COMMENTS OF THE

AMERICAN IRON AND STEEL INSTITUTE

on

Proposed Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard

87 Fed. Reg. 20,036 (April 6, 2022)

Docket ID No. EPA-HQ-OAR-2021-0668

Submitted June 21, 2022

Executive Summary

The American Iron and Steel Institute (AISI) submits these comments in response to the U.S. Environmental Protection Agency's Proposed Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard, 87 Fed. Reg. 20,036 (April 6, 2022). AISI serves as the voice of the American steel industry, representing member companies, including both integrated and electric arc furnace (EAF) steel manufacturers, and associate members who are suppliers to or customers of the steel industry. AISI members own and operate facilities in the United States subject to Clean Air Act regulations.

The overall costs imposed on the iron and steel industry because of the unnecessary expansion of the existing Ozone Transport program to cover the iron and steel industry would be massive. If implemented as proposed, the rule would have adverse economic impact not only to the domestic supply of steel but to the U.S. economy as well. The proposal would, in most cases, require controls that are technically infeasible to implement. It would further place emission limitations on the industry that are set without any clear technical basis. Further, the NO_X emission reductions resulting from imposition of such costs on the iron and steel industry would be negligible and result in no (or virtually no) appreciable improvement to downwind maintenance or attainment of the ozone NAAQS – which is the sole legal and technical purpose of this proposed rule.

The below comments detail our primary objections with EPA's proposal and form a strong basis that EPA should not finalize requirements for the iron and steel industry in this rulemaking.

- NO_X control technology to the extent necessary to achieve the identified NO_X emission limits is not technically feasible for nearly all of the identified iron and steel emissions units, and EPA's information in the docket does not provide any support for its purported technical feasibility conclusions.

- EPA's overall legal and technical approach to the proposed rule is flawed, due to a lack of demonstrated meaningful improvement in air quality, failure to align upwind and downwind reduction obligations, failure to address certain emission reduction strategies, defective modeling, and failure to focus on mobile sources.

- EPA's approach to developing the proposed rule by avoiding industry-specific information collection and instead relying upon assumptions related to control device technical feasibility, baseline emission rates and control device efficiency results in deeply flawed emission limits and is arbitrary and capricious.

- Applicability of the proposed rule to iron and steel emission units should be based on a higher ton per year threshold to harmonize the iron and steel industry with the electric generating unit industry.

- NO_X control technology to the extent necessary to achieve the identified NO_X emission limits is not economically reasonable for many of the identified iron and steel emissions units, as the cost per ton of NO_X reduced is substantially higher than calculated by EPA.

- To address site-specific variations in cost to install controls, the rule should include a flexibility term allowing for case-by-case considerations, consistent with many other rulemakings.

- Since EPA excluded iron and steel emission units from the trading program, CEMS are unnecessary and periodic stack tests to generate emission factors is sufficient.

- A three-hour rolling average NO_X emission limit is inconsistent with EPA's statements and support in the preamble, drastically increases the stringency of the emission limit, and is unnecessary to address regional ozone.

- Installation of all required control equipment by the 2026 ozone season is impractical if all identified iron and steel emission units remain regulated under the rule, and the rule needs to provide for compliance extensions consistent with other regulations.

- A Work Plan to identify the control device and installation schedule is unnecessary due to the likely need to submit air permit applications and is otherwise impractical within 180 days.

I. A Robust Steel Industry is Critical to the Health and Security of Our Country and the Proposed Rule Will Be Catastrophic to the Industry.

From national security supply chain production to major economic impact in states and local communities across the country, the American steel industry is one of the nation's most critical manufacturing sectors.

Unfortunately, EPA's proposed rule will put significant burden on the already vulnerable steel industry that faces rising inflation and significant competition from foreign markets, many of which are not subject to the stringent environmental protection requirements that currently apply here in the U.S. The Administration must be aware that this rule will be catastrophic to steelmaking facilities and will put our nation's steelmakers in an untenable situation. There is no proven technology that can produce the intended results of reducing NOx emissions in the steel industry. National security, thousands of American jobs, and the entire domestic steel industry are at stake should this rule be enacted.

When it comes to environmental protection, one approach does not fit all manufacturing sectors proposed to be regulated, many of whom have varying technological approaches. The proposed rule, if finalized in its current form, will place cost and timing burdens on domestic steelmakers that simply will not produce the intended environmental protection results. The cost and time steelmakers will have to forfeit to comply with a rule that will not reduce emissions will create major disruption in the American steel making supply chain. Such disruption is contrary to the delicate balance the Clean Air Act seeks to improve the nation's air quality resources while maintaining the country's productive capacity.

AISI contends that EPA must withdraw the proposed rule and reassess its obligations under the "good neighbor" provisions of the Clean Air Act.

While we applaud the EPA's efforts to protect our environment, American steel producers have worked hard to successfully reduce their environmental footprint even while producing the advanced and highly recyclable steel that our economy needs. This is, of course, consistent with the goals of the Clean Air Act, where Congress directed EPA "to protect and enhance the quality of the Nation's air resources" with the purpose of promoting both "the public health and welfare and the productive capacity of its population."

AISI serves as the voice of the American steel industry in the public policy arena and advances the case for steel in the marketplace as the preferred material of choice. AISI also plays a lead role in the development and application of new steels and steelmaking technology. AISI is comprised of member companies, including integrated and electric arc furnace steelmakers, and associate members who are suppliers to or customers of the steel industry.

AISI is proud that our total industry employs more than 387,000 people in the United States and indirectly supports nearly two million jobs. We contribute more than $520 billion to the economy when considering the direct, indirect, and related impacts. The strong international competition the industry encounters makes us vulnerable to even small increases in operating costs.

II. AISI Questions the Legal and Technical Sufficiency of EPA's Findings In This Proposed Rule.

AISI has primarily focused its comments on the portions of the proposed rule directed to the iron and steel industry. Nonetheless, AISI has serious concerns regarding the overall legal and technical sufficiency of the proposed rule. Following is a brief overview of some of the main concerns identified by AISI in conjunction with other trade associations.[1]

- *EPA Has Wrongly Concluded That This Rule Would Result In Any Meaningful Improvement In Air Quality.* By EPA's own analysis the proposed rule, if finalized, would result in a cost of $22 billion at a 3% discount rate. EPA seeks to justify this cost by suggesting that this cost would result in "meaningful" improvements in air quality. To the contrary, in connection with the implementation of a National Ambient Air Quality Standard of 70.00 ppb, EPA's own analysis (87 Fed. Reg. 20097) shows the following air quality improvement from the 4 categories of controls involved – falling short of "meaningful" improvement:

Existing EGU controls in 2023	0.07 ppb
New EGU controls/Gen. shifting in 2026	0.36 ppb
Non-EGU (Tier 1)	0.18 ppb
Non-EGU (Tier 2)	0.04 ppb
Total	0.64 ppb

[1] AISI has assisted the Midwest Ozone Group (MOG) in preparing the comments that MOG has submitted on this proposed rule. The positions identified in this Section II of AISI's comment letter are adopted from the MOG comment letter. AISI directs EPA to the MOG comment letter for a full discussion of these issues.

- *EPA Failed To Align Upwind and Downwind State Emission Reduction Obligations*. Nowhere in its discussion of the regulatory framework underlying these proposals does EPA recognize its obligation to align the responsibility of upwind states to the obligation of downwind states to control emissions. EPA's statutory duty is to harmonize the Good Neighbor Provision of Clean Air Act §110(a)(2)(D)(i) with nonattainment and maintenance requirements of Clean Air Act §172 so that compliance burdens are aligned among upwind and downwind states. EPA, however, has proposed a new transport rule without consideration of the timing of the implementation of nonattainment controls by downwind states - effectively shifting the burden of additional controls to the upwind states. EPA has a duty to delay the upwind compliance date to align with the downwind state compliance deadlines. Both plans must be aligned with the same timeframes to avoid an inappropriate shifting of the compliance burden from one group of states to another.

- *EPA Must Assess Ongoing Emissions Reductions Programs and On-The-Books Controls to Correctly Assess Nonattainment*. EPA has the burden to assess both upwind and downwind emissions reductions programs. The modeling relied upon for these proposals, however, fails to include all such emission control requirements. Principal among the omitted control programs is the New York State Department of Environmental Conservation recently adopted controls for simple cycle and regenerative combustion turbines or "peaking units" noted by the agency as being inefficient and approaching 50 years of age. Yet, while New York has estimated controls will result in a 4.8 ppb significant air quality improvement to nonattainment monitors within the New York Metropolitan Nonattainment Area, implementation is delayed until 2025 and beyond. This is occurring while EPA seeks to impose new controls on upwind states in 2023.

- *EPA's Air Quality Modeling Is Defective*. EPA's air quality modeling used to support the new transport rule contains numerous defects including (a) reliance on 12 km grid resolution domain which does not accurately account for ozone transport in the Lake Michigan area where finer grid modeling is necessary (b) assessing days in which the downwind monitors are actually in attainment with the ozone NAAQs (and therefore are not indicative of the cause of nonattainment) and (c) selection of days for analysis in which the nonattainment was caused by "exceptional events" - contrary to Clean Air Act requirements.

- *EPA Has Failed To Address* NO_X *Mitigation Strategies For Several Key Local Sources*. EPA should consider other NO_X mitigation strategies from local sources like simply cycle combustion turbines, municipal waste combustors, and distributed generation. These sources are known to be causing nonattainment or maintenance problems in their own areas.

- *EPA Continues To Address Point Sources In Its Proposed Rule When It Is Undisputed That Mobile Sources Are The Primary Cause Of Remaining Air Quality Problems*. Available modeling data clearly shows that the most significant contributor to ozone air quality is mobile sources. The air quality impacts from downwind state mobile source emissions reductions programs are measurable and warrant incorporation into the overall calculation of emissions reductions from Clean Air Act programs that will improve ozone air quality as part of the initial and aligned analysis of attainment strategies for both upwind and downwind states.

- *EPA's Proposal Is Limited Only To* NO_X *Emissions And Fails To Recognize That VOCs Are A Matter Of Significant Concern in Wisconsin And Illinois Because Of Modeling Inaccuracies*. Several downwind nonattainment monitors in urban areas around Lake Michigan have recently been shown to be largely unresponsive to ozone reduction strategies consisting of regional interstate NO_X control and that high ozone days in the region were predominantly VOC-limited in nature.

III. Iron and Steel Mill Applicability Should Be Based on a Higher Ton Per Year Threshold and the Applicability and Definition Should Be Revised to Provide Further Clarity and Equivalence to Other Sources.

