good practices for minimizing emissions and the source uses best efforts regarding planning, design, and operating procedures." 80 Fed. Reg. 33840, 33980 (June 12, 2015); EDNF SR at 18, 20.

EDNF states that proposed requirements to operate under written startup and shutdown procedures also ensures that its processes "will operate, even during startup and shutdown, consistently with good practices for minimizing emissions." EDNF SR at 20. It further states that the proposal includes a requirement to control visible emissions during startup and shutdown by "[o]perating in a manner consistent with good air pollution control practices for minimizing emissions." *Id*.; *see* EDNF Prop. at 6 (proposed Section 217.381(a)(3)(A)); PC26 at 6. ENDF suggests that its proposal satisfies this criterion because these proposed requirements are based on a consent decree with the United States, so USEPA has approved them.

Criterion #7. The seventh criterion is that "[t]he 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." 80 Fed. Reg. 33840, 33980 (June 12, 2015); EDNF SR at 18, 20-21.

EDNF stresses that its proposal requires its facility to maintain a log of startup and shutdown events. ENDF SR at 20; *see* ENDF Prop. at 6 (proposed Section 217.381(a)(3)(B)). It adds that this requirement is based on a consent decree with the United States and that USEPA has approved it. EDNF SR at 21. EDNF concludes based on these factors that the proposal meets this criterion. *Id*. at 20-21; PC26 at 6.

<u>Technical Feasibility and Economic Reasonableness</u>

<u>Regions and Source Affected.</u>

EDNF states that its proposed AELs "would apply statewide to any weak nitric acid manufacturing process." ENDF SR at 12, 16. However, EDNF reports that, to the best of its knowledge, "it operates the only weak nitric acid manufacturing processes in Illinois." *Id*. at 6, 12, 16.

<u>Technical Feasibility and Economic Reasonableness.</u>

EDNF argues that the Board needs to complete its response to the 2015 SIP Call and address technical conditions during startup and shutdown and amend Section 217.381. EDNF SR at 14.

EDNF asserts that, because no change to existing facilities or operations is necessary to comply with it, its proposal is technically feasible and economically reasonable. ENDF SR at 14.

<u>IEPA Comment and Request for Information</u>

Regarding opacity, IEPA requested that EDNF confirm through "Method 5 emissions testing that there is not a particulate matter element to opacity readings." PC5 at 7. IEPA suggested that it may support excluding EDNF from 35 Ill. Adm. Code 212.123 if EDNF "can and does demonstrate that there is no PM in the opacity stream." *Id*. If EDNF cannot make that demonstration, IEPA states that it "cannot recommend that the Board adopt the proposed exclusion." *Id*. IEPA adds that an exception to the opacity limits should be made in Part 212 and not only in Part 217. *Id*.

<u>EDNF's Response and Revised Proposal</u>

EDNF responded that, although it "investigated the possibility of performing Method 5 emission testing to confirm that the opacity readings during startup and shutdown do not results from particulate matter emissions," it concluded that this testing was not feasible. PC 13 at 6. EDNF argued that Method 5 testing during normal operations would not represent startup and shutdown. Also, because startup and shutdown operations occur on short notice and intermittently, it cannot practically plan to test during those events. *Id*.

In its questions pre-filed for the third hearing, the AG stated EDNF's position that Method 5 emission testing is not feasible to confirm that opacity during startup and shutdown events are not cause by PM because those events are intermittent and occur on short notice. AG Questions 2 at 2, *citing* PC13 at 6. The AG asked EDNF to provide "more detail on why the intermittent and unpredictable nature of startup and shutdown events made this testing impractical, including, for example, the estimated costs of completing such testing and/or the length of time it would take to complete." AG Questions 2 at 2-3.

EDNF responded that independent contractors typically perform Method 5 testing for PM according to a plan approved by regulators before the test is performed. PC18 at 2. EDNF asserts that, "[e]ven if a test plan were prepared in advance of a shutdown, it is impractical to deploy a contractor to the site, set up to conduct a test, and conduct the test before the shutdown is complete." *Id.* It adds that startups occur as quickly as possible after a shutdown, so it is impractical for the same reason to deploy a contractor for Method 5 testing while a process is starting up. *Id.* EDNF also stresses that nitric acid production is not expected to generate particulate-based opacity and that opacity is used in these facilities as a proxy for NO_x. *Id.*, *citing* PC13 at 6.

EDNF reports that it instead conducted a literature review and determined that no literature suggests that opacity during startup or shutdown is due to particulate matter. PC13 at 6, Exh. 4 (AP-42 background report for nitric acid production). It adds that Federal Register notices of Subpart G and Ga NSPS rules "do not note any particulate matter in stack emission from nitric acid plants." *Id.*, *citing* 77 Fed. Reg. 48435 (Aug. 14, 2012), 76 Fed. Reg. 63885 (Oct. 14, 2011). "Finally, EPA's Alternative Control Techniques Document for nitric acid production explains the visible emissions as directly related to NO_2 gas." PC13 at 7 (citation omitted). EDNF argues that this literature is consistent with its earlier submissions indicating that "opacity readings during startup and shutdown are the result of NO_2 gas itself – which is visible at the concentrations occurring during startup and shutdown – rather than particulate matter." *Id.* EDNF reports that it "has received no follow-up questions on the particulate matter information from Illinois EPA." PC13 at 7.

In its questions pre-filed for the third hearing, the AG noted that EDNF had performed this literature review and the results it reported. AG Questions 2 at 3, *citing* PC14 at 6. The AG asked Rain Carbon for the purpose of a complete record to describe the method by which it carried out the literature review. AG Questions 2 at 3.

EDNF responded that it searched USEPA's electronic docket for the Subpart Ga NSPS rule and reviewed Federal Register notices from USEPA adoption of the original Subpart G for nitric acid production processes. PC 18 at 2-3. It states that it also reviewed AP-42, USEPA's compilation of emission factors as well as supporting documents. *Id.* at 3. EDNF states that it has already cited and submitted material it located in its literature search. PC18 at 3; *see* EDNF SR, Exhs. 2, 3, 4.

In its supplemental response to IEPA, EDNF reports that on March 11, 2024, IEPA proposed revisions. PC13 at 2. EDNF characterizes the revisions as non-substantive and does not object to them. *Id*. at 2, 9; *see* PC26 at 10. EDNF submitted the revised proposal as Exhibit 1. In addition to revisions previously proposed by the Board and JCAR, Exhibit 1 includes the following revisions.

First, while IEPA agreed that Section 217.381(a) instead of Section 212.123 should apply to nitric acid plants with regard to opacity, IEPA favored achieving this by amending Part 212 rather than Part 217. PC13 at 8. IEPA deleted EDNF's proposed Section 217.381(a)(4) providing that "[t]he limitation on visible emissions in this section are in lieu of the limitations in 35 Ill. Adm. Code 212.123." PC 13, Exh. 1 at 25. IEPA instead added a Section 212.12(d) providing that "Section 212.123 shall not apply to emissions units subject to 24 Ill. Adm. Code 217.381(a)." *Id*. at 19; *see* PC26 at 10.

Second, IEPA's revisions added "clarifying language to proposed Section 217.381(a)(1) and (a)(6)." PC13 at 8; Exh.1 at 24, 25.

Third, IEPA added detail to the requirement to maintain a log of startup and shutdown events in Section 217.381(a)(3)(B). PC13 at 8, Exh. 1 at 25.

Fourth, IEPA deleted the phrase "during all Operating Periods," which ENDF agrees is superfluous. PC13 at 8, Exh. 1 at 24, 25.

Fifth, IEPA added to the proposed definitions introductory language clarifying that they apply "[f]or the purposes of this Section." PC13 at 8, Exh. 1 at 26.

<u>IEPA Testimony</u>

Before the second hearing, IEPA generally requested "emissions data from previous startup at the affected sources that would indicate what worst-case emissions could be expected during SSM events, and modeling demonstrations or monitoring data that would demonstrate that these events would not interfere with maintenance of the applicable NAAQS. IEPA Test. at 2.

IEPA reported that EDNF provided it with CEMS data from startups and modeling data. IEPA Test. at 3. It added that EDNF had not provided the data or a detailed discussion of the modeling with its most recent submission to the Board. *Id*.; *see* PC13.

IEPA testified that it requested that EDNF use USEPA Method 5 emission testing to confirm that opacity readings do not have an opacity element. IEPA Test. at 6. IEPA now agrees that Method 5 testing does not feasibly support EDNF's proposal to exempt units subject to 35 Ill. Adm. Code 217.381(a) from 35 Ill. Adm. Code 212 opacity standards. IEPA states that Method 5 does not provide this support "because the intermittent and unpredictable nature of startup and shutdown events prevents EDNF from testing during such periods, and testing during normal operating scenarios would not be representative of emissions during startup and shutdown." *Id*.

EDNF proposed to rely on USEPA technical and regulatory publications to reach two conclusions on this point: "(1) the opacity during startup and shutdown periods is produced entirely by light reacting with the NO_x in the emissions stream" and PM emissions from startup and shutdown of EDNF's processes are negligible from an air pollution control standpoint, and (2) USEPA recognized this in removing the NO_x opacity standard in NSPS Subpart G from NSPS Subpart Ga. IEPA Test. at 6-7. IEPA concludes that these provide sufficient evidence that opacity readings under 35 Ill. Adm. Code 212 "are not needed for emissions from the nitric acid processes." *Id*. at 7.

In response to other IEPA requests, "EDNF provided this data and information as requested to the Agency, but for a more limited timeframe." IEPA Test. at 7. ENDF submitted "startup and shutdown date, time, duration, and emissions data for the years 2021-2023. *Id*. After consultation, IEPA determined that three years of data and not five was sufficient. *Id*. IEPA concluded that "[t]his data and information adequately supports the AEL language proposal given relatively low maximum emissions potential and the demonstration of a relatively low impact on the NO_2 NAAQS when modeled." *Id*.

IEPA reports that EDNF also modeled emissions from the absorption towers at both of its plants. Based on modeling every hour of the year at specified emission rates, "[t]h maximum 1-hour model receptor produced by EDNF in its modeling demonstration was 8.47 $\mu g/m^3$, which is only 4.5% of the NAAQS." IEPA Test. at 7-8. IEPA noted that "this maximum modeled concentration was the 1st highest 1-hour value, which value is typically compared against the 8th highest modeled concentration. Thus, EDNFs impacts would actually be less than 4.5% of the NAAQS." *Id*. at 8.

IEPA concludes, based on the additional support provided to it by EDNF, that it "does not object to adoption of the rule proposed as set forth in EDNF's March 15, 2024 filing with the Board with one exception. IEPA Test. at 8; *see* PC26 at 9. IEPA opposes deleting 35 Ill. Adm. Code 217.381(b), (c), and (d) as shown in ENDF's filing. *See* PC13, Exh. 1. IEPA stresses that these are existing provisions. IEPA argues that EDNF had not deleted these from its original proposal, and they were not part of its discussions with EDNF. IEPA later confirmed with EDNF that striking through subsections (b), (c) and (d) was unintentional. IEPA Test. at 8; *see* PC23 at 4; PC26 at 9, n.4.

<u>Post-Hearing Comments (PC25)</u>

EDNF concludes by requesting that "the Board move forward expeditiously with a 'second notice' proposal and then final adoption of a rule incorporating EDNF's proposal." PC25 at 2, 11.

<u>Board Findings</u>

The data that EDNF provided in response to IEPA's request for information demonstrated that there is a "relatively low maximum emission potential" and a "relatively low impact on the NO_2 NAAQS." IEPA Test. at 7. Additionally, EDNF's impacts would be less than 4.5% of the NAAQS. *Id*. at 8.

Upon its own review, the Board agrees with IEPA and finds that the proposal meets USEPA's seven criteria for AELs, is technically feasible and economically reasonable, and does not harm human health or the environment. The Board includes EDNF's revised proposal in its proposal for second notice.