EPA adopted a 100 tons of NO_X per year potential to emit applicability threshold for iron and steel mill emissions units.[2] In the preamble, EPA requested comment on whether it should set an applicability threshold based on a unit's production capacity rather than an emission threshold.[3]

To the extent iron and steel mill units remain in the rule, AISI concurs that an emission threshold applicability is more suitable than a production capacity. However, AISI asserts that EPA should raise the applicability threshold to some level higher than 100 tons of NO_X per year potential to emit to harmonize iron and steel applicability to EGU applicability.

Specifically, applicability for EGUs is based on a 25-megawatt generator.[4] Such EGU sources have a potential to emit closer to 150 tons of NO_X per year.[5] Thus, EPA is imposing mandates on emissions units in the iron and steel mill industry that are smaller from an emissions standpoint than EGUs. To ensure that the rule does not unnecessarily impose obligations on smaller sources, and to ensure uniformity across industries, AISI requests that EPA set the applicability threshold for iron and steel mill units to at least 150 tons of NO_X per year potential to emit.

In addition, AISI believes that the applicability section as drafted creates confusion. It references "emissions units" which are undefined. AISI suggests that EPA replace "emissions units" with "affected unit," which is a defined term. And in that regard, AISI requests that EPA revise the definition of "affected unit." To provide clarity and ensure consistency across the rule, the definition of "affected unit" should simply state: "any emission unit identified in Table 1 meeting the applicability criteria of this section."

[2] 87 Fed. Reg. 20036, 20181 (April 6, 2022) (proposed 40 C.F.R. § 52.43(b)).
[3] 87 Fed. Reg. at 20145.
[4] 40 CFR § 97.404.
[5] For illustration purposes, a 25MW gas-fired turbine could emit more than 150 tons per year of NO_X (assuming the unit operates at an emission rate of 1.4 lb NO_X per MWh). Mathematically, this calculation is as follows: 25 [MWh] x 1.4 [lbs NO_X/MWh] x 8760 [hours/yr] / 2000 [lbs/ton] = 153 tons of NO_X per year.

The applicability section also includes "each BOF Shop containing two or more such units that collectively emit or have the potential to emit 100 tons per year or more of NO_X."[6] AISI asserts that there is no reason to treat operations within a BOF Shop differently than other emissions units, and "accumulate" otherwise minor emissions units for the purposes of the 100 ton per year applicability trigger. Doing so could arguably result in the need to install controls on otherwise minor sources. Applicability for operations within the BOF Shop should therefore be based on a 100 tons per year threshold for each individual affected unit, consistent with every other regulated emission unit. As such, AISI requests that EPA revise the applicability section to read: "The requirements of this section apply to each new or existing affected unit at an iron and steel mill or ferroalloy manufacturing facility that directly emits or has the potential to emit 100 tons per year or more of NO_X, and that is located within any of the States listed in § 52.40(a)(1)(ii), including Indian country located within the borders of any such State(s)." Under this approach, the definition of "BOF Shop" is unnecessary and should be deleted.

Finally, the definitions section includes definitions for "BOF Baghouse System" and "Steel Production Cycle," however neither of those terms are used in the proposed rule.[7] AISI therefore request that EPA delete those definitions.

IV. EPA's Approach in the Proposed Rule of Developing Emission Limits Based on Multiple Assumptions is Arbitrary and Capricious.

As a heavily-regulated industry, iron and steel mill companies are quite accustomed to EPA's standard regulatory approach for developing new or modified Clean Air Act regulations for the industry. That approach almost always starts with an Information Collection Request (ICR) whereby EPA solicits existing data on source emissions, requests stack tests to address data gaps, and solicits information on technical and economic feasibility.[8] EPA will then often engage with the industry to ensure there is a clear understanding on the interpretation of the data.

However, EPA did not follow that very standard regulatory development approach here. EPA did not submit an ICR to develop the technical basis for the proposed rule. Nor did EPA informally reach out to the industry to solicit input on technical or economic aspects of the proposed rule. To AISI's knowledge, no non-EGU industry category was aware that EPA was proposing stringent and expensive NO_X control requirements until EPA circulated the pre-publication version of the proposed rule. This approach seems to fail the general standard of good government and due diligence that EPA applies in rulemakings that could materially and adversely affect stationary sources.

Instead of following the time-honored regulatory development approach, EPA instead "went off on its own." To identify NO_X emission limits for iron and steel emission units, EPA based the proposed rule on multiple assumptions without any industry input. As stated by EPA in the preamble, "most of the emissions limits in this proposed rule are based on *examples* of

[6] 87 Fed. Reg. at 20181 (proposed 40 C.F.R. § 52.43(b)).
[7] 87 Fed. Reg. at 20181 (proposed 40 C.F.R. § 52.43(a)).
[8] *See e.g.*, 84 Fed. Reg. 42704, 42708 (August 16, 2019) (discussing the issuance of CAA Section 114 requests including a facility questionnaire and source testing request in development of the proposed rule for the NESHAP: Integrated Iron and Steel Manufacturing Facilities Residual Risk and Technology Review).

permitted emissions and *estimated* reduction potential from the identified control technology."[9] To arrive at an emission limit, EPA chose an uncontrolled emission limit or rate from among dozens and dozens of such limits or rates and assumed a control technology and then randomly chose a percent reduction from a range of possible percent reductions for that control technology. This compounding of assumptions on top of assumptions seriously calls into question EPA's approach for setting emission limits and the basis for and viability of such limits.

By way of one example, EPA's approach to setting the proposed NO_X limit for blast furnaces is technically suspect and largely lacking in explanation. In the Technical Support Document (TSD), EPA states that the proposed NO_X emission limit is based on "potential use of low-NO_X burners, flue gas recirculation, and SCR."[10] Nowhere in the TSD, however, does EPA provide support for, or an explanation of, its determination that NO_X controls are feasible for a blast furnace, let alone specifically low-NO_X burners, flue gas recirculation, and SCR.

EPA follows-up that assumption on available NO_X controls by making a further assumption on the uncontrolled NO_X emission rate from blast furnaces. While the TSD references some uncontrolled NO_X emissions rates from blast furnaces, EPA instead appears to rely solely on the Ohio SIP rule establishing a case-by-case NO_X RACT limit for one blast furnace of 0.06 lb/mmbtu.[11] There is no discussion on the suitability of this single uncontrolled emission limit to other blast furnaces. Further, there is a lack of engineering assessment as to the feasibility that control efficiencies never implemented as proposed are even theoretically attainable in practice.

After assuming the technical feasibility of control requirements without any clear basis or explanation, and after assuming an uncontrolled emission rate based on a single data point without explanation on its suitability to the industry as a whole, EPA established a control efficiency. EPA noted that "use of these technologies separately or in combination can achieve 20-90% reduction efficiency at blast furnace stoves."[12] EPA therefore identified an extremely wide-ranging reduction efficiency of 20% on the low end and 90% on the high end. EPA seemed to arbitrarily settle on a 50% control efficiency to develop the final emission limit, without any explanation of its basis.[13]

Therefore, just using blast furnaces as an example, EPA did not provide a specific basis for determining the suitability of NO_X controls, did not explain its use of a single data point (a site-specific RACT regulation) to identify an uncontrolled emission rate, and arbitrarily chose a control efficiency from an extremely wide range without explanation. This multiple-layered assumptions without reasoning inevitably results in a flawed emission limit.

While courts often provide EPA with wide latitude in rulemaking, it is well-established that a rule is arbitrary and capricious if there is a lack of a reasonable explanation.[14] This position by the courts seems imminently reasonable given the subject here is a regulation that would impose enormously burdensome requirements on the iron and steel industry that would achieve at best

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[9] 87 Fed. Reg. at 20146 (emphasis added).
[10] Non-EGU Sectors TSD, December 2021, p. 42.
[11] Non-EGU Sectors TSD, December 2021, p. 43.
[12] Non-EGU Sectors TSD, December 2021, p. 43.
[13] Non-EGU Sectors TSD, December 2021, p. 43.
[14] *New York v. EPA*, 964 F.3d 1214, 1222 (D.C. Cir. 2020).

negligible and highly questionable actual benefits to society. In much of this proposed rule, EPA appears to use the "throw a dart at the dartboard" approach, and not the court-mandated approach of reasoned explanations. Furthermore, the standard practice for NO_X limit setting on process industries (non-EGUs) often requires site or unit-specific control and limit setting ability to overcome unique issues at a particular mill.

Due to these substantial deficiencies in how the proposed rule was developed, AISI requests that EPA withdraw the proposed rule and redetermine, with required explanation, NO_X limits for iron and steel emissions units (if such emission units remain regulated notwithstanding the arguments noted throughout this comment letter).

V. NO_X Control Technology of the Extent Necessary to Achieve the Emission Limits is Not Technically Feasible for Most of the Iron and Steel Emission Units.

A foundational premise of any Clean Air Act rule that imposes emissions limits that require control technology is that such control technology must be technically feasible for the source. In the proposed rule preamble, however, EPA alleges that the D.C. Circuit has held that compliance with the good neighbor provisions of the Clean Air Act is without regard to claims of infeasibility of controls. Specifically, EPA stated in the preamble that "claims about infeasibility of controls are generally insufficient to justify an extension of time to comply, given the Wisconsin court's holding that the good neighbor provision requires upwind states to eliminate their significant contribution in accordance with the downwind states' attainment deadlines, without regard to questions of feasibility."[15]

However, EPA has seriously misunderstood the D.C. Circuit here. That court concluded that EPA could not avoid complying with implementation of good neighbor provisions of the Clean Air Act due to *administrative* feasibility. The court observed that EPA had concluded that "developing a rule that would have covered additional sectors and emissions reductions on longer compliance schedules would have required more of the EPA's resources over a longer rulemaking schedule."[16] Given this observation, the D.C. Circuit held that "administrative infeasibility, like scientific uncertainty, cannot justify the Update Rule's noncompliance with the statute."[17] The court did not speak to technical feasibility of controls but instead addressed administrative infeasibility on the part of the agency and its duty to comply with the statute.

Contrary to EPA's statement in the proposed rule preamble, the U.S. Supreme Court has held that "perhaps the most important forum for consideration of claims of economic and technological infeasibility is before the state agency formulating the implementation plan."[18] In this circumstance, EPA is acting as the "state agency" in formulating the federal implementation plan. As such, considerations of technical and economic feasibility are most pertinent. And in that regard, AISI has concluded that for many of the iron and steel emissions units identified in the proposed rule, NO_X control technology of the kind required to achieve the required NO_X emission limit is not technically feasible.

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[15] 87 Fed. Reg. at 20104, *citing State of Wisconsin v. EPA*, 938 F.3d. 303, 319 (D.C. Cir. 2019).
[16] State of Wisconsin v. EPA, 938 F.3d. 303, 319 (D.C. Cir. 2019).
[17] *State of Wisconsin v. EPA*, 938 F.3d. 303, 319 (D.C. Cir. 2019).
[18] *Union Electric Co. v. EPA*, 427 U.S. 246, 266 (1976).