IERG

IERG argues that, by removing SMB provisions from Part 201 in R18-23, the Board left affected entities "with no feasible option for compliance with Section 216.121 during periods of startup." IERG SR at 29; IERG TSD at 3; *see* Wall Test. at 3. IERG adds that sources fired by coal or solid fuel "do not have feasible options for compliance with Section 216.121 during shutdown." *Id.*

In this sub-docket, IERG proposes to amend the Board's CO standard applicable to fuel combustion emission sources to include an AEL addressing CO emissions during startup and shutdown. IERG SR at 29: IERG TSD at 3. IERG based its proposal on Boiler MACT work practice standards in NESHAP Subpart DDDDD. IERG TSD at 3, 4. IERG intends that its proposed AELs would allow "entities with fuel combustion emission sources to operate in continuous compliance with the Board's regulations during all modes of operation." IERG SR at 29. Because it proposes to incorporate USEPA work practice standards to which many sources are already subject, IERG asserts that the proposal "will not result in any adverse harm to the environment or human health." *Id*. at 30; *see* PC22 at 4.

The Board first discusses IERG's operations, then its current emissions limits, then its proposal for alternative emission limits, then USEPA's seven criteria for AELS, then the technical feasibility and economic reasonableness of the proposal, then IEPA's comment requesting more information, then IEPA's testimony, then IERG's questions at the third hearing, and finally post-hearing comments.

Operations and Emissions

IERG states that boilers and process heaters emit CO "as a product of incomplete combustion." IERG SR at 25-26; IERG TSD at 3, 8, 13; Wall Test. at 4. IERG lists time, temperature, and turbulence as factors that influence complete combustion. IERG TSD at 8, 13; IERG SR at 26 (citation omitted); Wall Test. at 4; PC22 at 6. "CO emissions can be minimized when boilers and process heaters operate at sufficiently high combustion temperature and with sufficient time and turbulence (mixing) in the firebox to allow for more complete combustion to occur." *Id*. The CO autoignition temperature – the temperature at which it combusts – is approximately 1128 ºF. IERG TSD at 8 (citation omitted). IERG asserts that, as firebox temperatures begin to approach the CO autoignition temperature, CO emission fall drastically to barely measurable levels." *Id*. at 9, *citing* IERG TSD, Attachment 1 (Example Startup Involving Refractory Dry-Out); PC22 at 7.

Startup.

IERG argues that, during startup, it is not technically feasible to achieve these conditions. IERG SR at 26; IERG TSD at 8; PC22 at 6. IERG states that a boiler startup can take a significant amount of time to reach sufficient operating temperature for good combustion, particularly after a long shutdown. IERG SR at 26; IERG TSD at 3; Wall Test. At 5; PC22 at 6. After a longer shutdown, combustion temperatures must increase slowly to avoid damaging the boiler equipment and compromising boiler performance. *Id*.

IERG states that it is not aware of any technically feasible means of controlling excess CO emissions during startup other than to minimize the duration of the startup while maintaining safe operation. IERG SR at 25, 26-27; IERG TSD at 8; Wall Test. at 5.

Shutdown.

IERG states that compliance with the CO standard is also an issue for fuel combustions emission sources during shutdown, particularly for boilers and process heaters fired by coal or solid fuel. IERG SR at 25, 27; Wall Test. at 5; PC22 at 7. Boilers and process heaters fired by coal and solid fuel "may have a longer residence time for fuel remaining in the combustor after fuel delivery is stopped." IERG SR at 27; IERG TSD at 3, 9; Wall Test. At 5; PC22 at 7. Incomplete combustion may continue "as the fuel stops burning and bed temperature cools off, resulting in elevated CO emissions." *Id*.

IERG adds that excess CO emissions may generally be less of an issue for shutdowns of boilers and process heaters fired by natural gas. For those units, shutdown is ceasing the flow or feed to the boiler or process heater, which can be performed rapidly. IERG SR at 27; IERG TSD at 3, 9; Wall Test. at 5.

IERG added that a malfunction or breakdown in a boiler or process heater "may just lead to a shutdown in order to address the cause of the malfunction." IERG SR at 27., n.9; IERG TSD at 9. While an upset or malfunction could rapidly change operating conditions and result in temperature differentials in the boiler or process heater firebox and also result in excess CO emissions, IERG reports that "this is not typically the case." *Id*.

Measuring Excess Emissions.

Factors affecting excess emissions during startup include the size of the boiler or process heater and the duration of the startup event. IERG TSD at 9. Duration varies based on the shutdown that necessitated the startup and the amount of time that passes after the shutdown. *Id*. IERG list three basic categories of startup. First, startup may follow repairs for an instrument malfunction. Second, startup may follow a required inspection by the Illinois State Fire Marshal, which shuts down a boiler for approximately one week. Third, startup may follow system repairs or replacing refractory. *Id*.

IERG asserts that these different events "can result in startup durations varying between several minutes to more than a day." IERG TSD at 9. If a boiler or process heater shuts down as because of an instrument issue, that startup period may be less than two hours. *Id*. IERG expects startup of this nature typically to occur 5-10 times per year. *Id*. at 10. After the boiler or process heater is down for a routine inspection, startup can be less than 18 hours. *Id*. at 9. IERG expects startup of this nature typically to occur once every 1-2 years. *Id*. at 10. Startup may last longer than one day for an initial startup or for refractory work, although IERG expects this to occur typically once every five years. *Id* at 9-10.

Based on available data for boilers and process heaters operating in Illinois, IERG projects CO concentrations during startup typically range from 300-1,500 PPMV. IERG TSD at 10. Stressing that emissions vary with the size of the boiler or process heater and the duration of the startup, IERG projects that "the mass emissions of a boiler or process heater startup event can typically vary from only a few lbs per event for a brief startup to a few hundred lbs per event for an extended startup." *Id*. Over the course of a year for a given boiler or process heater, emissions attributable to startup events "might range from a few lbs of CO to approximately 2,000 lbs of CO." *Id*.

IERG argues that excess CO emissions during shutdown are largely limited to coal-fired or solid fuel-fired boilers and process heaters, where "there can be a brief period of incomplete emissions as the fuel stops burning and bed temperature cools off." IERG TSD at 10. Based on its review of available data for coal-fired and solid fuel-fired boilers and process heaters, IERG argues that "the duration of excess CO emissions during shutdown is much lower than periods of startup. While shutdowns typically last 1-2 hours, their duration could be as long as 9 hours. *Id*. IERG reports that "CO emissions typically range from 200 ppmv to 500 ppmv." *Id*.

Reducing Emissions.

IERG argues that it is "not aware of a technical means to control the excess CO emissions during these startup periods, or for shutdown periods for coal-fired and solid fuel-fired boilers and process heaters." IERG TSD at 11; PC22 at 7. IERG adds that the sole option is "to follow standard startup and shutdown procedures to achieve normal operating conditions as quickly as possible" while maintaining safe operation. *Id*. IERG argues that this is consistent with the Boiler MACT work practices reflected in its proposal. IERG TSD at 11.

Air Quality Impact.

IERG argues that, although fuel combustion sources have generated startup and shutdown emissions for decades, "[d]uring this time there has never been a CO nonattainment area in the State of Illinois." IERG TSD at 11 (citation omitted).

The AG notes that IERG proposes standards based on NESHAP rather than NAAQS. It adds that "[t]he federal boiler NESHAP is intended to regulate emissions of hazardous air pollutants" or HAPs, which are "types of pollutants known or suspected to cause cancer or other serious health effects, often in very low quantities." AG Questions at 3 (¶1).

The AG first asks IERG how Illinois' CO attainment status under NAAQS relates to HAP emissions from boilers and compliance with the federal boiler NESHAP. AG Questions at 3 (¶1a).

Mr. Wall acknowledged that "Illinois' attainment status for CO does not directly relate to HAP emission for boilers." Tr.1 at 53. He testified that IERG's proposal refers to the boiler NESHAP "because it's an established USEPA approved program that regulates SSM similar to SMB emissions from combustion sources." *Id.* He added that the attainment status "demonstrates the current levels of CO emissions which includes SMB emissions from heaters and boilers within the state are not and have not caused adverse ambient air quality impacts of CO in Illinois." *Id.* He also testified that it demonstrates that IERG's proposal "will not cause or contribute to any adverse ambient impacts." *Id.*

The AG states that "[t]he federal boiler NESHP is not primarily intended to limit CO emissions; rather, it uses CO emissions as a surrogate for limits on organic hazardous air pollutants." AG Questions at 3 (¶1b), *citing* 87 Fed. Reg. 60827 (Dec. 5, 2022). The AG asks IERG why the federal boiler NESHP operates this way and how using CO as a surrogate for organic HAPs relates to IERG's proposal. AG Questions at 3 (¶1b).

Mr. Wall responded that USEPA used CO as a surrogate for organic HAP emissions "as the pollutants generally trend together from combustion sources as both are products of incomplete combustion and are impacted by similar operational parameters." Tr.1 at 54. He added that it is simpler to have emission limits, work practice standards, and monitoring requirements based on a single pollutant, "which is why USEPA often utilizes surrogate pollutants in rulemaking." *Id.* He also added that "the feasible control technologies are the same for both pollutants." *Id.* at 53-54.

The AG asked IERG whether its proposal could have "any adverse impact on human health or the environment due to emission of HAPs." AG Questions at 3 (¶1c).

Mr. Wall testified that it would not. "IERG's proposal does not address or change any requirements regarding HAPs." Tr.1 at 55. The proposal uses the same work practice requirements as the boiler NESHAP to regulate CO emissions. Tr.1 at 55-56. He concluded that IERG's proposal "would not have any adverse impact on human health or the environment as the emissions from regulated sources will not increase. *Id.* at 56.

The AG asked IERG whether boilers in Illinois have "ever emitted organic HAPs in violation of state or federal environmental laws or regulations." AG Questions at 3 (¶1d). The AG also asked IERG to "comprehensively list the organic HAPs that could be emitted by the boilers covered by IERG's proposed regulations." AG Questions at 3 (¶1e).

Mr. Wall testified that, based on the large number of them, "IERG does not have knowledge of the compliance history of all boilers within the state." Tr.1 at 56. He acknowledged that there are organic HAPs for which CO is a regulated surrogate under the boiler NAAQS, including benzene, chloroform, formaldehyde, hexane, toluene, and others. *Id.*

at 56-57. He testified that these HAPs are not specifically relevant to IERG's proposal, as it proposes only an AEL to the CO standard in Section 216.121. *Id.* at 57.

IERG also asserts that "Illinois has no violating CO monitors for either the 1-hour or 8-hour CO NAAQS." IERG TSD at 15. IERG cites recent data from Illinois' CO ambient monitoring network for the 1-hour and 8-hour CO standards, which indicate "ambient air quality levels only a fraction (1-13%) of the standards." *Id.* at 11. IERG asserts that these data show that there is "a large compliance margin below the CO NAAQS across the state." *Id.* IERG concludes that its proposed AELs "will not result in any increase in CO emissions from the regulated fuel combustion emission sources" and that its proposal has no potential to adversely affect air quality. *Id.* at 11-12; *see id.* at 18.

IEPA argues that these points "provided very limited support for its very broad proposal." PC5 at 26. While the monitoring network may never have measured an exceedance, IEPA argues that this does not demonstrate that one would not result from the requested relief. *Id.* IEPA further argues that these monitors "are not necessarily meant to measure CO concentrations near or at any of the unnamed potentially affected sources, nor are they meant to determine compliance with the NAAQS on a statewide or regional basis." *Id.* IEPA also argues that the potentially affected sources are mostly "nowhere near one of those CO monitors, and the appropriate concern is CO concentrations at publicly accessible areas" near these 1,500 or more sources. *Id.*

Anti-Backsliding.

IERG asserts Illinois has experienced startup and shutdown emissions from fuel combustion emission sources "for decades." IERG TSD at 12. It argues that the rules amended in the underlying docket R23-18 will not change "how fuel combustion sources operate during startup or shutdown nor their historical emissions." *Id.* It further argues that its proposed AELs "merely document compliance with the best practices that most of the potentially impacted facilities are already following." *Id.* IERG concludes that, "[a]s there will be no change in emissions from regulated sources, the proposed amendments will not result in any 'backsliding.'"

Emissions Limitation

The Board's Part 216 CO emission standards are organized by source category with fuel combustion emission sources in Subpart B. IERG SR at 14; *see* 35 Ill. Adm. Code 216.121, 216.122. IERG states that Part 216 contains standards but not "requirements for monitoring, testing, recordkeeping or reporting." IERG SR at 14. It argues that Boiler MACT is more comprehensive and includes these requirements. *Id*, *citing* 40 CFR 63 Subpart DDDDD.

Section 216.121 of the Board's air rules provides in its entirety that "[n]o 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." 35 Ill. Adm. Code 216.121; *see* IERG SR at 15.

IERG argues that compliance with this standard during startup and shutdown "is likely unachievable for numerous entities in Illinois." IERG SR at 14; Wall Test. at 6.

Proposed AELs

Section 216.103. Section 216.103 entitled "Definitions" provides in its entirety that "[t]he definitions contained in 35 Ill. Adm. Code 201 and 211 apply to this Part." 35 Ill. Adm. Code 216.103.

IERG proposes to incorporate into Section 216.121 provisions of Boiler MACT at 40 CFR 63 Subpart DDDD that include the terms "shutdown" and "startup." IERG SR at 24; Wall Test. at 6. Neither Part 201 nor 211 defines "shutdown." *Id.* Although Part 211 defines "startup," that definition differs from the definition in Boiler MACT. *Id., citing* 35 Ill. Adm. Code 211.6310. IERG proposes a definition of "startup" consistent with Boiler MACT. IERG SR at 24

IERG proposed to add to Section 216.103 language providing that "[t]he definition of 'startup' and 'shutdown' in 40 CFR 63.7575 apply to Section 216.121(b) of this Part." IERG Prop. at 2; *see* IERG SR at 24; IERG TSD at 4.

Boiler MACT provides that "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. 40 CFR 63.7575; *see* IERG SR at 24-25.

Boiler MACT provides that "startup" means

> (1) [e]ither 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; *see* IERG SR at 25.

Section 216.104. Section 216.104 entitled "Incorporations by Reference" provides in its entirety that "[t]he following materials are incorporated by reference: non-dispersive infrared method, 40 CFR 60, Appendix A, Method 10 (1982)." 35 Ill. Adm. Code 216.104.

IERG proposed to add language incorporating "40 CFR 63, Subpart DDDDD (2022) [National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters]," known as Boiler MACT. IERG Prop. at 2; *see* IERG SR at 24, 27; IERG TSD at 4; Wall Test. at 6; *see also* 40 CFR 63.7480–63.7575. IERG states that it proposes to incorporate this Subpart because its proposed amendments to Section 216.121 refer to it. IERG SR at 25; IERG TSD at 5.

IERG states that USEPA first adopted Boiler MACT in 2004 "to regulate emissions of hazardous air pollutant from industrial, commercial, and institutional boilers and process heaters." IERG SR at 24; IERG TSD at 5, *citing* 69 Fed. Reg. 55218 (Sept. 13, 2004).

IEPA revised Boiler MACT in 2011. IERG SR at 27-28; IERG TSD at 6-7, *citing* 76 Fed. Reg. 15608 (Mar. 21, 2011). IERG adds that USEPA again revised it in 2013 by "defining 'startup' and 'shutdown' and revising the work practice standards to better reflect the MACT during those periods." IERG SR at 28 IERG TSD at 7, *citing* 78 Fed. Reg. 7138 (Jan. 31, 2013).

USEPA again revised Boiler MACT in 2015. It revised the definitions of "startup" and "shutdown" and work practices applicable during those periods. IERG SR at 28, IERG TSD at 7, *citing* 80 Fed. Reg. 72790, 72793 (Nov. 20, 2015). In 2022, USEPA revised Boiler MACT again, including revisions to numeric limits. IERG SR at 28; IERG TSD at 7, n.4, *citing* 87 Fed. Reg. 60816 (Oct. 6, 2022).

The AG notes that USEPA later revised Subpart DDDDD. AG Questions at 4 (¶3), *citing* 87 Fed. Reg. 60816 (Oct. 6, 2022). The AG reports that, although the electronic Code of Federal Regulations is regularly updated and includes this revision, the 2022 Annual Edition of Title 40 of the Code was published on July 1, 2022, and does not include it. AG Questions at 4 (¶3) (citation omitted). If IERG's proposal does not refer to the 2022 Annual Edition of the Code, the AG asked IERG what its proposal does refer to. AG Questions at 4 (¶3a). The AG also asked IERG whether its proposal incorporates the most recent revision to Subpart DDDDD by reference. *Id*. (¶3b). The AG questioned whether IERG's proposal should cite the revision published on October 6, 2022 "to avoid ambiguity." *Id*. at 5 (¶3c).

Mr. Wall testified that IERG's proposal intended to refer to the most recent version of the boiler NAAQS last amended on October 6, 2022. Tr.1 at 61. He added that IERG "can clarify that as needed." *Id*.; *see supra* at 8-9 (nonsubstantive revisions proposed by Board).

Section 216.121. IERG proposed to designate existing Section 216.121 as subsection (a) and add subsection (b) providing in its entirety that,

> [n]otwithstanding 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 Prop. at 2-3; *see* IERG SR at 15; IERG TSD at 4, Wall Test. at 6.

IERG states that the 200 ppm standard in existing Section 216.121 "would continue to be the CO standard applicable during normal, steady-state operation." IERG SR at 15. Under its proposal, IERG asserts that for periods of startup and shutdown, facilities could comply with either the 200 ppm standard or "the incorporated Boiler MACT work practice standards." *Id*.

In the following subsection, the Board summarizes the provisions of Boiler MACT at Subpart DDDD that IERG proposes to incorporate.

40 CFR 63.7500(f). Section 63.7500 is entitled "What emission limitations, work practices, and operating limits must I meet?" 40 CFR 63.7500. It establishes standards and limits for boilers and process heaters at major sources. IERG SR at 16; *see* 40 CFR 63.7500(a).

Subsection (a) provides that a source must meet its requirements "at all times the affected unit is operating, except as provided in paragraph (f) of this section." 40 CFR 63.7500(a). Under subsection (f), "[t]hese standard 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 63.7500(f); *see* 40 CFR 63.7575 (defining "shutdown" and "startup"); 40 CFR 63 Subpart DDDDD, Table 3 (Work Practice Standards).

By proposing to incorporate this provision, IERG intends that "facilities with fuel combustion emission sources will have the option to comply with the requirements of NESHAP Subpart DDDDD, Table 3, Items 5 and 6 during periods of startup and shutdown in lieu of the CO standard in 35 Ill. Adm. Code 216.121." IERG SR at 16.

40 CFR 63.7500(a)(3). Subsection (a) provides in part that the source "must meet the requirements in paragraphs (a)(1) through (a)(3) of this section, except as provided in paragraphs (b) through (e) of this section." 40 CFR 63.7500(a); *see* IERG SR at 17. Subsection (a)(3) provides in its entirety that

> [a]t 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); *see* IERG SR at 17; IERG TSD at 4.

IERG asserts that facilities complying with its proposed AELs must operate and maintain sources during startup and shutdown in the prescribed manner. IERG SR at 17. By proposing to incorporate this provision, IERG seeks "to mirror the SMB permit conditions concerning the duty to minimize emission during SMB periods." *Id*. IERG adds that USEPA criteria for AELs require that they "include a requirement that the frequency and duration of operation in startup and shutdown mode are minimized to the greatest extent practicable, and that the facility is operated in a manner consistent with good practice for minimizing emissions." *Id*.; *see* IERG TSD at 14-15 (Criterion 3).

For boilers and process heaters burning only clean fuel, that have not installed CMS, and that comply through subsection (1) of the definition of "startup," IERG states that its proposal would require only operating during startup and shutdown under subsection (a)(3). IERG SR at 17.

40 CFR Part 63 Subpart DDDDD, Table 3, Rows 5 and 6. Table 3 of Subpart DDDDD, entitled "Work Practice Standards," provides those standards applicable to boilers and process heaters at major sources. IERG SR at 18; *see* 40 CFR Subpart DDDDD Table 3.

Row 5 of Table 3 requires fuel combustion sources to comply with specified requirements during startup. 40 CFR Subpart DDDDD Table 3, Row 5. Subsection (a) requires that "[y]ou must operate all CMS during startup." *Id*. Subsection (b) requires using one or a combination of listed clean fuels to startup a boiler or process heater. *Id*. Subsection (c) provides two work practice options, based on the subsection of the definition of "startup" under which the source complies. *Id*. Under subsection (d), the source must collect monitoring data specified in 40 CFR 63.7535(b), keep records during periods of startup, and provide reports concerning startup specified in 40 CFR 63.7555. *Id*.; *see* IERG SR at 18-20; IERG TSD at 4.

Row 6 of Table 3 requires fuel combustion source to comply with specified requirements during shutdown. First, "[y]ou must operate all CMS during shutdown." 40 CFR Subpart DDDDD Table 3, Row 6. Second, it addresses venting emissions when firing fuels that are not clean fuels during shutdown. *Id*. Third, it addresses using another fuel in addition to the fuel use before initiating shutdown to support the shutdown process. *Id*. Fourth, it requires the source to collect monitoring data specified in 40 CFR 63.7535(b), keep records during periods of shutdown, and provide reports concerning shutdown specified in 40 CFR 63.7555. *Id*; *see* IERG SR at 20-21; IERG TSD at 4.

IERG asserts that, by incorporating Table 3 and its requirements to operate CMS, it does not intend to require installing CMS on fuel combustion emission devices that do not now have it. IERG SR at 21. IERG intends only that sources that have CMS will be required to operate it during startup and shutdown. *Id*.

40 CFR 63.7505(e). Section 63.7505, entitled "General Compliance Requirements," provides these requirements for complying with Subpart DDDDD. IERG SR at 21. Subsection

(e) provides in its entirety that, "[i]f 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 63.7575(e); *see* IERG SR at 21-22.

<u>40 CFR 63.7535(b).</u> Section 63.7535 entitled "Is there a minimum amount of monitoring data I must obtain?" provides in subsection (b) that

> [y]ou 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 63.7535(b); *see* IERG SR at 22.

IERG asserts that, by incorporating subsection (b), it does not intend to require installing CMS on fuel combustion emission devices that do not now have it. IERG SR at 22. IERG intends only that sources that have CMS will be required to operate it during startup and shutdown. *Id*.

<u>40 CFR 63.7555(d)(9-12).</u> Section 63.7575 entitled "What record must I keep?" provides recordkeeping requirement recordkeeping for Subpart DDDDD. IERG SR at 22. Subsection (d) requires that, "[f]or 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." 40 CFR 63.7555(d); IERG SR at 22. Subsections (9) through (12) establish the following recordkeeping requirements:

> (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. 40 CFR 63.7555(d)(9-12); *see* IERG SR at 22-23.

By proposing to incorporate these provisions, IERG intends to require that facilities keep the records listed in subsections (9) and (10) if the facility complies with the AEL instead of Section 216.121. If the facility complies with the AEL, IERG also intends that the facility would also be required to keep the record listed in subsections (11) and (12) depending on the definition of "startup" with which it complies. IERG SR at 24.

IERG notes that "Section 63.7555 contains requirements for recordkeeping and does not contain requirements specific to reporting." IERG SR at 21. Section 63.7550 provides reporting requirements for Boiler MACT and requires submitting compliance reports including specified information. *Id.*, n.7. This information includes records of each instance of startup or shutdown and each deviation from the work practice standards for periods of startup and shutdown. *Id.*, *citing* 40 CFR 63.7550(c)(5)(xviii), (d). However, "IERG does not intend to incorporate the compliance report requirements from Section 63.7550 as the compliance report requirements are structured for semi-annual submittals and structured to include numerous non-startup and non-shutdown related information." IERG SR at 21, n.7.