1. *Use of SCR on an Electric Arc Furnace is Not Technically Feasible.*

In the proposed rulemaking, EPA proposes an emission limit of 0.15 lb/ton for Electric Arc Furnaces (EAFs) pursuant to Table 1. Per Table V11.C-3 of the preamble to the proposed rule, this limit was established by assuming an emission rate of "around 0.2 lb/ton" based on "example permit limits and assuming 25% reduction by installation of SCR." The following section discusses EAF operations and the technical infeasibility of installing SCR.

EAFs are a batch process used to melt steel scrap and returns from the mill by use of an electric arc. Scrap is charged through the open lid of the vessel. When closed, an arc is drawn utilizing the carbon electrodes in the vessel. The heat of the arc melts the scrap and generates off-gases which are drawn through an opening in the furnace lid. The evacuation rate is controlled to keep the furnace at a slight negative pressure to prevent loss of fugitive emissions while not drawing ambient air into the vessel. The gases contain particulate matter and carbon monoxide at a temperature of about 2,100 °F. The gases pass through refractory lined duct and the CO is oxidized by introduction of ambient air through an air gap in the duct, which is referred to as direct evacuation control or DEC. This configuration also allows the furnace lid to be removed and the furnace to be rotated for metal tapping.

During a heat, the gases are cooled by a water-cooled duct and combined with the gas volume exhausted from the shop canopy hood. NO_X formation in the EAF vessel is minimal because the furnace is maintained at a low negative pressure and minimal ambient air is introduced. Supplemental heat can be supplied by oxy-fuel burners which combust natural gas and/or carbon fuel with elemental oxygen. The burners do not use air for combustion and NO_X is therefore not formed. NO_X potentially can be formed by the combustion of CO in the air gap, but air ingress is controlled, and the final flue gases have minimum excess oxygen. The batch operation process includes charging, melting, and metal tapping.

The DEC gases are combined with the canopy hood gases and filtered in a negative pressure fabric filter before release to the atmosphere. Typical filter gas volumes are between 750,000 and 1,500,000 acfm at between 170 °F and 240 °F. NO_X concentration levels are typically around 50 ppm.

Application of SCR on an EAF is not technically feasible for the following reasons:

- The wide variation in gas temperature in the DEC system (fluctuating from ambient to 2100 F) during the batch process heat cycle would thermally stress the catalyst substrate, sintering the matrix.
- The low NO_X concentration in the DEC system would result in low removal efficiency.
- Particulate matter in the gases is abrasive and would limit the efficiency of the system, and the metals in the particulate would poison the catalyst.
- Placement of the SCR after the final shop particulate control device, i.e., baghouse, is not technically feasible due to low temperatures and would require wasteful combustion of a

significant amount of natural gas to reheat the large volume of gas to the SCR activation temperature. This would result in the formation of additional NO_X and other pollutants, including GHGs.

- There have been no successful SCR applications on an EAF. Accordingly, SCR vendors have no experience in specification of SCR design or catalyst formulation and no stated removal efficiency can be guaranteed or even theorized without actual data from a successful EAF application. EPA has not provided any example of a successful application of SCR at an EAF.

- EPA has not provided sufficient data to support the proposed enforceable limit or the proposed percent reduction by SCR.

EPA's suggested use of SCR on an EAF is inappropriate given the preceding technical infeasibility justifications. EPA's assumed NO_X rate, prior to the theoretical application of SCR, is flawed and lacks technical references that distinguish between limits of new EAF and existing EAFs. Further, EPA's assumed removal efficiencies are arbitrary and unsupported. For these reasons, EPA's proposed rule is arbitrary and capricious in requiring add-on controls for an EAF and the proposed emission limit in Table 1 of 40 C.F.R. § 52.43 must be removed.

2. ***Use of SCR for Blast Furnace Stoves is Not Technically Feasible.***

In the proposed rulemaking, EPA proposes an emission limit of 0.03 lb/MMBtu for blast furnaces pursuant to Table 1. Per Table V11.C-3 of the preamble to the proposed rule, this limit was established by assuming an emission rate of 0.06 lb/MMBtu based on Ohio's NO_X RACT rules that only considered blast furnace stoves using blast furnace gas as a fuel and assuming 40-50% reduction by burner replacement and installation of SCR. The following section discusses blast furnace operations and the technical infeasibility of installing SCR.

EPA in the Non-EGU Sector Technical Support Document (December 2021), Docket ID No. EPA-HQ-OAR-2021-0668, specifies that EPA is referring to blast furnace stoves when applying the proposed limit of 0.03 lb/MMBtu. The rule needs to clarify that EPA is applying this limit to blast furnace stoves.

Blast furnaces are used to convert iron ore and iron-bearing raw materials to hot metal. The process is completed in a vertical shaft furnace in which raw materials (ore, coke, and flux) are introduced in batch additions via a skip car at the top of the column. Combustion occurs within the shaft generating heat that melts the iron and reduces the oxides forming metallic iron.

Combustion occurs by introduction of pre-heated air, referred to as blast, through tuyeres. Carbon in the coke is first converted to carbon dioxide (CO_2) which passes upward through the burden heating the ore. In the burden part of the CO_2 produced by coke combustion is reduced to carbon monoxide (CO) by contact with iridescent coke which has been heated by the exhaust gases passing through the bed. This reaction is referred to as the Boudouard reaction. The top gases are passed through a scrubber to remove particulate matter (PM) and then used as fuel in the furnace stoves or as fuel for other processes in the steel mill. The higher heating value (HHV) of the blast furnace gas is approximately 95 BTU/scf which results in lower flame temperature and lower NO_X emissions.

The furnaces are equipped with regenerative heat exchangers, which are commonly referred to as stoves, in which the blast air is heated. Blast furnace gas and supplemental natural gas are fired in the stoves to heat the stove refractory, called checkers. Some blast furnace stoves are also fired with coke oven gas. When the required checker temperature is achieved the gas flow is reversed and stored sensible heat is recovered into the blast air. Typically, there are 3 to 4 stoves on each furnace which are cycled through to provide blast to the blast furnace. The combustion gases are vented through a common stack from the stoves.

There are several significant challenges with respect to design and installation of SCR on blast furnace stoves that render it technically infeasible:

- The exhaust temperature from the blast furnace stoves is too low for the application of SCR (optimal temperature is 600-700 °F) and the extreme volumes of exhaust gases would need to be re-heated with natural gas to achieve the needed SCR activation temperature. Reheating the large volume of gas would require firing wasteful natural gas which would result in additional NO_X emissions and significant greenhouse gas (GHG) emissions.

- There has been no application of SCR to any blast furnace stove in the Iron and Steel sector. Accordingly, SCR vendors have no experience in specification of SCR design or catalyst formulation as they do with the power industry. EPA has not provided any example of a successful application of SCR at a blast furnace stove.

- The flue gas volume from stove combustion is significant and the surface area for SCR design would be extremely large. Therefore, the physical dimensions of any proposed SCR would also be large. Given the space constraints that would be faced at many facilities, the retrofit cost for installation of the SCR, including structural support, induced draft fan to overcome the additional static pressure loss, physical placement, etc., would be high.

- As previously noted, the achievable removal efficiency of SCR is highly dependent on the inlet NO_X loading. Blast furnaces operate with remarkably high exhaust volumes and relatively low inlet NO_X concentrations, particularly when firing blast furnace gas. The low inlet NO_X concentrations would result in low removal efficiency with no guarantee that the 40-50% removal efficiency suggested by EPA could be achieved in practice. The reduced efficiency would also require a higher ammonia molar ratio likely to result in significant ammonia slip.

- The effect of particulate in the combustion gases from blast furnace gas fuel firing is expected to foul or poison the catalyst, reducing effectiveness even further. SCR vendors have no data on these gas streams and would require significant testing to assess if this issue could be mitigated.

- A limit that is derived based on a blast furnace gas fired stoves, as EPA proposes, cannot be used for stoves when combusting other fuels, such as natural gas or coke oven gas which have different characteristics.

EPA's proposed use of SCR on blast furnace stoves is inappropriate given that use of SCR for a blast furnace stove is not technically feasible based on the preceding justification. Further, EPA's assumed removal efficiencies are arbitrary and not supported with any actual application at a blast furnace or actual data. For these reasons, EPA's proposed rule is arbitrary and capricious in requiring add-on controls for blast furnace stoves and the proposed emission limit in Table 1 of 40 C.F.R. § 52.43 must be removed.

3. *Use of SCR and SNCR on a Basic Oxygen Furnace is Not Technically Feasible.*

In the proposed rulemaking, EPA proposes an emission limit of 0.07 lb/ton for Basic Oxygen Furnaces (BOFs) pursuant to Table 1. Per Table V11.C-3 of the proposed rule preamble, this limit was established by assuming an emission rate of 0.14 lb/ton based on unspecified and undocumented "emission testing" and assuming 50% reduction by installation of SCR. Even though the limit is based on an unsubstantiated 50% reduction by SCR, the preamble states, a "potential 25-50% reduction by SCR" without providing any technical support of why 50% was selected to determine the proposed limit and not some lower number. The unspecified emission testing does not allow comments to be submitted to address the likely misapplication of the undocumented testing. The following section discusses BOF operations and the technical infeasibility of installing SCR/SNCR.

BOFs are a batch process used in integrated iron and steel facilities to convert hot metal produced in the blast furnace and scrap into steel. Hot metal contains between 3.5 and 4.5% carbon. When converting the hot metal to steel, the carbon is removed by oxidation in the BOF vessel. This process is completed by blowing oxygen into the liquid metal bath which oxidizes the carbon, forming carbon monoxide (CO) and carbon dioxide (CO_2). Impurities are removed by forming slag from the addition of flux (quick lime). The oxidation of carbon generates heat which melts the scrap and raises the liquid temperature to about 2,800°F. The CO and CO_2 produced are emitted from the vessel along with a high concentration of particulate matter which is removed using a particulate control device. The blowing process does not generate NO_X due to the complete reaction of oxygen (O_2) with the carbon in the hot metal and the exclusion of air containing nitrogen.

The BOF blowing process occurs in batch cycles with charging, blowing, and tapping events. Each batch cycle is referred to as a heat. The total cycle can be around one hour with the blowing period between approximately 18 and 24 minutes. Off-gas temperatures entering the fume capture hood can be between 350°F during charging and 3,200°F during the peak blow period of the heat cycle. There are two (2) types of BOF furnaces based on how the off gases are processed after leaving the vessel: full combustion/open hood and suppressed combustion/closed hood. The steel industry operates both types of these furnaces.