USEPA Criteria

IERG argues that, in the 2015 final rule on SSM, USEPA recognized that there are approaches to addressing emissions during SSM events that are consistent with CAA requirements. IERG SR at 28; PC22 at 4, *citing* 80 Fed. Reg. 33840, 33844 (June 12, 2015). USEPA clarified seven criteria for developing and evaluating AELS applicable during startup and shutdown. 80 Fed. Reg. 33840, 33914 (June 12, 2015). IERG states that it drafted its proposed AEL to satisfy each of the criteria. IERG TSD at 4, 12.

In the following subsections of the opinion, the Board reviews IERG's position on the USEPA criteria.

Criterion #1. The first criterion is that "[t]he revision is limited to specific, narrowly defined source categories suing specific control strategies (*e.g.*, cogeneration facilities burning natural gas and using selective catalytic reduction)." 80 Fed. Reg. 33840, 33914 (June 12, 2015); IERG TSD at 12.

IERG argues that its proposal applies narrowly because it is limited specifically to "boilers and process heaters with actual heat input greater than 2.9 MW (10 mmbtu/hr)." IERG TSD at 12, *citing* 35 Ill. Adm. Code 216.121. It argues that, during startup and shutdown under 40 CFR 63 Subpart DDDDD, a boiler or process heater must comply with work practice standards in Table 3. IERG asserts that the general CO standard at 35 Ill. Adm. Code 216.121 would continue to apply to normal operations. During startup and shutdown, facilities could opt to comply with that standard or with incorporated work practice standards under Subpart DDDDD. IERG TSD at 12-13; *see* PC22 at 5. IERG argues that, in adopting Subpart DDDDD, "USEPA understood the concerns with meeting the Boiler MACT standards during periods of startup and shutdown." *Id*. at 13.

Criterion #2. The second criterion is that "[u]se of the control strategy for this source category is technically infeasible during startup or shutdown periods." 80 Fed. Reg. 33840, 33914 (June 12, 2015); IERG TSD at 13; *see supra* at 121-126 (summarizing standards).

Above under "Operations and Emissions," the Board reviewed IERG's arguments on controlling emissions during startup and shutdown. *See supra* at 116-120. IERG stresses that, "[g]enerally, CO emissions should be minimized when combustion temperatures are in excess of the autoignition temperature for CO" of 1128 ºF. IERG TSD at 14. IERG asserts that, as startup proceeds and firebox temperatures begin to approach the CO autoignition temperature, "CO emissions fall drastically to barely measurable levels." *Id*. at 9, 14, *citing* IERG TSD, Attachment 1 (Example Startup Involving Refractory Dry-Out); PC22 at 7.

Criterion #3. The third criterion is that "[t]he alternative emission limitation requires that the frequency and duration of operation in startup or shutdown mode are minimized to the greatest extent practicable." 80 Fed. Reg. 33840, 33914 (June 12, 2015); IERG TSD at 15.

IERG argues that, although the duration of startups and shutdowns vary, "[i]t is to the facility's benefit to minimize startup duration of boilers and process heaters to the greatest extent practical." IERG TSD at 14. IERG states that it proposes to incorporate in its AELs the general duty to minimize emissions under the Boiler MACT. *Id*., citing 40 CFR 63.7500(a)(3); *see* PC22 at 9-10; *supra* at 123-126 (summarizing operation and maintenance requirements). IERG concludes that its proposed AELs include the necessary requirement to minimize emissions, including during startup and shutdown. IERG TSD at 15.

<u>Criterion #4.</u> The fourth criterion is that, "[a]s 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." 80 Fed. Reg. 33840, 33914 (June 12, 2015); IERG TSD at 16.

From the 2015 SIP Call final rule, IERG cited USEPA on "the information required for an approvable alternative emissions limitation." USEPA indicated that "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." IERG TSD at 15, *citing* 80 Fed. Reg. 33840, 33867 (June 12, 2015); PC22 at 8. IERG argues that it proposes to incorporate existing federal requirements and not a new emission limit, so it is not necessary to model the proposal. PC22 at 8. IERG notes that USEPA approved Washington's SIP including AELs for certain pre-existing biomass boilers during specific modes of operation after concluding that PM emissions would not increase as a result. *Id*. at 8-9, *citing* 88 Fed. Reg. 39210 (June 15, 2023).

IERG argues that Illinois has no CO monitors showing violation of either the 1-hour or 8-hour CO NAAQS. Although it states that "[t]he CO NAAQS allows for one exceedance per year," IERG argues that "[m]ost recent Illinois data show the highest monitor's worst daily high 1-hour and 8-hour CO NAAQS readings are dramatically below the NAAQS." IERG TSD at 15; *see* PC22 at 7-8. IERG adds that sources subject to Boiler MACT have since 2015 relied on SSM provisions that it proposes to incorporate with "minimal if no impact on CO emissions in Illinois." *Id*. Based on these factors, IERG concludes that "additional analysis of worst-case emissions under this criterion is not necessary." *Id*.

<u>Criterion #5.</u> The fifth criterion is that "[t]he alternative emission limitation requires that all possible steps are taken to minimize the impact of emissions during startup and shutdown on ambient air quality." 80 Fed. Reg. 33840, 33914 (June 12, 2015); IERG TSD at 16. IERG asserts that its proposed AELs "incorporate the startup requirements that mandate the use of clean fuels under Boiler MACT." IERG TSD at 16-17, *citing* 40 CFR Subpart DDDDD Table 3, Rows 5, 6; PC22 at 9-10; *see supra* at 124 (summarizing work practice standards). IERG concludes that, by incorporating these standards, its proposal "will minimize the impact of emissions of CO during startup on ambient air quality." IERG TSD at 17.

<u>Criterion #6.</u> The sixth criterion is that the "[t]he alternative emission limitation requires that, at all times, the facility is operated in a manner consistent with good practices for minimizing emissions and the source uses best efforts regarding planning, design, and operating procedures." 80 Fed. Reg. 33840, 33914 (June 12, 2015); IERG TSD at 17. IERG notes that it proposes incorporating the general duty to minimize emissions under Boiler MACT. IERG TSD at 17, *citing* 40 CFR 63.7500(a)(3); PC22 at 9-10; *see supra* at 123-24 (summarizing operating and maintenance standards).

<u>Criterion #7.</u> The seventh criterion is that "[t]he 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." 80 Fed. Reg. 33840, 33914 (June 12, 2015); IERG TSD at 18. IERG argues that it proposes to incorporate

Boiler MACT provisions addressing this criterion. IERG TSD at 18, *citing* 40 CFR 63.7555; *see supra* at 125-126 (summarizing recordkeeping requirements).

Environmental Justice

From the main docket R23-18, the AG cites IEPA's testimony that USEPA requires SIP submissions to include impact on EJ communities. AG Questions at 4 (¶2), *citing* <u>Amendments to 35 Ill. Adm. Code 201, 202, and 212</u>, R 23-18 (Jan. 25, 2023) (transcript of Jan. 19, 2023 hearing at 175-76). The AG notes that IERG had testified that its proposal "will not result in any adverse impacts on EJ areas or EJ communities." AG Questions at 4 (¶2), *citing* <u>Amendments to 35 Ill. Adm. Code 201, 202, and 212</u>, R 23-18 (Feb. 21, 2023) (transcript of Feb. 16, 2023 hearing at 44-45). The AG also notes IERG's statement that, based on IEPA's EJ Start mapping tool, at least one IERG member that could be impacted by IERG's alternative proposal is located in an EJ area. AG Questions at 4 (¶2), *citing* <u>Amendments to 35 Ill. Adm. Code 201, 202, and 212</u>, R 23-18 (Feb. 24, 2023) (responses to Board questions).

The AG asked IERG whether its understanding is that USEPA will require a discussion of EJ impacts in SIP submissions. Based on its understanding of the information USEPA requires, the AG asked IERG whether the rulemaking record includes sufficient information about EJ impacts to support a SIP submission. AG Questions at 4 (¶2a).

Mr. Wall testified that IERG understands that neither the CAA nor USEPA regulations for SIP submissions require or prohibit an EJ evaluation. Tr.1 at 58. He further testified that IERG's proposal will not result in any increases in emissions from any regulated sources, so "there is no potential for adverse impact to EJ areas as a result of this proposal." *Id*. at 59. Based on these factors, Mr. Wall's testimony asserts that IERG's position that its proposal includes sufficient information for a SIP submission. *Id*.

The AG asked IERG what impact its proposal will have on EJ communities and EJ areas relative to Illinois' current air rules. The AG asked IERG to "provide specific locations of EJ communities and EJ areas that would be affected by the proposal" and to "quantify this impact and provide evidence in support of your conclusion." AG Questions at 4 (¶2b).

Mr. Wall's testimony acknowledged, given the number of regulated combustion sources, "there are numerous boilers and heaters operating within a number of these EJ areas within the state." Tr.1 at 60. Because IERG does not expect its proposal to have an impact on emissions, it expects "no adverse impact to any EJ area in the state." *Id*. In its first post-hearing comment IERG added that, under its proposal, "regulated sources will continue to operate as they have always operated with no increase in emissions." PC4 at 3.

Technical Feasibility and Economic Reasonableness

Region and Sources Affected.

IERG states that its proposed AELs would affect "facilities in Illinois with fuel combustion emission sources, such as boilers or process heaters, with actual heat input greater than 2.9 MW (10 mmbtu/hr) where such units cannot comply with the CO standard in Section 216.121 during periods of startup or shutdown." IERG SR at 30; *see* Wall Test. at 7. Although IERG acknowledges that Section 216.121 applies to a large number of sources, it states that sources most likely to be affected are those equipped with CMS for CO. IERG SR at 30, n.10. IERG further states that sources equipped with CO CMS have emissions data showing whether CO emissions from the boiler or process heater exceed the standard in Section 216.121 during startups and shutdowns. *Id*. IERG adds that sources subject to Section 216.121 that do not have CO CMS may be affected if IEPA requires installing CO CMS or if the source voluntarily installs CO CMS in the future. *Id*.

IERG submitted to IEPA a Freedom of Information Act request for "a list of boilers and process heaters with actual heat input greater than 2.9 MW (10 mmbtu/hr) in the State of Illinois." IERG SR at 31; *see* Wall Test. at 7. As summarized by IERG, IEPA lists 2,919 facilities with 9,961 combustion units in more than 400 types of industry. IERG SR at 31. For facilities with active combustion units, IEPA lists 1,545 facilities with 3,944 combustions units. *Id*. "IERG acknowledges that its proposal has the potential to affect a large number of facilities and sources within the State." *Id*.; Wall Test. at 7. In its first post-hearing comment, IERG noted that Mr. Wall's prefiled testimony in this subdocket includes "a spreadsheet of fuel combustion emission sources in the State that could potentially be impacted by IERG's proposal." PC4 at 4, *citing* Wall Test, Exh. A.

Technical Feasibility.

IERG asserts that its proposed AELs and standards are based on NESHAPs at 40 CFR 63 Subpart DDDDD. It argues that USEPA promulgated these Boiler MACT provisions in rulemakings that found them to be technically feasible. IERG SR at 31. IERG further argues that many fuel combustion emission sources in the state are already subject these or similar requirements. *Id*.

Economic Reasonableness.

IERG argues that USEPA found the provisions on which it based its proposal "to be economically justified. Per USEPA, the estimated average national price increases for industrial sectors were less than 0.1%." IERG SR at 31, *citing* 80 Fed Reg. 72806 (Nov. 20, 2015); 78 Fed Reg. 7138, 7156 (Jan. 31, 2013). IERG adds that units affected by the proposal are likely already subject to Boiler MACT and use alternate standards in proposed AELs. IERG SR at 32. IERG also argues that its AELs impose no additional requirements on these sources and provide only a compliance alternative to Section 216.121 during periods of startup and shutdown. *Id*. at 31, 32. IERG concludes that its proposed amendment to Section 216.121 "should not have any additional economic impact." *Id*. at 32.