The full combustion operation captures the vessel off gases in an open hood. Ambient air is introduced between the vessel mouth and hood. The amount of air introduced is controlled by the system draft to prevent fugitive emissions and to assure combustion of CO and hydrogen (H_2) emitted from the vessel. As a result of the combustion, the gas temperature increases to about 3,800°F and NO_X can be formed as thermal NO_X. The gases are cooled by convection/radiation in the water-cooled hood to about 450-550°F before being introduced to a cold side electrostatic precipitator (ESP) for particulate removal or passed through a wet venturi scrubber. The gas temperature and moisture content are critical for proper ESP operation. The particulate at the exit of the particulate control device (ESP or scrubber) is very small in diameter, and composed of zinc, lead and other metals which would foul or poison the SCR catalyst. Since SCR has not been applied for this source type, SCR designers or catalyst vendors do not have experience in design or specification for BOF NO_X control.

NO_X formation over the batch blow cycle is variable in the primary hood due to the constantly changing off-gas temperature profile and oxygen content of the gases required for hood draft requirements. In addition, no two heats are identical due to metal chemistry, e.g. percent carbon in hot metal. The presence of carbon monoxide inhibits NO_X formation and the carbon burn rate during the blow period changes the CO/CO_2 percentage of the gases. Gas volume at the exit of the ESP on a full combustion BOF is significantly higher than that of suppressed combustion designs. In order to maintain catalyst activation temperature, the gases would require heating by combustion of wasteful natural gas between heat cycles which would generate significant additional NO_X and GHGs.

During suppressed combustion operation, the vessel gases are captured in a close-fitting hood and ambient air is excluded. The gases are composed of CO, CO_2, and H_2. Once the hood skirt is in position, there is minimal N_2 and O_2 in the gases resulting in negligible NO_X formation during the blow cycle. Off-gas temperature increases from about 250°F to about 1,800°F at the top of the water-cooled hood during the heat. Sensible heat is removed in the water-cooled hood through convection and radiation. Gases are quenched and particulate is removed by a wet venturi scrubber. Given that NO_X formation is negligible, there is no application for SCR or SNCR control in the hood between the vessel and the quench. Cleaned gases are vented to an open flare for combustion of CO where NO_X is formed. Use of SCR/SNCR to control NO_X emissions from the open flare, downstream of a wet scrubber, is not possible given the absence of a physical stack.

Based on the preceding discussion, use of SCR for BOFs is not technically feasible due to the following issues:

- For both full and suppressed combustion units, EPA has provided no evidence of SCR/SNCR applications nor is AISI aware that any exist. Accordingly, SCR/SNCR vendors have no experience in specification of SCR/SNCR design or catalyst formulation and no stated removal efficiency can be guaranteed or even theorized without actual test data. Fouling of the SCR catalyst is also a significant concern. EPA has not provided sufficient data to support the proposed limit or the proposed percent reduction by SCR/SNCR. EPA provides no technical support of SCR/SNCR for the different types of BOFs and their different emission points, *e.g.*, open combustion flare and electrostatic precipitator stack.

- For full combustion units:
  - The temperature in the primary hood is variable over the batch process blow period and the required gas temperature and residence time for SCR and SNCR function cannot be achieved.
  - Given the variable conditions, the required molar ratio for ammonia introduction cannot be satisfied.
  - The high concentration of particulates will deteriorate the catalyst and poison the noble metals.
  - If SCR were placed after the ESP or wet scrubber, the gases would require reheating with natural gas to the required reaction temperature. Further, to prevent degradation of the SCR catalyst, the catalyst bed would be required to be held at the operating temperature between the batch processing of heats. This would result in combustion of a significant amount of wasteful natural gas which would generate more NO_X than that which is potentially formed in the combustion hood. Additionally, a significant amount of GHGs would be emitted from combustion of natural gas.

- For suppressed combustion units:
  - NO_X is formed primarily in the open combustion flare. No NO_X mitigation methods can be employed except proper operation of the flare per manufacturer recommendations.

EPA's suggested use of SCR/SNCR on a BOF is inappropriate given that SCR/SCNR is not technically feasible. Further, EPA's assumed emission rates and assumed removal efficiencies are arbitrary and unsupported. For these reasons, EPA's proposed rule is arbitrary and capricious in requiring add-on controls for BOFs and the proposed emission limit in Table 1 of 40 C.F.R. § 52.43 must be removed. If, however, EPA elects to retain limits for BOFs, the rule should clarify the specific compliance location, *e.g.*, full combustion control device, electrostatic precipitator, scrubber stack or suppressed combustion flare stack.

4. *Use of SCR on a Batch Annealing Furnace is Not Technically Feasible.*

In the proposed rulemaking, EPA proposes an emission limit of 0.06 lb/MMBtu for annealing furnaces pursuant to Table 1. Per Table V11.C-3 of the preamble to the proposed rule, this limit was established by assuming an emission rate of 0.0915 lb/MMBtu based on a Nucor AR permit for a recent new furnace and then assuming 40% reduction by SCR. The following section discusses annealing furnace operations and the technical feasibility of installing SCR.

First, AISI notes that applying a limit derived from a recent new furnace application to existing furnaces that have case-by-case retrofit limiting characteristics that increase the costs and decrease the cost per ton of NO_X effectiveness is not appropriate. The appropriate approach is to conduct a case-by-case RACT analysis that considers all of the retrofit costs involved with each furnace and their different limiting characteristics.

Annealing is a process in which steel is reheated and cooled to alter the characteristics of the metal crystalline structure which reduces stress cracking and produces steel properties required for further processing and forming for the commercial end-products. There a two basic annealing processes: batch and continuous. The type of equipment installed in each facility depends on the steel shape, annealing requirements, and the age of the facility. Annealing fuels vary depending on availability at the site and economic factors, and can be coke oven gas, blast furnace gas or natural gas.

Batch annealing is used for hot strip mill coils. The coils are stacked with an enclosure placed over the stack. A burner is fired upward through the center of the stack heating the coils. Flue gases are vented through the top of the stack and exit the building roof monitor. Burner sizes for batch annealing typically are 5-7 MMBtu/hr and multiple stacks are located in the processing area. Overhead access is required by crane for removing the enclosure and staking the coils.

The application of SCR to batch annealing is technically infeasible for the following reasons:

- Most batch annealing units are fugitive sources which are exhausted through a building roof monitor with no common stack for SCR installation.

- The required overhead access would prevent installation of any post-combustion control system.

- NO_X emissions/concentrations from the very small burners are extremely low and would therefore result in very low SCR removal efficiency.

- Normal flue gas temperatures would be too high for the SCR catalyst.

Continuous annealing is used for annealing flat steel sheet which is then feed to a hot strip mill for processing. These units typically consist of a preheater zone, soaking zone, and cooling zone. Each section employs burners which exhaust to separate exhaust stacks. Though SCR is technically feasible for a continuous annealing furnace, it is not cost-effective as discussed in Section VIII of this comment letter.

EPA’s suggested use of SCR on a batch annealing furnace is inappropriate given the preceding technical infeasibility justification. Further, EPA’s assumed removal efficiencies are arbitrary and unsupported. Finally, use of SCR on a continuous annealing furnace is not economically feasible as shown in Section VIII. For these reasons, EPA’s proposed rule is arbitrary and capricious in requiring add-on controls for annealing furnaces and the proposed emission limit in Table 1 of 40 C.F.R. § 52.43 must be removed.

5. *Use of SCR on a Ladle Metallurgical Furnace is Not Technically Feasible.*

In the proposed rulemaking, EPA proposes an emission limit of 0.1 lb/ton for Ladle Metallurgy Furnaces (LMFs) pursuant to Table 1. Per Table V11.C-3 of the preamble to the proposed rule, this limit was established by assuming 40% reduction by SCR; no baseline emission assumption, data or reference is provided. The following section discusses LMF operations and the technical infeasibility of installing SCR.

LMFs are a batch process used in the steel industry to increase the liquid metal temperature for casting and to produce steel grades by adding alloys. After production in an EAF or BOF, the ladle is covered by a water-cooled hood and three-phase electrodes are inserted through the hood into the liquid. Electric energy is applied to achieve the required metal temperature. Alloys are injected through chutes or through wire feeders to adjust the metal chemistry to product specifications.

Emissions from the heating and chemical reactions are vented through the area surrounding the electrodes and captured in a side-draft hood. The volume of air withdrawn for fume capture is much higher than the volume evolved from the vessel and the gas temperature is therefore low at the fabric filter, i.e., baghouse, inlet (typically 104 to 220 °F). The LMF batch process has cycles typically lasting 20 to 40 minutes. Generation of NO_X emissions is very low since there is no combustion source. Typical NO_X generation rates are about 0.0036 to 0.0075 lb/ton based on process weight or 0.9 lb/hr to 2.0 lb/hr for a 250-ton ladle weight. Gas volumes for a 250-ton furnace are typically 110,000 ACFM at 128 °F.

The application of SCR for a LMF is technically infeasible for the following reasons:

- The varying exhaust temperatures from the batch LMF process are too low for the application of SCR and the gases would require wasteful reheating to the SCR activation temperature through combustion of natural gas which would likely generate more NO_X then is being removed. Additionally, combustion of natural gas would result in additional emissions of other pollutants including GHGs.

- Very low NO_X concentrations in the gases would result in low removal efficiency.

- There have been no proven SCR applications on an LMF. Accordingly, SCR vendors have no experience in specification of SCR design or catalyst formulation and no stated removal efficiency can be guaranteed or even theorized. EPA has not provided any example of a successful application of SCR at a LMF.

- Similar to other emission units in the proposed rule, LMFs must be evaluated on an emission unit by emission unit basis for the 100 tpy PTE as is required by EGUs and other sources and not considered collectively as part of the "BOF Shop" grouping that unjustifiably punishes the steel industry.

EPA's suggested use of SCR on an LMF is inappropriate given the preceding technical feasibility justification. Further, EPA's assumed removal efficiencies are arbitrary and unsupported. For these reasons, EPA's proposed rule is arbitrary and capricious in requiring add-on controls for LMFs and the proposed emission limit in Table 1 of 40 C.F.R. § 52.43 must be removed.

6. *Use of SCR on a Ladle/Tundish Preheater is Not Technically Feasible.*

In the proposed rulemaking, EPA proposes an emission limit of 0.06 lb/MMBtu for Ladle/Tundish Preheaters pursuant to Table 1. Per Table V11.C-3 of the preamble to the proposed rule, this limit was established by assuming a baseline emission rate of 0.1 lb/MMBtu based on a Nucor Kankakee BACT limit for a recent new source and then applying 40% reduction by SCR. The following section discusses ladle/tundish preheaters and the technical infeasibility of installing SCR.

Ladle preheaters are employed in the steel shop to dry the ladle refractory in order to prevent steam release during metal addition or to cure refractory after ladle repair. In both applications an open gas flame is introduced into the ladle to increase the refractory temperature. The equipment typically includes an air/fuel burner in a vertical (down-fire) position or horizontal position depending on the manufacturer.

The natural gas burners are often very small with heat inputs as low as 0.5 – 1.5 MMBtu/hr. When vertically fired, a cover is placed over the ladle through which the burner fires into the ladle space. Combustion gases are vented through the gap under the cover or through an opening located on the cover (either natural draft or through use of an ID fan) depending on the manufacturer.

The application of SCR to a ladle/tundish preheater is technologically infeasible for the following reasons:

- Most ladle/tundish preheaters are fugitive sources which are exhausted directly into the steel shop. There is no stack and installation of SCR is therefore physically impossible.

- NO_X concentrations from the very small burners are extremely low and would therefore result in very low SCR removal efficiency.

- There have been no proven SCR applications on a Ladle/Tundish Preheater. Accordingly, SCR vendors have no experience in specification of SCR design or catalyst formulation and no stated removal efficiency could be guaranteed or even theorized. EPA has not provided any example of a successful application of SCR for ladle/tundish preheaters.

As discussed above and similar to other emission units in the proposed rule, ladle/tundish preheaters must be evaluated on an emission unit by emission unit basis for the 100 tpy PTE as is required by EGUs and other sources and not considered collectively as part of the "BOF Shop" grouping that unjustifiably punishes the steel industry.

EPA's suggested use of SCR on a ladle/tundish preheater is inappropriate given the preceding technical feasibility justification. Further, EPA's assumed SCR removal efficiencies are arbitrary and unsupported. EPA has not distinguished the NO_X rates between newly permitted preheaters and existing preheaters. For these reasons, EPA's proposed rule is arbitrary and capricious in requiring add-on controls for ladle/tundish preheaters and the proposed emission limit in Table 1 of 40 C.F.R. § 52.43 must be removed.

7. *Use of SCR on a Vacuum Degasser is Not Technically Feasible.*

In the proposed rulemaking, EPA proposes an emission limit of 0.03 lb/MMBtu for Vacuum Degassers pursuant to Table 1. Per Table V11.C-3 of the preamble to the proposed rule, this limit was established by assuming a baseline emission rate of 0.05 lb/MMBtu based on Nucor

Darlington and Nucor Tuscaloosa BACT limits of recent new sources and then applying 40% reduction by SCR.

First, AISI notes that applying a limit derived from a recent new source application, as EPA is proposing, to existing sources that have case-by-case retrofit limiting characteristics that increase the costs and decrease the cost per ton of NO_X effectiveness is not appropriate. The appropriate methodology is to conduct a case-by-case RACT analysis that considers all of the retrofit costs involved with each furnace and their different limiting characteristics.

With respect to EPA's proposed limits, AISI reviewed the permits for the Nucor Darlington and Nucor Tuscaloosa facilities which were referenced in the proposed rule as the starting point for the Vacuum Degasser emission limits as well as the Vacuum Degasser emission limits in the RBLC for these facilities. The NO_X emission limit at Nucor's Darlington and Tuscaloosa Plants for the Vacuum Degasser is 0.005 lb/ton. It is unclear to AISI the method by which EPA arrives at a starting point of 0.05 lb/MMBtu as referenced in the proposed rule. Further, no indication is given in the rule text or the docket as to how this conversion was performed, a common theme throughout the proposed rule.

Additionally, AISI notes that the RBLC indicates for both facilities that a flare is used for CO abatement, which is where the NO_X BACT limits are applied. Though the rule is again unclear as to where and how the emission limit for Vacuum Degassers apply, the fact that EPA uses a NO_X emission limit assigned to a CO abatement flare as its starting point for its proposed emission limit, AISI can only assume that EPA's intent is to regulate NO_X from a CO abatement flare using SCR. AISI contends that proposing to regulate extremely small amounts of NO_X from a CO control device as part of an Ozone transport rule is unnecessary and unreasonable. Further, it's technically infeasible, as discussed below.

Vacuum degassers are a batch process used in the steel industry to remove undesirable gases from molten steel prior to casting in order to produce the desired properties of the finished steel products. Specific gases to be removed can include hydrogen (H_2), oxygen (O_2), and nitrogen (N_2) dissolved in the liquid metal. They are also used to reduce the carbon content of the steel prior to casting to produce an ultra-low carbon product.

The gases are removed by reducing the pressure above the liquid metal surface to a low value, typically 0.5 – 1.0 mmHg (torr). This is accomplished by placing the metal ladle in a degas tank and withdrawing air from the tank using a vacuum pump (liquid ring pump), mechanical vacuum pump, or steam ejectors. The process cycles last about 20 minutes depending on heat size. A hard vacuum is held for about 5 minutes during which argon is injected through the ladle bottom. Stirring the metal with argon allows the dissolved gases to be released at the surface of the metal. The vacuum is then released, and alloys are added by chute or a wire feeder. During this batch process, the metal temperature decreases, and reheating can be required in an LMF before casting.

Gas volumes exhausted from the degas tank vary over the cycle from low to high (i.e., 250 acfm to 3,000 acfm) depending on product specifications and degasser equipment design. Particulate matter generated by alloy additions are typically removed by a fabric filter or cyclone before entering the vacuum pumps or steam ejectors. Steam ejectors are the most common type of degas vacuum pump used but hybrid and mechanical systems are also used. When the ejectors are used, they operate in series and are used to reduce the pressure in the degas tank with inter-stage condensers between ejectors. A final condenser exhausts non-condensable gases saturated with water vapor at about 180°F. The gas volume and gas conditions are specific to each facility operation and can vary significantly.

If the degas process is designed to reduce carbon in the metal, CO is generated. During degassing, dissolved oxygen in the liquid metal reacts with carbon and forms CO. If the process is designed to prevent carbon reaction, additions are made to the metal to consume oxygen and prevent CO formation.

If CO is to be controlled in the off gases, a flare is used to combust the CO to carbon dioxide (CO_2). In these systems, air is introduced with natural gas to supplement ignition of the flare. The higher heating value (HHV) of the process gases must be higher than 250-300 BTU/SCF to support the operation of the flare. NO_X is not expected to be formed in the degas tank due to the gas conditions (low oxygen) and non-contact of tank gases with the metal. However, NO_X can be formed in the flare flame.

The application of SCR to a vacuum degasser is technologically infeasible for the following reasons:

- NO_X is not generated in any significant quantities during the process but is rather formed in the flare flame when CO abatement is required. It is not possible to control NO_X from an open flare using SCR.

- The batch cyclic nature of the process and variable gas flow conditions (e.g., gas volumes and temperatures) are inconsistent with SCR application. Additionally, extremely low NO_X concentrations in the process gas would result in very low removal efficiency.

- There have been no proven demonstrations of SCR on a vacuum degasser. EPA has not provided any example of a successful application of SCR at a vacuum degasser.

As discussed above and similar to other emission units in the proposed rule, vacuum degassers must be evaluated on an emission unit by emission unit basis for the 100 tpy PTE as is required by EGUs and other sources and not considered collectively as part of the "BOF Shop" grouping that unjustifiably punishes the steel industry.

EPA's suggested use of SCR on a vacuum degasser is inappropriate given the preceding technical feasibility justification. Further, EPA's assumed removal SCR efficiencies are arbitrary and unsupported. EPA has not distinguished the NO_X rates between newly permitted vacuum degassers and existing vacuum degassers. For these reasons, EPA's proposed rule is arbitrary and capricious in requiring add-on controls for vacuum degasser and the proposed emission limit in Table 1 of 40 C.F.R. § 52.43 must be removed.

8. *Use of SCR and SNCR on Coal Charging and Coke Pushing Operations is Not Technically Feasible.*

In the proposed rulemaking, EPA proposes emission limits of 0.15 lb/ton for coke oven coal "charging" and 0.015 lb/ton for coke "pushing" pursuant to Table 1. Per Table V11.C-3 of the preamble to the proposed rule, these limits were established by assuming a baseline emission rate of 0.3 lb/ton for coal charging based on AP-42 Emission Factor and 0.02 for coke pushing based on a SunCoke Middletown limit. EPA assumed without technical justification a 50% reduction by SCR/SNCR for coal charging and 25% reduction by SCR for coke pushing. The following section discusses coal charging and coke pushing operations and the technical infeasibility of installing SCR/SNCR on charging and on pushing.

Coke ovens are a batch process used to produce foundry and metallurgical coke from bituminous coal by indirect heating to remove volatile fractions of the coal. The coal is charged to individual ovens and heated for approximately 15 to 24 hours.

There are two basic coke oven designs: 1) byproduct recovery, and 2) non-byproduct recovery. With the byproduct recovery design, ammonia and other saleable constituents are recovered as byproducts.

Coal charging and coke pushing are the two processes at a coke oven battery that EPA proposes to establish NO_X limits for. For by-products coke oven batteries coal is stored in silos above the coke battery either mid length or at the end of the battery and discharged into bins on the "larry" car. The larry car is a movable unit which discharges coal at a predetermined tonnage into each battery oven. Charging occurs when the lids on the charging ports of the oven are removed and the coal from the larry car passes through charging tubes to the ports on the top of each oven. The lids are then replaced on the charging ports and sealed. To reduce the potential for fugitive emissions, the head space of the oven is maintained at a negative pressure by aspirating the oven using a steam jet inductor vented to the battery suction main. After coking, the coke is pushed into a hot car and transferred to a quench car and then to a quench tower where direct contact with water reduces the coke temperature. The pushing of hot coke generates particulate matter emissions which are already regulated and are substantially captured and vented to a particulate matter control system (e.g., a fabric filter or mobile car wet scrubber). The pushing emissions are captured along with ambient air which cools the gas entering the control device. Gas volumes during the short duration of a push are high and the temperature of the gas is low. Since the coke pushing and coal charging are batch processes, the volume and temperature of the pushing and charging gases are highly variable over the short duration of less than a few minutes per charge or per push. Further, NO_X emissions from pushing are very low.

Pushing emission controls can include Minister Stein type (i.e., moving hoods), fixed hoods, mobile car wet scrubber cars, or sheds. The volume of captured gases and gas temperatures are specific to each battery. AISI members currently operate five (5) coke batteries with two types of push controls (movable hoods and a mobile car wet scrubber car).

NO_X can also be generated by combustion of coal particles during coal charging. The particulate is controlled by a fabric filter. Gas volumes are high and gas temperatures and NO_X emissions are very low.