IEPA Comment and Request for More Information

IEPA asserts that "IERG's proposal is not sufficiently tailored. It applies to very broad categories of emission units at any type of stationary source, combusting any type of fuel, and using any or no kind of emissions control strategy." PC5 at 25, *citing* IERG SR at 24. IEPA suggests that this breadth fails to satisfy USEPA's Criterion 1. PC5 at 25, n.41, citing 80 Fed. Reg. 33980 (June 12, 2015). IEPA adds that IERG did not provide CO emissions during periods of startup and shutdown "for any of the approximately 1500 sources or for any of the approximately 3900 units in numerous counties and possibly within EJ areas," any of which the proposal would allow to emit additional CO." PC5 at 25. IEPA argues that IERG should quantify emissions during startups and shutdowns and the durations of those periods for sources requiring relief. It adds that IERG should describe typical worst-case emissions for units during those periods, including "worst-case quantification, modeling, and information related to modeling including the data inputs. PC5 at 25.

IEPA asserts that "relatively few of the approximately 1,500 potentially affected sources sought and obtained in their permits affirmative defenses for emissions in excess of the otherwise applicable standard under the now-defunct SSM provisions." PC5 at 25. IEPA adds that "IERG has not provided information regarding the number of sources it directly represents that need relief or how many source in Illinois it believes may need the proposed relief sought." In its first post-hearing comment, IERG acknowledged testimony in the main docket that it "had not compiled a list of members that have startup, malfunction, and breakdown provisions in their permits." PC4 at 4, *citing* Amendments to 35 Ill. Adm. Code Parts 201, 202, and 212, R23-18, Transcript at 43 (Feb. 16, 2023). IEPA argues that IERG may be seeking relief unnecessarily and that emissions resulting from that relief may be greater than necessary and appropriate. *Id*. at 26.

IEPA argues that IERG needs to narrow the affected sources and provide technical support for proposed revisions. PC5 at 27. This support would include "identifying sources that are actually in need of an alternative CO standard, determining the greatest potential for impacting air quality during their startup and shutdown periods, quantifying worst-case emissions, and demonstrating that CO emissions during those periods would not threaten the CO (1-hour and 8-hour) NAAQS at these higher impact sources via modeling." *Id*.

IEPA Testimony

Before the second hearing, IEPA generally requested "emissions data from previous startup at the affected sources that would indicate what worst-case emissions could be expected during SSM events, and modeling demonstrations or monitoring data that would demonstrate that these events would not interfere with maintenance of the applicable NAAQS. IEPA Test. at 2.

In its pre-filed testimony, IEPA reported that "IERG did not provide any additional information to the Agency or the Board" and that this was consistent with what it had reported in status calls with the hearing officer. IEPA Test. at 3.

IEPA testified that its comments before the second hearing "noted deficiencies in the IERG proposal" and indicated the revisions and additional support it would need to consider supporting adopting the proposal and to assess whether it would be an appropriate revision of the SIP. IEPA Test. at 4; *see* PC5 at 24-27.

First, IEPA asserted that "IERG's proposal is not sufficiently tailored. It applies to an extremely large universe of sources and units, with no specificity regarding what sources/units have an actual need for relief." IEPA Test. at 4-5. IEPA argues that the proposal seeks relief unnecessarily. *Id*. at 5. IEPA further argues that, because the proposal lacks specificity, it fails to satisfy the first criterion of the SSM SIP Call guidance, which requires that the proposed relief "must be limited to specific, narrowly-defined source categories using specific control strategies." *Id*.

In its questions pre-filed for the third hearing, the AG noted IEPA's testimony that IERG had not specified sources or units actually needing regulatory relief. AG Questions at 1 (¶1). The AG asked how this lack of specificity prevented IEPA "from determining which facilities could be affected by the proposal, and how they could be affected?" *Id*. (¶1a).

Mr. Davis responded that a lack of specificity did not prevent IEPA from determining that "IERG's proposal would affect all fuel combustion emission sources greater than 10 million BTU." Tr.3 at 10. Based on information available to it, IEPA determined that "approximately 3,900 units at approximately 1,500 sources would potentially be impacted." *Id*. Mr. Davis clarified that IEPA's testimony on a lack of specificity referred to its "inability to assess whether relief from currently applicable emission standards is even necessary, and to the extent that it is, for which sources and what the individual and cumulative impact on air quality would be. *Id*. at 10-11. He further testified that, without this specificity, IEPA "cannot ensure or represent to USEPA that there will be no adverse impact on air quality. *Id*. at 11. He added that the breadth of IERG's proposal did not appear to satisfy USEPA's requirement that AELs address narrow and specifically defined source categories. *Id*.

The AG also asked IEPA what suggestions it had provided to IERG "on how to more specifically describe the affected sources or otherwise improve their proposal." The AG also asked how IERG responded to these suggestions. AG Questions at 1 (¶1b).

Mr. Davis testified that IEPA had conveyed to IERG the same concerns it had conveyed to the Board. He added that these communications began before the initial filings in this subdocket. Tr.3 at 11. He further testifies that IEPA more recently "reiterated to IERG that it should narrow the scope of its rulemaking proposal to those facilities that are actually in need of relief as supporting data could be ascertained from those facilities and emissions impact could be assessed." *Id*. at 11-12. Mr. Davis testified that, although "representative of IERG indicated that they would consider the suggestions," IERG "would likely not be identifying specific facilities in need of relief or providing facility-specific information." *Id*. at 12.

Second, IEPA testified that IERG's proposal did not include "sufficient technical support justifying the proposed AEL." IEPA Test. at 5. Without the support it had requested in its comments, IEPA argues that "it is not possible for the Board, the Agency, or the public to identify and consider the emissions impacts, including worst-case emissions impact, of the proposed AEL." *Id*.; *see* PC5 at 26-27. IEPA argues that, without the support it requested, IERG's proposal also fails to meet the fourth criterion of the SSM SIP Call guidance, which requires that, "[a]s part of its justification of the SIP revision, the state should analyze the potential worst-case emissions that could occur during startup and shutdown." IEPA Test. at 5.

The AG noted IEPA's testimony that IERG had not provided sufficient technical support for its proposal. The AG asked IEPA how its requested additional information would help measure emissions allowed by IERG's proposal. AG Questions at 1 (¶2a).

Mr. Davis testified that this additional information "would presumably include analysis if worst-case emissions scenarios and impact on air quality. Tr.3 at 12. He further testified that "[t]hese analyses would be similar to those provided by other proponents in this rulemaking and include data indicating what worst-case emissions are during startup and shutdown of affected units and an analysis of the impacts of those episodes on air quality." *Id*. at 12-13.

The AG asked whether it is possible without this additional support "to determine the extent to which IERG's proposal is effective in reducing emissions." AG Questions at 1 (¶2b).

Mr. Davis testified that without this support, "it is not possible to determine emissions impact from the large number of sources that would be affected by the proposal." Tr.3 at 13.

IEPA states that, since it submitted its comments on October 23, 2023, and in spite of suggestions to IERG in subsequent discussion, "IERG has failed to narrow the universe of affected sources to a specific number of identifiable sources and units, and it has provided no additional technical support or information to the Agency or Board." IEPA Test. at 5; *see* PC5. The Agency asserts that it does not have sufficient information with which to evaluate IERG's proposal. Consequently, IEPA "objects to the adoption of IERG's broad proposed amendments. Even if adopted by the Board, the Agency cannot offer IERG's proposal in a SIP submittal to USEPA." *Id*.

<u>IERG Questions</u>

IERG first asked IEPA whether it was aware of the decision of the U.S. Court of Appeals for the D.C. Circuit in <u>Envtl. Comm. of the Fla. Elec. Power Coordinating Group v. EPA, *et al.*</u>, No. 15-1239 (D.C. Cir. 2024). IERG Questions at 1 (¶1). Mr. Davis testified that IEPA is aware of this decision. Tr.3 at 14-15.

IERG asked IEPA whether it had had discussion with USEPA about this decision. IERG Questions at 1 (¶2). Mr. Davis testified that IEPA had briefly discussed with USEPA about how the decision may affect Illinois. Tr.3 at 15. He added that this discussion is ongoing. *Id*.

IERG asked IEPA whether it was aware of any action USEPA may take as a result of that decision, including filing a petition for rehearing, initiating an appeal, or re-issuing the SIP Call. IERG Questions at 1 (¶3). Mr. Davis testified that IEPA is not aware of any action of this nature. Tr.3 at 16-17.

IERG asked IEPA whether it agreed that the 2015 SSM SIP Call and 2022 Finding of Failure were the basis of the Agency's proposal and the Board's decision to adopt it in R23-18. IERG Questions at 1 (¶4). In his testimony, MR. Davis agreed that they were the basis. Tr.3 at 17.

IERG asked IEPA whether it had submitted the amendments adopted in R23-18 to USEPA for approval as a SIP revision? If so, it asked what the status of that submission is. IERG Questions at 1 (¶5). Mr. Davis testified that IEPA had submitted the amendments as a SIP revision and that "Region 5 is working toward a proposed approval of the SIP submittal." Tr.3 at 17.

IERG asked IEPA whether the decision in Envtl. Comm. of the Fla. Elec. Power Coordinating Group v. EPA, *et al.*, No. 15-1239 (D.C. Cir. 2024), affects USEPA's approval of the Illinois SIP revision. IERG Questions at 1 (¶6).

Mr. Davis testified that, although IEPA was not in a position to offer an opinion on any impact the decision may have, "Illinois' SIP Call is still in effect." Tr.3 at 17-18. Based on general discussions with USEPA, he testified that IEPA did not expect the decision to "have much impact" of the SIP revisions recently submitted to USEPA. *Id*. at 18.

In light of the court's decision in Envtl. Comm. of the Fla. Elec. Power Coordinating Group v. EPA, *et al.*, No. 15-1239 (D.C. Cir. 2024), IERG asked IEPA whether it had considered withdrawing the SIP submission to USEPA of the rules adopted in R23-18. IERG Questions at 1 (¶7).

Mr. Davis testified that IEPA "does not intend to withdraw its SIP submittal or to propose regulations to the Board seeking repromulgation of the pervious SSM provisions." Tr.3 at 18.

IERG asked IEPA if it had considered whether the decision will have any effect on the seven criteria for AELs in the 2015 SIP Call and 2013 proposed rules, which refer to a 1999 USEPA guidance document. IERG Questions at 2 (¶8).

Mr. Davis testified that IEPA is not in a position to offer an opinion on the effect this decision may have on USEPA. Tr.3 at 19. He noted that these criteria have been in effect for decades. *Id*. at 19. Although he acknowledges that USEPA could conceivably revise its SSM policy to take this recent decision into account, he stated that IEPA's "current understanding is that USEPA will be utilizing the same or similar criteria previously identified in assessing alternative emission limits." *Id*. at 20.

Post-Hearing Comments

IERG (PC22).

IERG noted IEPA's comment that it should narrow the universe of affected sources by identifying "sources that are actually in need of an alternative CO standard." PC22 at 5, *citing* PC5 at 27. IERG states that it has 49 members representing a variety of source categories. "IERG decided to pursue a generally applicable AEL given that several members of IERG expressed concern with complying with Section 216.121 during startup and shutdown, as well as the potential for numerous other sources that are not IERG members that likely have the same concern." PC22 at 6. IERG argues that a single general rulemaking is a more efficient use of resources than numerous site-specific proceedings for regulatory relief. *Id*.