Application of SCR and/or SNCR for coal charging and coke pushing is technically infeasible for the following reasons:

- SCR/SNCR for coke pushing operations employing a mobile scrubber car is not possible. By design the scrubber cars must enter the quench tower so there is no space on the mobile cars for installation of SCR/SNCR. Additionally, this pushing process is only a couple of minutes and occurs approximately once every fifteen minutes.

- The gases would require reheating, during the charging and pushing and during the interval until the next oven is charged and pushed, to the activation temperature using wasteful natural gas combustion (i.e., duct burners) resulting in additional NO_X formation likely in excess of that which is generated from the pushing and charging operations.

- NO_X emissions rates for pushing and charging are expected to be very low, resulting in low removal efficiency.

- There have been no proven SCR/SNCR applications on coal charging or coke pushing operations. Accordingly, SCR/SNCR vendors have no experience in specification of SCR/SNCR design or catalyst formulation and no stated removal efficiency could be guaranteed or even theorized. EPA has not provided any example of a successful application of SCR/SNCR for pushing or charging.

EPA's suggested use of SCR/SNCR on coal charging and coke pushing operations are inappropriate given the preceding technical feasibility justification. Further, EPA's assumed removal efficiencies are arbitrary and unsupported. EPA cannot establish new enforceable limits based on AP-42 emission factors that are more representative of average emissions and not maximum emissions. For these reasons, EPA's proposed rule is arbitrary and capricious in requiring add-on controls for coal charging and coke pushing and the proposed emission limit in Table 1 of 40 CFR 52.43 must be removed.

9. *Use of SCR and/or SNCR on a Multi-Fuel Boiler is Not Technically Feasible.*

In the proposed rulemaking, EPA proposes emission limits ranging from 0.08 lb/MMBtu for natural gas boilers and 0.20 lb/MMBtu for coal, coke oven gas, and blast furnace gas fired boilers. The preamble to the proposed rule suggests these limits could be achieved by different mechanisms from combustion modifications to SCR installation. The following sections discuss multi-fuel boiler operations at an iron and steel facility and the technical feasibility of applying SCR.

Boilers operated at integrated iron and steel facilities and coke batteries are multi-fuel fired. Due to the age of the facilities and date of boiler installation, the boilers are from different manufactures and design characteristics, such as fuel, heat release rate, and burner configuration. For these reasons, the expected NO_X emission rate will vary considerably from unit to unit burning the same fuel or fuel mixture.

In general, these boilers fire a primary fuel such as blast furnace gas or coke oven gas mixed with natural gas added for flame stability and to maintain positive ignition. The boilers are typically defined as swing load with variable steam demand and therefore variable fuel firing input. Excess air is variable for each fuel type to complete combustion and the flue gas volume will therefore not be constant.

The F-factor, which relates heat input to exhaust volume, for each of the fuels is significantly different depending on gas composition:

- Blast furnace gas contains a high concentration of inert gases (CO_2, N_2) and a low HHV which requires a higher combustion air volume. Blast furnace gas burns with a low adiabatic flame temperature. The F-factor, dry for blast furnace gas is approximately 16,500 scf/MMBtu but can vary depending on the blast furnace generating the fuel (blast temperature, natural gas, pulverized coal firing, etc.). This in turn changes the CO content of the fuel and the higher heat value. HHV can vary between approximately 65 and 120 Btu/scf, with a typical average around 92 Btu/scf.

- The F-factor, dry for natural gas is 8,710 scf/MMBtu with a HHV of 1020 Btu/scf.

- Coke oven gas is between blast furnace gas and natural gas, with the HHV for coke oven gas typically between 460 and 550 BTU/scf.

- The generation rate of both coke oven gas and blast furnace gas can vary significantly based on the variability of coal charging rates and interruption of charging at the coke ovens and the wind-on/wind-off conditions and the impacted burden input rates at the blast furnace. As a result, the ratios of fuel blends at multi-fueled fired boilers are impacted and are susceptible to variable operating conditions.

Because the heat release rates of the differing gas blends are significantly different and susceptible to variable coke oven and blast furnace operations, the required location for SCR to operate at the correct temperature would vary as gas composition varies. Likewise, the correct injection points for SNCR would also vary as the gas blend varies.

EPA's suggested use of SCR and/or SCNR on a multi-fuel boiler at an iron and steel facility is therefore not technically feasible because of the variable conditions on a multi fuel boiler. EPA has not provided any example of a successful application of SCR in an Iron and Steel sector multi-fueled boiler that combusts 1) blast furnace gas and natural gas, 2) coke oven gas and natural gas or 3) blast furnace gas, coke oven gas and natural gas, which are examples of the blends used throughout the sector.

Based on previous federal NSPS regulations, state NO_X SIP and NO_X RACT regulations, steel industry boilers are already regulated by boiler NO_X regulations in Indiana, Ohio, Michigan, and Pennsylvania. An October 2016 RACT determination in Pennsylvania for two coke oven gas fired boilers that supplement with natural gas determined that the exhaust temperature was below the necessary SCR reaction temperature and that the cost effectiveness of SCR was well above EPA's proposed cost-effective threshold of $7,500 per ton of NO_X reduced. That same RACT study noted some additional technical challenges with installing SCR on existing multi-fueled boilers, including potential required reheat of the flue gas to SCR activation temperature, retrofit challenges including major ductwork modifications that would be required, and the fact that SCR has never been implemented on combustion units firing COG.

Finally, AISI notes that EPA has previously established numeric limits using a 99% upper predictive limit of actual test data to ensure that enforceable limits are realistically achievable under a multitude of operating conditions. This is in contrast to the proposed emission limits for boilers in this rule which fails to consider the multi-fuel blends that are fired at numerous boilers throughout the Iron and Steel sector.

For these reasons, EPA's proposed rule is arbitrary and capricious in requiring add-on controls for blast furnace gas and coke oven gas boilers and the proposed emission limit in Table 1 of 40 C.F.R. § 52.43 must be removed. Additionally, the rule should clarify that the boiler natural gas limit does not apply to blast furnace gas and coke oven gas boilers in the Iron and Steel sector that supplement with natural gas or fire natural gas for periods when the other fuels are unavailable. Finally, if EPA elects not to remove the blast furnace gas and coke oven gas limits for multi-fuel boiler in the Iron and Steel sector, the rule should clarify that only the blast furnace gas and coke oven gas limit applies (i.e., 0.20 lb/MMBtu) and that the natural gas boiler limit (i.e., 0.08 lb/MMBtu) does not apply.

VI. EPA Provided No Justification Regarding its Determination That Add-On Controls are Technically or Economically Feasible for the Iron and Steel Industry.

Throughout the proposed rule for the iron and steel industry, EPA relies on suggested use of add-on control devices for determining NO_X emission limits for affected units. For example, EPA proposes an emission limit of 0.15 lb/ton for EAFs. EPA's justifications for its proposed limit include:

> Example permit limits at around 0.2 lb/ton. Assumes 25% reduction by SCR to achieve 0.15 lb/ton steel.[19]
>
> For EAFs, EPA based the emission limit of 0.15 lb/ton of steel on projected reduction efficiency of 40-50% as compared to existing permit limits for EAFs. EPA considered a range of baseline emission data and permit limits from mini mills, integrated iron and steel facilities, and ferroalloy facilities ranging from 0.20 lb/ton to 0.35 lb/ton. EPA projects minimally 40% NO_X reduction efficiency is achievable by use of low-NO_X technology, including potential use of low-NO_X burners and selective catalytic reduction.[20]

In the above statements, EPA suggests that both low NO_X burners and SCR are technically feasible for an EAF. Further, EPA states that "minimally 40%" reduction is available using those technologies before applying a 25% reduction to the baseline emission limit from "example permits."

[19] 87 Fed. Reg. at 20145.
[20] Non-EGU Sectors TSD, December 2021, p. 43.

EPA, however, never states the basis for identifying that those technologies are applicable to an EAF. There is no explanation of why those measures are technically feasible for an EAF, nor any explanation regarding what reductions could be expected for an EAF.

Based on a review of the non-EGU TSD, it appears EPA is utilizing the Menu of Control Measures (MCM) and the related Control Measures Database (CMDB) as reference sources for potential control technologies and associated cost-effectiveness information. To understand EPA's assumptions, AISI downloaded the MCM section for iron and steel and reviewed both the MCM table entries as well as the cited references for the MCM. Doing so required considerable effort to obtain files which are not included in the rulemaking docket. AISI also downloaded the Control Strategies Tool (CoST) and extracted the underlying data in the tool for steel, including the references. Finally, AISI also reviewed the CMDB.

Based on this review of EPA support information, the below documents were determined to be the most relevant ones for the steel industry. None of these documents, however, support EPA's position of technical feasibility for add-on controls for the iron and steel emission units.

1. **EPA 1994e:** *U.S. Environmental Protection Agency, Emissions Standard Division, Office of Air Quality Planning and Standards, "Alternative Control Techniques Document--* NO_X *Emissions from Iron and Steel Mills," EPA-453/R-94-065, Research Triangle Park, NC, September 1994.*

EPA's 1994 Alternative Control Techniques (ACT) document for steel assessed NO_X emission controls on two types of steel emission units included in the proposed rule: reheat furnaces and annealing furnaces. For reheat furnaces, the study evaluated low excess air (LEA), Low NO_X burners (LNB), and flue gas recirculation (FGR). For annealing furnaces, the study evaluated LNB, FGR, and SCR.

For reheat furnaces, EPA noted that major modifications to furnace structure and refractories in some existing reheat furnaces would be necessary. EPA estimated the cost effectiveness of emission reductions from these technologies at a range of up to approximately $1,000/ton (1994$), which is approximately $2,000/ton in 2022$ based on the difference in CPI.[21]

For annealing furnaces, EPA noted that one unit was operational with SCR, and that three were under construction. EPA noted that there may be problems in installing SCR at existing furnaces. While EPA did not discuss continuous versus batch annealing, the assumption is that the study focused on continuous annealing given that SCR is not possible for batch annealing.

EPA estimated cost effectiveness at up to approximately $2,000/ton for LNB/FGR (1994$), up to $11,000/ton for SCR (1994$), and up to $5,000/ton for LNB/SCR (1994$), which would equate in 2022$ to approximately $4,000/ton, $22,000/ton and $10,000/ton.

Finally, EPA 1994e provides the following statement which directly conflicts with EPA's proposed emission limitation for EAFs:

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[21] Converted using the U.S. Bureau of Labor Statistics' CPI Inflation Calculator available at https://www.bls.gov/data/inflation_calculator.htm.

"The use of electricity to melt steel scrap in the EAF transfers NO_X *generation from the steel mill to a utility power plant. There is no information that* NO_X *emissions controls have been installed on EAF's or that suitable controls are available." [5-23].*

Therefore, apart from some very minor discussion of controls for annealing furnaces and reheat furnaces, this EPA document does not support its conclusions in the proposed rule. And it directly contradicts EPA's conclusions regarding EAFs.

2. **EPA 1998e:** *Pechan, 1998: E.H. Pechan & Associates, Inc., "Ozone Transport Rulemaking Non-Electricity Generating Unit Cost Analysis," prepared for U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Innovative Strategies and Economics Group, Research Triangle Park, September 1998.*

The 1998 non-EGU document, like the EPA1994e, evaluated reheat and annealing furnaces. Ozone season cost effectiveness was calculated in 1990$. The document includes the following relevant information:

- Reheat furnace - $700-$900 /ton for LNB and/or FGR ($1,400 -$1,800 in 2022$)
- Annealing furnace - $1,350-$9,070/ton for mixes of LNB, FGR and SCR ($2,700 - $18,140 in 2022$)

The following excerpts from the study are relevant and noteworthy:

"It should be noted that although the control technologies selected for use here are generally technically feasible, certain instances are likely to exist where installation of a control is much more problematic, and hence, expensive than the existing cost data suggest. In some instances, site-specific characteristics may result in lower costs, although it is possible that the bias here is low (e.g., costs will be higher than estimated). In some cases, it is also possible that the control technology is not technically feasible." [Page 21]

"Because there are more NO_X *emitting source types than there is documented control technique and cost information, some assignments of control efficiency and cost information were made based on like processes being able to be controlled via like control options. This may overstate the* NO_X *reductions that might be achieved using today's technology." [Page 61]*

Therefore, much like EPA1994e, this document only provides a very minor discussion on reheat furnaces and annealing furnaces, and nothing more.

3. **Non-EGU TSD Reference 44:** *Midwest Regional Planning Organization (MRPO). 2005. Iron and Steel Mills Best Available Retrofit Technology (BART) Engineering Analysis, prepared by MACTEC*

The 2005 MRPO study prepared by MACTEC developed \$/ton NO_X estimates for model sources while noting that site-specific factors can significantly impact the installed costs of pollution control equipment.

The following excerpt of the 2005 study notes a relevant lack of consideration of gas stream requirements required by an SCR system:

> *"Potential site-specific costs not included but that may be necessary are additional particulate removal equipment and ductwork for a control equipment bypass. If mechanical cleaners are not present, additional gas cleaning may be needed for SCR. Some gas cleaning typically occurs at iron and steel plants. Fuel fired emission units often have bypasses on SCR systems to protect them during startup, shutdown, and malfunction conditions, which could damage the SCR catalyst. As mentioned in the technical feasibility step of the evaluation, if the temperature range is not met by the fuel fired emission unit, modifications would be required to either reduce (for units with temperatures higher than the required catalysts) or increase the boiler gas temperature. Our costs do not include estimates for reheating or providing make up air at lower temperatures to meet the required temperature levels for the SCR to operate. In the case where more heat was required to reach the catalyst temperatures, an actual design would most likely include a duct burner to re-heat the gas stream and a heat exchanger for heat recovery. In this case gas re-heat is required because the exhaust gas is too cool for SCR operating temperature. In addition to a heat exchanger, this option could incur significant costs for duct work and larger air blowers. The potential for fouling the exchanger from dust should also be evaluated. Each facility will have to determine if this option is feasible on a site-specific basis." [Page 32]*

The only affected units in the Iron and Steel industry for which NO_X costs were estimated by MACTEC is "furnaces". The study does not explicitly define "furnaces", but it is reasonable to assume that "furnaces" includes the reheat and annealing furnaces considered in EPA 1994e and EPA 1998e.

MACTEC's cost for "furnaces" were estimated as follows (presumed 2005\$/ton):

- LNB: \$2,813-\$5,687 per ton (\$4,220 - \$8,531 per ton 2022\$)
- LNB+FGD: \$4,205-\$9,186 per ton (\$6,308 - \$13,779 per ton 2022\$)
- SCR: \$7,566-\$13,762 per ton (\$11,349 - \$20,643 per ton 2022\$)
- ULNB +SCR: \$8,581-\$13,114 per ton (\$12,872- \$19,671 per ton 2022\$)

MACTEC concluded its model plant assessment by recommending either LNB or ULNB as BART:

> *"In general we proposed ULNB or LNB for* NO_X *control primarily because the costs for these controls are significantly lower than other methods and the marginal improvements in control efficiency are generally not as cost effective." [Page 48]*

Therefore, again, EPA's support document only references annealing furnaces and reheat furnaces, and none of the other iron and steel emission units that EPA is attempting to regulate under the proposed rule.

4. **EPA 2010b:** *EPA, 2010: "*NO_X *CONTROL STRATEGIES IN THE IRON AND STEEL INDUSTRY (11-11-10).pdf", pdf document provided by Donnalee Jones (jones.donnalee@epamail.epa.gov) via email to Amy Vasu 11/16/10.*

EPA 2010b is the most recent steel industry-specific document referenced by EPA's Menu of Control Measures (MCM) and CoST models. EPA 2010b's conclusions can be summarized with the following statement taken directly from the study:

> *"To capture* NO_X *emissions from this industry, the most likely opportunity is to retrofit low* NO_X *burners into gas fired equipment." [EPA 2010b, Page 1]*

Estimated costs are provided on Page 2 of EPA 2010b on a 2006$/ton basis:

- SCR - $5,970-$7,679 per ton ($8,800 - $11,318 per ton on a 2022$ basis).
- LNB - $2,889 per ton ($4,258 per ton on a 2022$ basis).
- LNB+SCR - $3,964 per ton ($5,842 per ton on a 2022$ basis).

There is no accompanying analysis to show how these values were derived. Further, the source categories for EPA 2010b are unclear and generic. Accordingly, it's unclear whether EPA intends the EPA 2010b to be limited to the same units discussed in the EPA1994e and the 2005 MRPO BART analyses.

AISI also reviewed all of the other referenced documents in the Iron and Steel Mills section of the TSD.[22] None of these additional documents provide any technical insights regarding the feasibility of NO_X controls on iron and steel emission units.

In summary, nowhere in the docket does EPA provide justification for determining that add-on controls (namely SCR) are feasible for any affected sources under the proposed rule except for reheat furnaces and annealing furnaces. Further, each of the above studies referenced by EPA provide SCR cost effectiveness ranges which far exceed EPA's stated threshold (*i.e.*, $7,500/ton).

VII. The Proposed Rulemaking Ignores Prior RACT and BACT Determinations for the Iron and Steel Sector.

In issuance of the proposed FIP, EPA has ignored numerous RACT determinations of existing sources and BACT determinations of new sources for the iron and steel sector which have consistently determined that add-on controls are technically and/or economically infeasible for the majority of affected units.

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[22] Non-EGU Sectors TSD, December 2021, pp. 37-41 (*citing* EPA 2006b, Pechan 2001, EPA 2002a, EPA 1993c, EPA 2007d, Sorrels 2007, RTI 2011, EPA 1993a, and ERG 2000).

The below table summarizes recent determinations relevant to affected units included in the proposed FIP. As shown in the table, none of the listed RACT or BACT determinations found add-on controls to be technically or economically feasible for the affected units considered.

Summary of Recent RACT/BACT Determinations for the Iron and Steel Sector

Facility	Affected Unit	Determination
Nucor Steel Louisiana 2011 BACT [LDEP Permit No.PSD-LA-751]	Blast Furnace Stoves	SCR technically infeasible
Nucor West Virginia Mill 2022 BACT [WV DEP Permit No. 14-0039]	EAF	SCR technically infeasible
	Reheat Furnaces	SCR economically infeasible
	LMF	SCR technically infeasible
	Annealing Furnace	SCR technically infeasible
Cleveland Cliffs Coatesville 2016 PA RACT [EPA-R03-OAR-2022-0165]	EMS Boiler	SCR economically infeasible ($35,600/ton)
	Batch Heat Treat Furnaces	SCR economically infeasible ($28,900 - $37,500/ton)
	NAB Continuous Heat Treat Furnaces	SCR economically infeasible ($19,800 - $36,800/ton)
Cleveland Cliffs Monessen 2016 PA RACT [EPA-R03-OAR-2022-0165]	Boilers	SCR economically infeasible ($11,000 - $12,000/ton)
Cleveland Cliffs Cleveland Works 2008 Ohio RACT [Final RACT limits at OAC 3745-110-03(N)]	Reheat Furnace	SCR technically infeasible
	Batch Annealing	SCR technically infeasible
	Blast Furnaces	SCR technically infeasible
	BOF	SCR technically infeasible
	Ladle Preheater	SCR technically infeasible
U.S. Steel Edgar Thomson 2020 PA RACT [EPA-R03-OAR-2020-0575]	Blast Furnaces	SCR technically infeasible
	Boilers	SCR economically infeasible
U.S. Steel Irvin 2020 PA RACT [EPA-R03-OAR-2020-0575]	Reheat Furnaces	SCR technically infeasible
Cleveland Cliffs Conshohocken 2016 PA RACT [EPA-R03-OAR-2021-0380]	Annealing Furnace	SCR economically infeasible ($22,300/ton)
Cleveland Cliffs Steelton 2017 PA RACT [EPA-R03-OAR-2021-0531]	Reheat Furnace	SCR economically infeasible ($11,385 - $23,025/ton)
	Electric Arc Furnace	SCR technically infeasible

EPA stated in the preamble that the proposed FIP is "intended to be consistent with the scope and stringency of RACT requirements."[23] Yet, as the above clearly demonstrates, the proposed FIP contradicts nearly every RACT and BACT determination made by States for the iron and steel industry.

VIII. NO_X Control Technology of the Extent Necessary to Achieve the Emission Limits is Not Economically Reasonable for Most of the Iron and Steel Emission Units.

In the preamble to the proposed rule, EPA stated that for non-EGUs including the iron and steel sector, it analyzed the rule using a marginal cost threshold of up to $7,500 per ton (2016$) for 2026.[24] EPA further stated that it used this marginal cost threshold to further assess potential control strategies, estimated emission reductions, air quality improvements and costs for the potentially impactful industries.[25] AISI, however, has calculated the costs for controls to achieve the emissions limits in the proposed rule and has concluded that EPA underestimated the costs. For many of the emissions units, the costs substantially exceed $7,500 per ton.

Notwithstanding the technical infeasibility issues, AISI performed an economic evaluation based on affected units across its members to determine whether the cost-effectiveness of EPA's suggested controls in the proposed rule align with EPA's stated cost-effectiveness basis, specifically $7,500 per ton.

The below table shows the estimated range of cost-effectiveness calculations for affected units across AISI member facilities if these technologies defied their clear technically infeasible attributes.