<u>AG (PC21).</u>

The AG cites IEPA's comments, which named two deficiencies with IERG's proposal. First, IERG's proposal was overly broad because it would apply to approximately 3,900 emission units at about 1,5000 sources. PC 21 at 3, *citing* PC5 at 25. Because IERG did not specify which of those sources required the proposed relief, the AG asserts that IEPA could not determine their effect ton CO emissions. PC21 at 3, *citing* PC5 at 25-26. Second, IEPA commented that IERG's proposal did not provide sufficient technical information. PC21 at 3, *citing* PC5 at 26. To address these deficiencies, IEPA requested that IERG specified information. PC 21at 3, *citing* PC5 at 25-27.

The AG argues that, while it has had months in which to do so, "IERG has neither specified the sources to which its proposed amendments would apply nor supplied IEPA with additional technical support for those amendments." PC21 at 3. Without that information, the AG asserts that IEPA cannot ensure that the proposal would not have an adverse effect on air quality and cannot offer the proposal to USEPA as a SIP submission. *Id., citing* Tr.3 at 10; IEPA Test. at 5.

The AG concludes by recommending that the Board reject IERG's proposed amendments to Part 216 and not adopt them for second-notice review. PC21 at 3.

<u>IEPA (PC23).</u>

IEPA asserts that it has indicated to IERG that its proposal "is not sufficiently tailored to those sources that have an actual need for alternative emission limits and is not limited to a narrowly-defined source category." PC23 at 6, *citing* PC5 at 24-27, IEPA Test. at 3-5. It states that IERG "has not narrowed the universe of affected sources.," and IEPA "has insufficient information with which to evaluate IERG's proposal." PC23 at 6-7. IEPA asserts that it objects to adopting a proposal "for thousands of fuel combustion sources throughout the State." *Id*. at 6.

IEPA asserts that it has also explained to IERG "the additional technical support that would be necessary for the Agency to assess emission impact and determine whether the proposed amendments would be appropriate for a revision of the Illinois SIP." PC23 at 6. This support includes "identifying the greatest potential for air quality impacts during startup and shutdown periods for subject sources, quantifying worst case emissions, and demonstrating that carbon monoxide emissions during these periods will not threaten the 1-hour and 8-hour CO National Ambient Air Quality Standards at these higher impacts via modeling." *Id*. IEPA states that IERG "has not provided additional technical support," and IEPA "has insufficient information with which to evaluate IERG's proposal." PC23 at 6-7.

IEPA concludes that it objects to adopting IERG's proposal. If the Board adopts it, IEPA does not intend to submit it to USEPA for approval. PC23 at 6-7, *citing* IEPA Test. at 5.

Board Findings

As IEPA and the AG noted, IERG's proposal is not narrowly-tailored and potentially could apply to some 3,900 unidentified emission units at 1,500 sources. IEPA's comment laid out what technical support IERG needed to have to allow IEPA to access the impact on emissions, but IERG chose not to comply with IEPA's request. IERG has not done any modeling to show the effects on air pollution that giving all of these unidentified units exceptions to the Board's air regulations would have. Therefore, there is no way to know that IERG's proposal would not harm human health and the environment. The Board declines to include IERG's proposal in its proposal for second notice.

CONCLUSION

For the reasons above, the Board concludes to revise its air pollution regulations. The Board finds that the proposed rules are technically feasible and economically reasonable and will not have an adverse economic impact on the people of the State of Illinois. The Board submits its proposed rules to JCAR for second-notice review.

ORDER

The Board directs the Clerk to submit the second-notice proposal to JCAR for its review.

IT IS SO ORDERED.

I, Don A. Brown, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on July 11, 2024, by a vote of 4-0.

Don A. Brown

Don A. Brown, Clerk
Illinois Pollution Control Board

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENTS

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

PART 212
VISIBLE AND PARTICULATE MATTER EMISSIONS

SUBPART A: GENERAL

SUBPART B: VISIBLE EMISSIONS

SUBPART D: PARTICULATE MATTER EMISSIONS FROM INCINERATORS

SUBPART E: PARTICULATE MATTER EMISSIONS
FROM FUEL COMBUSTION EMISSION UNITS

SUBPART K: FUGITIVE PARTICULATE MATTER

212.316 Emissions Limitations for Emission Units in Certain Areas

SUBPART L: PARTICULATE MATTER EMISSIONS
FROM PROCESS EMISSION UNITS

Section
212.321 Process Emission Units For Which Construction or Modification Commenced On or After April 14, 1972
212.322 Process Emission Units For Which Construction or Modification Commenced Prior to April 14, 1972
212.323 Stock Piles
212.324 Process Emission Units in Certain Areas

SUBPART N: FOOD MANUFACTURING

Section
212.361 Corn Wet Milling Processes
212.362 Emission Units in Certain Areas

SUBPART O: PETROLEUM REFINING,
PETROCHEMICAL AND CHEMICAL MANUFACTURING

Section
212.381 Catalyst Regenerators of Fluidized Catalytic Converters

SUBPART Q: STONE, CLAY, GLASS
AND CONCRETE MANUFACTURING

Section
212.421 Portland Cement Processes For Which Construction or Modification Commenced On or After April 14, 1972
212.422 Portland Cement Manufacturing Processes
212.423 Emission Limits for the Portland Cement Manufacturing Plant Located in LaSalle County, South of the Illinois River
212.424 Fugitive Particulate Matter Control for the Portland Cement Manufacturing Plant and Associated Quarry Operations Located in LaSalle County, South of the Illinois River
212.425 Emission Units in Certain Areas

SUBPART R: PRIMARY AND FABRICATED METAL

PRODUCTS AND MACHINERY MANUFACTURE

SUBPART S: AGRICULTURE

SUBPART T: CONSTRUCTION AND WOOD PRODUCTS

SUBPART U: ADDITIONAL CONTROL MEASURES

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENTS

AUTHORITY: Implementing Section 10 and authorized by Sections 27 and 28.5 of the Environmental Protection Act [415 ILCS 5/10, 27 and 28.5].

SOURCE: Adopted as Chapter 2: Air Pollution, Rules 202 and 203: Visual and Particulate Emission Standards and Limitations, R71-23, 4 PCB 191, filed and effective April 14, 1972; amended in R77-15, 32 PCB 403, at 3 Ill. Reg. 5, p. 798, effective February 3, 1979; amended in R78-10, 35 PCB 347, at 3 Ill. Reg. 39, p. 184, effective September 28, 1979; amended in R78-11, 35 PCB 505, at 3 Ill. Reg. 45, p. 100, effective October 26, 1979; amended in R78-9, 38 PCB 411, at 4 Ill. Reg. 24, p. 514, effective June 4, 1980; amended in R79-11, 43 PCB 481, at 5 Ill. Reg. 11590, effective October 19, 1981; codified at 7 Ill. Reg. 13591; amended in R82-1 (Docket A), at 10 Ill. Reg. 12637, effective July 9, 1986; amended in R85-33 at 10 Ill. Reg. 18030, effective October 7, 1986; amended in R84-48 at 11 Ill. Reg. 691, effective December 18, 1986; amended in R84-42 at 11 Ill. Reg. 1410, effective December 30, 1986; amended in R82-1 (Docket B) at 12 Ill. Reg. 12492, effective July 13, 1988; amended in R91-6 at 15 Ill. Reg. 15708, effective October 4, 1991; amended in R89-7(B) at 15 Ill. Reg. 17710, effective November 26, 1991; amended in R91-22 at 16 Ill. Reg. 7880, effective May 11, 1992; amended in R91-35 at 16 Ill. Reg. 8204, effective May 15, 1992; amended in R93-30 at 18 Ill. Reg. 11587, effective July 11, 1994; amended in R96-5 at 20 Ill. Reg.7605, effective May 22, 1996; amended in R23-18 at 47 Ill. Reg. 12107, effective July 25, 2023; amended in R23-18(A) at 48 Ill. Reg. ___________, effective ______________.

SUBPART B: VISIBLE EMISSIONS

Section 212.124 Exceptions

a) Sections 212.122 and 212.123 will not apply to emissions of water or water vapor from an emission unit.

b) An emission unit that has obtained an adjusted opacity standard in compliance with Section 212.126 will be subject to that standard rather than the limitations of Section 212.122 or 212.123.

c) Compliance with Particulate Emissions Limitations as a Defense ~~the particulate regulations of this Part will constitute a defense~~.

1) For all emission units that are not subject to Section~~Chapters~~ 111 or 112 of the CAA and Section ~~Sections~~ 212.201, 212.202, 212.203, or 212.204 but are subject to Section~~Sections~~ 212.122 or 212.123: the opacity limitations of Sections 212.122 and 212.123 will not apply if it is shown that the emission unit was, at the time of emission, in compliance with the applicable particulate emissions limitations of Subparts D through T.

2) For all emission units that are not subject to Section~~Chapters~~ 111 or 112 of the CAA but are subject to Section~~Sections~~ 212.201, 212.202, 212.203, or 212.204:

A) An exceedance of the limitations of Section 212.122 or 212.123 will constitute a violation of the applicable particulate limitations of Subparts D through T. It will be a defense to a violation of the applicable particulate limitations if, during a subsequent performance test conducted within a reasonable time not to exceed 60 days after the Agency's written notification of violation, under the same operating conditions for the unit and the control devices, and in accordance with Method 5, 40 CFR 60, incorporated by reference in Section 212.113, the owner or operator shows that the emission unit is in compliance with the particulate emission limitations.

B) It will be a defense to an exceedance of the opacity limit if, during a subsequent performance test conducted within a reasonable time not to exceed 60 days after the Agency's written notification of violation, under the same operating conditions of the emission unit and the control devices, and in accordance with Method 5, 40 CFR part 60, Appendix A, incorporated by reference in Section 212.113, the owner or operator shows that the emission unit is in compliance with the allowable particulate emissions limitation while, simultaneously, having visible emissions equal to or greater than the opacity exceedance as originally observed.

d) During startup of coal-fired boiler 1 or 2 at the Baldwin Energy Complex, coal-fired boiler 1 or 2 at the Kincaid Power Station, coal-fired boiler 1 at Newton Power Station, or coal-fired boiler 51, 52, 61, or 62 at the Powerton Generating Station, or malfunction or breakdown of these boilers or the air pollution control equipment serving these boilers, when a six-minute average opacity exceeds the applicable limitation in Section 212.122(a) or 212.123(a), compliance with the limitation may alternatively be demonstrated as follows:

1) Alternative Averaging Period.

A) For Baldwin Energy Complex coal-fired boilers 1 and 2, compliance for that six-minute period may be determined based on opacity readings averaged over a period of up to one hour beginning with the six-minute period in excess of the applicable standard.

B) For Kincaid Power Station coal-fired boilers 1 and 2, Newton Power Station coal-fired boiler 1, and Powerton Generating Station coal-fired boilers 51, 52, 61, and 62, compliance for that six-minute period may be determined based on opacity readings averaged over a period of up to three hours beginning with the six-minute period in excess of the applicable standard.

2) Recordkeeping and Reporting

A) Any owner or operator complying with the alternative averaging period in subsection (d)(1) must maintain records of these average opacity calculations and report these calculations to the Agency as part of the next quarterly excess emissions report for the source.

B) For each startup, the report must include:

i) The date, time, and duration of the startup.

ii) A description of the startup.

iii) The reasons for the startup.

iv) An indication of whether written startup procedures were followed. If any were not, the report must describe all departures from established procedures and all reasons the procedures could not be followed.

v) A description of all actions taken to minimize the magnitude or duration of opacity requiring the use of the alternative averaging period in subsection (d)(1).

vi) An explanation of whether similar incidents could be prevented in the future and, if so, a description of the actions taken or to be taken to prevent similar incidents in the future.

vii) Confirmation that the requirements of subsection (d)(3) have been fulfilled.

C) For each malfunction and breakdown, the report must include:

i) The date, time, and duration (i.e., the length of time during which operation continued with opacity exceeding the applicable limitation in Section 212.122(a) or 212.123(a) on a six-minute average basis) until corrective actions were taken or the boiler was taken out of service.

ii) A description of the incident.

iii) Any corrective actions used to reduce the magnitude or duration of opacity requiring the use of the alternative averaging period in subsection (d)(1).

iv) Confirmation that the requirements of subsections (d)(2)(D) and (d)(3) have been fulfilled.

D) Any person who causes or allows the continued operation of a coal-fired boiler during a malfunction or breakdown of the coal-fired boiler or related air pollution control equipment when that continued operation would require compliance with the alternative averaging period in subsection (d)(1) must immediately report the incident to the Agency by telephone at 217-782-3397 and as otherwise provided in the operating permit. After that, this person must comply with all lawful directives of the Agency regarding the incident.

3) Work Practices. Any person relying on the alternative averaging period in subsection (d)(1) must comply with the following work practices.

A) Operate the coal-fired boiler and related air pollution control equipment in a manner consistent with good engineering practice for minimizing opacity during startup, malfunction, or breakdown.

B) Use good engineering practices and best efforts to minimize the frequency and duration of operation in startup, malfunction, and breakdown.

e) During startup of the emission unit designated Kiln 1 or Kiln 2 at the petroleum coke calcining facility located in Robinson, Illinois, when average opacity exceeds 30 percent for a six-minute period under Section 212.123(a), compliance with Section 212.123(a) may alternatively be determined based on the average of opacity readings taken during a one-hour period using Test Method 9 (40 CFR 60, Appendix A-4, incorporated by reference in Section 212.113). However, compliance may be based on the average of up to three one-hour average periods if compliance is not demonstrated during the preceding hours. For this subsection (e), "startup" means the time from when green coke feed is introduced into the kiln until the temperature at the pyroscrubber inlet servicing the kiln achieves a minimum operating temperature of 1800 °F (based on a three-hour rolling average).

f) Section 212.123 will not apply to emission units subject to 35 Ill. Adm. Code 217.381(a).

(Source: Amended at 47 Ill. Reg._____, effective ___________)

Section 212.322 Process Emission Units For Which Construction or Modification Commenced Prior to April 14, 1972

a) Except as further provided in this Part, a ~~no~~ person must not~~shall~~ cause or allow the emission of particulate matter into the atmosphere in any one-hour ~~one hour~~

period from any process emission unit for which construction or modification commenced prior to April 14, 1972, that~~which~~, either alone or in combination with the emission of particulate matter from all other similar process emission units at a source or premises, exceeds the allowable emission rates specified in subsection (c) ~~of this Section~~.

b) Interpolated and extrapolated values of the data in subsection (c) ~~of this Section~~ must ~~shall~~ be determined ~~by~~ using the following equation:

$$E = C + A(P)^B$$

where:

P = process weight rate; and

E = allowable emission rate; and,

1) For process weight rates up to 27.2 Mg/hr (30 T/hr):

	Metric	English
P	Mg/hr	T/hr
E	kg/hr	lbs/hr
A	1.985	4.10
B	0.67	0.67
C	0	0

2) For process weight rates above ~~in excess of~~ 27.2 Mg/hr (30 T/hr):

	Metric	English
P	Mg/hr	T/hr
E	kg/hr	lbs/hr
A	25.21	55.0
B	0.11	0.11
C	-18.4	-40.0

c) Limits for Process Emission Units for~~For~~ Which Construction or Modification Commenced Prior to April 14, 1972

Metric		English	
P	E	P	E
Mg/hr	kg/hr	T/hr	lbs/hr
0.05	0.27	0.05	0.55
0.1	0.42	0.10	0.87
0.2	0.68	0.20	1.40
0.3	0.89	0.30	1.83
0.4	1.07	0.40	2.22
0.5	1.25	0.50	2.58
0.7	1.56	0.75	3.38
0.9	1.85	1.00	4.10
1.8	2.9	2.00	6.52
2.7	3.9	3.00	8.56
3.6	4.7	4.00	10.40
4.5	5.4	5.00	12.00
9.	8.7	10.00	19.20
13.	11.1	15.00	25.20
18.	13.8	20.00	30.50
23.	16.2	25.00	35.40
27.2	18.15	30.00	40.00
32.0	18.8	35.00	41.30
36.0	19.3	40.00	42.50
41.0	19.8	45.00	43.60
45.0	20.2	50.00	44.60
90.0	23.2	100.00	51.20
140.0	25.3	150.00	55.40
180.0	26.5	200.00	58.60
230.0	27.7	250.00	61.00
270.0	28.5	300.00	63.10
320.0	29.4	350.00	64.90
360.0	30.0	400.00	66.20
400.0	30.6	450.00	67.70
454.0	31.3	500.00	69.00

where:

P = Process weight rate in Mg/hr or T/hr, and

E = Allowable emission rate in kg/hr or lbs/hr.

d) Alternative Standard

1) The owner or operator of the petroleum coke calcining facility located in Robinson, Illinois, may emit particulate matter into the atmosphere from Kiln 1 or Kiln 2 exceeding the allowable emission rates specified in subsection (c) while the temperature of the inlet to the pyroscrubber servicing Kiln 1 or Kiln 2 does not achieve a minimum operating temperature of 1800 °F during startup, malfunction, or breakdown (based on a three-hour rolling average). During this period of time, the owner or operator must comply with subsection (d)(3). For purposes of this subsection, "startup" is defined as the duration from when green coke feed is first introduced into the kiln until the temperature at the pyroscrubber inlet servicing the kiln achieves a minimum operating temperature of 1800 °F (based on a three-hour rolling average).

2) Use of the alternative standard in subsection (d)(1) must not exceed a total of 300 hours per kiln in a calendar year.

3) During any time that Kiln 1 or Kiln 2 is operated while the pyroscrubber servicing the emission unit is not achieving the minimum operating temperature of 1800 °F, the owner or operator must:

A) minimize emissions to the extent practicable;

B) not introduce green coke into the kiln unless or until a minimum operating temperature of 400 °F measured at the inlet to the pyroscrubber is achieved; and

C) operate the natural gas-fired burners to minimize the time that a kiln operates below 1800 °F, consistent with technological limitations, manufacturer specifications, and good air pollution control practices for minimizing emissions.

4) The owner or operator must keep and maintain all records necessary to demonstrate compliance with this subsection (d), including records of each hour that the pyroscrubber operated below 1800 °F. The owner or operator must provide these records to the Agency upon request.

(Source: Amended at 47 Ill. Reg. _____, effective __________)

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENT

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

PART 215
ORGANIC MATERIAL EMISSION STANDARDS AND LIMITATIONS

SUBPART A: GENERAL PROVISIONS

SUBPART B: ORGANIC EMISSIONS FROM STORAGE
AND LOADING OPERATIONS

SUBPART C: ORGANIC EMISSIONS FROM
MISCELLANEOUS EQUIPMENT

SUBPART E: SOLVENT CLEANING

Section

SUBPART F: COATING OPERATIONS

Section

SUBPART H: SPECIAL LIMITATIONS FOR SOURCES IN MAJOR URBANIZED AREAS WHICH ARE NONATTAINMENT FOR OZONE

Section

SUBPART I: ADJUSTED RACT EMISSIONS LIMITATIONS

Section

SUBPART K: USE OF ORGANIC MATERIAL

Section

SUBPART N: VEGETABLE OIL PROCESSING

Section

SUBPART P: PRINTING AND PUBLISHING

Section

SUBPART Q: LEAKS FROM SYNTHETIC ORGANIC CHEMICAL AND POLYMER MANUFACTURING EQUIPMENT

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENT

SUBPART R: PETROLEUM REFINING AND RELATED INDUSTRIES; ASPHALT MATERIALS

SUBPART S: RUBBER AND MISCELLANEOUS PLASTIC PRODUCTS

SUBPART T: PHARMACEUTICAL MANUFACTURING

SUBPART U: COKE MANUFACTURING AND BY-PRODUCT RECOVERY

SUBPART V: AIR OXIDATION PROCESSES

SUBPART W: AGRICULTURE

SUBPART X: CONSTRUCTION

SUBPART Y: GASOLINE DISTRIBUTION

SUBPART Z: DRY CLEANERS

SUBPART AA: PAINT AND INK MANUFACTURING

Section

SUBPART BB: POLYSTYRENE PLANTS

Section

SUBPART PP: MISCELLANEOUS FABRICATED PRODUCT MANUFACTURING PROCESSES

Section

SUBPART QQ: MISCELLANEOUS FORMULATION MANUFACTURING PROCESSES

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENT

SUBPART RR: MISCELLANEOUS ORGANIC CHEMICAL MANUFACTURING PROCESSES

AUTHORITY: Implementing Sections 9.1 and 10 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/9.1, 10 and 27].

SOURCE: Adopted as Chapter 2: Air Pollution, Rule 205: Organic Material Emission Standards and Limitations, R71-23, 4 PCB 191, filed and effective April 14, 1972; amended in R77-3, 33 PCB 357, at 3 Ill. Reg. 18, p. 41, effective May 3, 1979; amended in R78-3 and R78-4, 35 PCB 75, at 3 Ill. Reg. 30, p. 124, effective July 28, 1979; amended in R80-5 at 7 Ill. Reg. 1244, effective January 21, 1983; codified at 7 Ill. Reg. 13601 Corrected at 7 Ill. Reg. 14575; amended in R82-14 at 8 Ill. Reg. 13254, effective July 12, 1984; amended in R83-36 at 9 Ill. Reg. 9114, effective May 30, 1985; amended in R82-14 at 9 Ill. Reg. 13960, effective August 28, 1985; amended in R85-28 at 11 Ill. Reg. 3127, effective February 3, 1987; amended in R82-14 at 11 Ill. Reg. 7296, effective April 3, 1987; amended in R85-21(A) at 11 Ill. Reg. 11770, effective June 29, 1987; recodified in R86-39 at 11 Ill. Reg. 13541; amended in R82-14 and R86-12 at 11 Ill. Reg. 16706, effective September 30, 1987; amended in R85-21(B) at 11 Ill. Reg. 19117, effective November 9, 1987; amended in R86-36, R86-39, R86-40 at 11 Ill. Reg. 20829, effective December 14, 1987; amended in R82-14 and R86-37 at 12 Ill. Reg. 815, effective December 24, 1987; amended in R86-18 at 12 Ill. Reg. 7311, effective April 8, 1988; amended in R86-10 at 12 Ill. Reg. 7650, effective April 11, 1988; amended in R88-23 at 13 Ill. Reg. 10893, effective June 27, 1989; amended in R88-30(A) at 14 Ill. Reg. 3555, effective February 27, 1990; emergency amendments in R88-30A at 14 Ill. Reg. 6421, effective April 11, 1990, for a maximum of 150 days; amended in R88-19 at 14 Ill. Reg. 7596, effective May 8, 1990; amended in R89-16(A) at 14 Ill. Reg. 9173, effective May 23, 1990; amended in R88-30(B) at 15 Ill. Reg. 3309, effective February 15, 1991; amended in R88-14 at 15 Ill. Reg. 8018, effective May 14, 1991; amended in R91-7 at 15 Ill. Reg. 12217, effective August 19, 1991; amended in R91-10 at 15 Ill. Reg. 15595, effective October 11, 1991; amended in R89-7(B) at 15 Ill. Reg. 17687, effective November 26, 1991; amended in R91-9 at 16 Ill. Reg. 3132, effective February 18, 1992; amended in R91-24 at 16 Ill. Reg. 13555, effective August 24, 1992; amended in R91-30 at 16 Ill. Reg. 13849, effective August 24, 1992; amended in R98-15 at 22 Ill. Reg. 11427, effective June 19, 1998; amended in R12-24 at 37 Ill. Reg. 1683, effective January 28, 2013; expedited correction at 37 Ill. Reg. 16858, effective January 28, 2013; amended in R19-1 at 44 Ill. Reg. 15032, effective September 4, 2020; amended in R23-18(A) at 48 Ill. Reg. ___________, effective ___________.

SUBPART K: USE OF ORGANIC MATERIAL

Section 215.302 Alternative Standard

a) Emissions of organic material exceeding ~~in excess of~~ those permitted by Section 215.301 are allowable if the ~~such~~ emissions are controlled by one of the following methods:

1)~~a)~~ Flame, thermal, or catalytic incineration so as to either ~~either to~~ reduce the~~such~~ emissions to 10 ppm equivalent methane (molecular weight 16) or less~~,~~ or ~~to~~ convert 85 percent of the hydrocarbons to carbon dioxide and water; ~~or,~~

2)~~b)~~ A vapor recovery system that~~which~~ adsorbs ~~and/~~or condenses at least 85 percent of the total uncontrolled organic material that would otherwise be emitted to the atmosphere; or~~,~~

3)~~c)~~ Any other air pollution control equipment approved by the Agency capable of reducing by 85 percent or more the uncontrolled organic material that would otherwise be ~~be otherwise~~ emitted to the atmosphere.

b) Compliance with the emissions standard in Section 215.301 during startup of the emission unit designated Kiln 1 or Kiln 2 at the petroleum coke calcining facility located in Robinson, Illinois, must be determined by the average of hourly emissions of organic material during startup of Kiln 1 or Kiln 2 over an averaging period of no more than 12 hours. For the alternative standard in this subsection (b), "startup" means the time from when green coke feed is first introduced into the kiln until the temperature at the pyroscrubber inlet servicing the kiln achieves a minimum operating temperature of 1800 °F (based on a 3-hour rolling average). During startup, the owner or operator must:

1) minimize emissions to the extent practicable;

2) not introduce green coke into the kiln until a minimum operating temperature of 400 °F measured at the inlet to the pyroscrubber is achieved; and

3) operate the natural gas-fired burners to minimize the duration of startup, consistent with technological limitations, manufacturer specifications, and good air pollution control practices for minimizing emissions.

c) The owner or operator that is subject to subsection (b) must keep and maintain all records necessary to demonstrate compliance with that subsection, including records of the duration and frequency of each startup.

(Source: Amended at 48 Ill. Reg. _____, effective __________)

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENTS

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

PART 216
CARBON MONOXIDE EMISSIONS

SUBPART A: GENERAL PROVISIONS

SUBPART B: FUEL COMBUSTION EMISSION SOURCES

SUBPART C: INCINERATORS

SUBPART N: PETROLEUM REFINING AND CHEMICAL MANUFACTURE

SUBPART O: PRIMARY AND FABRICATED METAL PRODUCTS

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

216.APPENDIXA Rule into Section Table
216.APPENDIXB Section into Rule Table
216.APPENDIXC Compliance Dates

AUTHORITY: Implementing Section 10 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/10 and 27].

SOURCE: Adopted as Chapter 2: Air Pollution, Rule 206: Carbon Monoxide Emissions, R71-23, 4 PCB 191, April 13, 1972, filed and effective April 14, 1972; amended at 3 Ill. Reg. 47, p. 92, effective November 8, 1979; amended at 4 Ill. Reg. 24, p. 514, effective June 4, 1980; codified at 7 Ill. Reg. 13607; amended in R87-18 at 12 Ill. Reg. 20774, effective December 6, 1988; amended in R90-23 at 16 Ill. Reg. 18075, effective November 13, 1992; amended in R23-18(A) at 48 Ill. Reg. __________, effective ____________.

SUBPART A: GENERAL PROVISIONS

Section 216.103 Definitions

The definitions contained in 35 Ill. Adm. Code 201 and 211 apply to this Part. The definitions for "catalytic cracking unit" and "hot standby" in 40 CFR 63.1579, incorporated by reference in Section 216.104, apply to Section 216.361(d). The definition of "startup" in 40 CFR 63.2, incorporated by reference in Section 216.104, applies to Section 216.361(d).

(Source: Amended at 48 Ill. Reg. _____, effective __________)

Section 216.104 Incorporations by Reference

The following materials are incorporated by reference: non-dispersive infrared method, 40 CFR 60, Appendix A, Method 10 (1982); 40 CFR 63, Subpart A (2022); 40 CFR 63, Subpart UUU (2022). This Section incorporates no later editions or amendments.

(Source: Amended at 48 Ill. Reg. _____, effective __________)

SUBPART B: FUEL COMBUSTION EMISSION SOURCES

Section 216.121 Fuel Combustion Emission Sources

A person must not 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.

(Source: Amended at 48 Ill. Reg. _____, effective __________)

SUBPART N: PETROLEUM REFINING AND CHEMICAL MANUFACTURE

Section 216.361 Petroleum and Petrochemical Processes

a) A person must not cause or allow the emission of a carbon monoxide waste gas stream into the atmosphere from a petroleum or petrochemical process unless the waste gas stream is burned in a direct flame afterburner or carbon monoxide boiler so that the resulting concentration of carbon monoxide in the waste gas stream is less than or equal to 200 ppm corrected to 50 percent excess air, or the waste gas stream is controlled by other equivalent air pollution control equipment approved by the Agency under 35 Ill. Adm. Code 201.

b) Regardless of 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 the waste gas stream is less than or equal to 750 ppm corrected to 50 percent excess air.

c) Regardless of 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 the waste gas stream is less than or equal to 350 ppm corrected to 50 percent excess air.

d) For the petroleum refinery facilities located in Channahon, Lemont, and Robinson Illinois, regardless of subsections (a) through (c), during startup and hot standby, petroleum catalytic cracking units must comply either with subsections (a) through (c) or the non-numerical standards for these operating modes in 40 CFR 63 Subpart UUU Tables 9, 10, 14, and 41, 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), incorporated by reference in Section 216.104.

(Source: Amended at 48 Ill. Reg. _____, effective __________)

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENT

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

PART 217
NITROGEN OXIDES EMISSIONS

SUBPART A: GENERAL PROVISIONS

Section

SUBPART B: NEW FUEL COMBUSTION EMISSION SOURCES

Section

SUBPART C: EXISTING FUEL COMBUSTION EMISSION UNITS

Section

SUBPART D: NO_x GENERAL REQUIREMENTS

Section

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENT

SUBPART E: INDUSTRIAL BOILERS

SUBPART F: PROCESS HEATERS

SUBPART G: GLASS MELTING FURNANCES

SUBPART H: CEMENT AND LIME KILNS

SUBPART I: IRON AND STEEL AND ALUMINUM MANUFACTURING

SUBPART K: PROCESS EMISSION SOURCES

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENT

SUBPART M: ELECTRICAL GENERATING UNITS

SUBPART O: CHEMICAL MANUFACTURE

SUBPART Q: STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES AND TURBINES

SUBPART T: CEMENT KILNS

SUBPART U: NO_x CONTROL AND TRADING PROGRAM FOR SPECIFIED NO_x GENERATING UNITS

SUBPART V: ELECTRIC POWER GENERATION

SUBPART W: NO_x TRADING PROGRAM FOR
ELECTRICAL GENERATING UNITS

SUBPART X: VOLUNTARY NO_x EMISSIONS REDUCTION PROGRAM

Section

217.APPENDIX H Compliance Dates for Certain Emissions Units at Petroleum Refineries

AUTHORITY: Implementing Sections 9.9 and 10 and authorized by Sections 27 and 28.5 of the Environmental Protection Act [415 ILCS 5/9.9, 10, 27 and 28.5 (2004)].

SOURCE: Adopted as Chapter 2: Air Pollution, Rule 207: Nitrogen Oxides Emissions, R71-23, 4 PCB 191, April 13, 1972, filed and effective April 14, 1972; amended at 2 Ill. Reg. 17, p. 101, effective April 13, 1978; codified at 7 Ill. Reg. 13609; amended in R01-9 at 25 Ill. Reg. 128, effective December 26, 2000; amended in R01-11 at 25 Ill. Reg. 4597, effective March 15, 2001; amended in R01-16 and R01-17 at 25 Ill. Reg. 5914, effective April 17, 2001; amended in R07-18 at 31 Ill. Reg. 14271, effective September 25, 2007; amended in R07-19 at 33 Ill. Reg. 11999, effective August 6, 2009; amended in R08-19 at 33 Ill. Reg. 13345, effective August 31, 2009; amended in R09-20 at 33 Ill. Reg. 15754, effective November 2, 2009; amended in R11-17 at 35 Ill. Reg. 7391, effective April 22, 2011; amended in R11-24 at 35 Ill. Reg. 14627, effective August 22, 2011; amended in R11-08 at 35 Ill. Reg. 16600, effective September 27, 2011; amended in R09-19 at 35 Ill. Reg. 18801, effective October 25, 2011; amended in R15-21 at 39 Ill. Reg. 16213, effective December 7, 2015; amended in R23-18(A) at 48 Ill. Reg. _________, effective __________.

SUBPART O: CHEMICAL MANUFACTURE

Section 217.381 Nitric Acid Manufacturing Processes

a) New Weak Nitric Acid Processes. A person must not cause or allow the emission of nitrogen oxides into the atmosphere from any new weak nitric acid manufacturing process to exceed any of the following standards and limitations:

1) 0.75kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) (1.5 lbs/T), on a 30-day rolling average basis, calculated from the quantity of NOx emitted per quantity of acid produced (100 percent acid basis) for each operating hour within the prior 30 operating days, and the average of those hourly values over the 30-day operating period;

2) Visible emissions greater than 5 percent opacity except during startup and shutdown;

3) During startup and shutdown, as defined in subsection (e), visible emissions must be controlled through:

A) Operating in a manner consistent with good air pollution control practices for minimizing emissions;

B) Maintaining a log of startup and shutdown events, including the dates, times, and durations of those events, quantity of acid produced during those events (lb/hr), and NOx emissions during those events (lb/hr). These records shall be submitted to the Agency upon request; and

C) Operating in compliance with written startup and shutdown procedures that are specifically developed to minimize startup and shutdown emissions, the duration of individual startups and shutdown, and the frequency of startups and shutdowns.

4) 0.05 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) from any acid storage tank vents (0.1 lbs/T).

5) In determining compliance with subsection (a)(1), during process operating periods where there is little or no acid production (e.g., startup or shutdown), the average hourly acid production rate must be determined from the data collected over the previous 30 days of normal acid production periods. For any hour in which subsection 217.381(a)(5) is utilized for compliance calculations, the owner or operator must maintain records of the quantity of acid produced within that hour.

b) Existing Weak Nitric Acid Processes. A person must not cause or allow the emission of nitrogen oxides into the atmosphere from any existing weak nitric acid manufacturing process to exceed of any the following standards and limitations:

1) 2.75 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) (5.5 lbs/T);

2) Visible emissions greater than 5 percent opacity;

3) 0.1 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) from any acid storage tank vents (0.2 lbs/T).

c) Concentrated Nitric Acid Processes. A person must not cause or allow the emission of nitrogen oxides into the atmosphere from any concentrated nitric acid manufacturing process to exceed of any the following standards and limitations:

1) 1.5 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) (3.0 lbs/T);

2) 225 ppm of nitrogen oxides (expressed as nitrogen dioxide) in any effluent gas stream emitted into the atmosphere;

3) Visible emissions greater than 5 percent opacity.

d) Nitric Acid Concentrating Processes. A person must not cause or allow the emission of nitrogen oxides into the atmosphere from any nitric acid concentrating process to exceed any of the following standards and limitations:

1) 1.5 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) (3.0 lbs/T);

2) Visible emissions greater than 5 percent opacity.

e) The following definitions apply to this Section:

1) "Operating Periods" means a period during which a process is producing nitric acid and nitrogen oxides are emitted. An operating period begins at the initiation of startup, ends at the completion of shutdown, and includes all periods of malfunction.

2) "Shutdown" means ceasing the nitric acid production operations of a process for any reason. Shutdown begins when ammonia is no longer being fed to the process and ends the earlier of three hours later or when compressed air is no longer being fed to the process.

3) "Startup" means the process of initiating the nitric acid production operations of a process. Startup begins one hour before ammonia is first fed to the process and ends no more than five hours after ammonia is first fed to the process.

(Source: Amended at 48 Ill. Reg. _____, effective __________)