Cost-Effectiveness of EPA's Suggested Control Technologies for the Iron and Steel Industry – Assuming These Technologies Defy Technical Infeasibility

Affected Unit	EPA Suggested Control Technology	Cost Effectiveness ($/ton)
Blast Furnaces (stoves)	SCR	$51,000 - $1.9m/ton
Basic Oxygen Furnaces	SCR/SNCR	$102,000/ton[a]
Reheat Furnaces	SCR	$8,400 – $15,600 / ton
Annealing Furnaces	SCR	$11,000 – $38,000 / ton
Ladle Metallurgy Furnace	SCR	$6MM / ton[b]

[a] Cost calculated for a single model BOF
[b] Cost calculated for a model LMF using methodology discussed below

As shown in the above table, the cost effectiveness ranges for each of the listed affected units include values that are far above EPA's suggested cost-effectiveness threshold for the proposed rule (*i.e.*, $7,500/ton), making installation on most units economically infeasible.

In order to determine the economic feasibility to retrofit SCR technology on existing NO_X-emitting sources, AISI utilized the EPA Air Pollution Control Cost Manual (CCM), Section 4,

[23] 87 Fed. Reg. at 20101-20102.
[24] 87 Fed. Reg. at 20155.
[25] 87 Fed. Reg. at 20083.

Chapter 2, Selective Catalytic Reduction, NO_X Controls. The approach incorporates methodologies from the June 12, 2019 version of the CCM for SCR design parameters and annual costs while utilizing the approach from the January 2002 CCM for direct and indirect costs. The 2002 manual reflects a more robust determination for direct and indirect costs for SCR as equations incorporate several sensitivity cases, while the 2019 approach is based on the Clean Air Markets Division (CAMD) Integrated Planning Model (IPM) for utility and industrial boilers. The CCM presents cost estimation for industrial boilers via modified IPM equations to replace electricity production ratings with "typical" boiler heat input capacities using boiler net plant heat rate (NPHR). Neither version of the CCM presents cost estimation methodology specific to non-boiler sources (*e.g.*, blast furnace, annealing furnace, reheat furnace) or sources which do not combust fossil fuels via a burner (*e.g.*, electric arc furnace, ladle metallurgy furnace).

Critical inputs to the CCM model include heat input rate represented by the total maximum burner heat input to the unit, observed actual exhaust gas temperature and flow rate, actual annual NO_X emissions and operating hours for the unit, and market cost data for ammonia, natural gas, and electricity. To employ the CCM methodology for units which do not combust fuel via a burner, such as LMFs, a heat input was simulated utilizing the natural gas F-factor from Table 1 to 40 CFR Part 75 and the known exhaust gas flow associated with unit. Given that SCR operates at an optimum control efficiency at around 700˚F, the approach incorporates reheating the exhaust gas stream via a natural gas-fired duct burner to elevate the current exhaust gas temperature to the target temperature. The combined gas volume from the existing system and natural gas reheat process is utilized for SCR design parameters such as the catalyst area. The cost model includes direct and operating costs associated with a NO_X analyzer as determined by EPA's Emission Measurement Center (EMC): Continuous Emission Monitoring Systems CEMS Cost Model Version 3.0 (3/7/2007). Finally, the cost model assumes an interest rate of 7.00% per the 2018 EPA Cost Manual, Section 1, Chapter 2, Cost Estimation: Concepts and Methodology, Part 2.5.2 and an SCR operating life of 20 years.

IX. EPA Has Incorrectly Applied Its Own Data To Determine the Cost Threshold to Evaluate Emission Reductions Related to the Iron and Steel Industry.

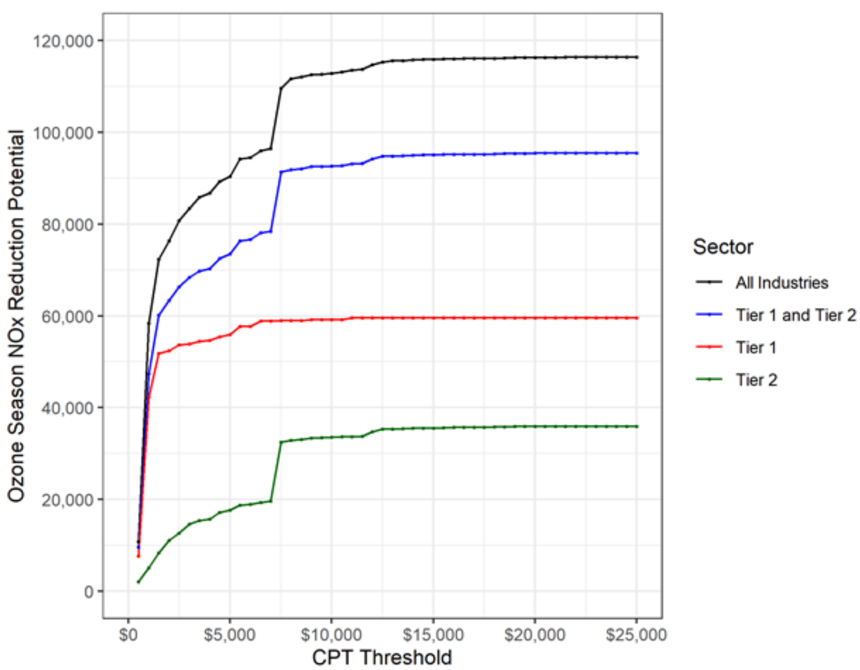
AISI had assessed EPA's cost data and has determined that EPA has inappropriately applied its own data assessing the cost threshold for categorizing Tier 1 Industries including iron and steel mill. Specifically, in the Agency's Screening Assessment for non-EGU emissions units, EPA offers the following comment:

> To identify an annual cost threshold for evaluating potential emissions reductions in the Tier 1 and Tier 2 industries, the EPA used the Control Strategy Tool (CoST), the Control Measures Database (CMDB), and the projected 2023 emissions inventory to prepare a listing of potential control measures, and costs, applied to non-EGU emissions units in the projected 2023 emissions inventory. Using this data, we plotted curves for Tier 1 industries, Tier 2 industries, Tier 1 and 2 industries, and all industries at $500 per ton increments. Figure 1 indicates there is a "knee in the curve" at approximately $7,500 per ton. We used this marginal cost threshold to further assess estimated emissions reductions, air quality improvements, and costs from the potentially impactful industries. Note that controls and related emissions reductions are available at several estimated cost

levels up to the \$7,500 per ton threshold. The costs do not include monitoring, recordkeeping, reporting, or testing costs.[26]

However, a review of the figure set out below makes it clear that Tier 1 Industries including iron and steel mills have a very much lower marginal cost threshold than the \$7,500 per ton value assigned to Tier 1 Industries by EPA. Indeed, as is graphically illustrated in Figure 1, the "knee in the curve" for Tier 1 sources occurs at a cost of approximately \$1,000 per ton at which point the ozone season NO_X reduction potential is in excess of 50,000 tons. Increasing the cost threshold to \$7,500 per ton (approximately a 700% increase in cost) does nothing more than increase the NO_X reduction potential by approximately 15% more than would be achieved at the \$1,000 per ton threshold. It is also obvious that the incremental gain from the "knee in the curve" is substantially different than for Tier 2. Thus, there is no technical basis to treat cost effectiveness threshold for Tier 1 and 2 similarly – in fact the data clearly supports the opposite conclusion.

Ozone Season NO_X Reductions and Costs per Ton (CPT) for Tier 1, Tier 2 Industries, and Other Industries



EPA's basis for imposing controls on Tier 1 sources therefore fails to satisfy the mandate of the Good Neighbor provisions of the Clean Air Act that the emission reduction involved are necessary to address downwind nonattainment or that that the control requirements being proposed are cost effective and consistent with the judicial mandates of the U. S. Supreme Court.[27] Accordingly, the rule as proposed by EPA is based on this additional erroneous assumption and cannot be finalized as proposed.

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[26] EPA-HQ-OAR-2021-0668-0150.

[27] *EME Homer II*, 134 S.Ct. 1584.

X. A Case-By-Case Compliance Option is Necessary to Address Site-Specific Considerations.

Due to EPA's approach of rule development without an ICR and without industry input, the proposed rule inevitably relies on assumptions and generic conclusions (as discussed in detail in Section IV, above). This has resulted in a "one-size fits all" approach to setting NO_X limits for emissions units at process industries like iron and steel. Such an approach is fatally flawed in terms of the ability for the rulemaking to be technically implemented. The reason for this is that each source in process sectors is uniquely designed and operated which results in a very wide range of NO_X emission rates and exhaust gas conditions needing to be controlled. The detrimental aspect of this approach is compounded by the fact that the proposed rule does not include any flexibility whatsoever to take into consideration site-specific variables.

A proper study of the iron and steel sector, which should have served as the basis for any actions related to the industry in this proposal, would show that in reality there are thousands of grades of steel manufactured across the industry and each grade requires very specific process equipment design and operation to achieve the specifical product quality parameters. For example (one of many), there are fundamental differences between manufacture of carbon steels and stainless steels at EAF shops. The difference in EAF (a batch process) operation result in a wide range of NO_X emission rates between these product classes. Specifically, in the manufacture of certain stainless steels, they have considerably longer heats and lower concentrations of NO_X in the exhaust gas streams than for carbon steels. This difference alone can radically change the fundamental technical and economic feasibility of certain NO_X control strategies.

There are countless other examples where unique product quality, product type, and site-specific process design factors work in direct opposition to a one size fits all rulemaking for the iron and steel sector. EPA itself and state agencies have recognized in other national NO_X control rulemakings by ensuring that these rulemakings included provisions to allow site specific technical and economic evaluations should a presumptive emission rate be infeasible at a given source.

As discussed above, EPA analyzed the rule using a marginal cost threshold of up to $7,500 per ton (2016$) for 2026. Based on data that AISI has been able to gather, it is apparent that in many circumstances EPA underestimated the cost per ton of controls for the iron and steel industry. However, due to the very short comment period, AISI has not been able to assess every potential new control at every potential iron and steel emission unit. Therefore, it is quite likely that a case-by-case, site-specific economic feasibility assessment will identify that certain emission controls are infeasible.

For example, not all BOF shops are built the same, and the cost for adding NO_X controls (if such controls were feasible) can vary greatly depending on items such a physical space for control equipment, surrounding infrastructure in the shop, and other engineering factors. Due to this substantial site-by-site variability, AISI asserts that to the extent iron and steel emission units remain subject in the final rule, that the final rule adopts a case-by-case compliance option.

The use of case-by-case assessments in rulemaking is a standard approach to ensure the rule fairly identifies site-specific circumstances. In particular, case-by-case assessments are standard in RACT rulemakings, including involving the Ozone Transport Region.[28] Due to the prevalence of such flexibility terms, AISI requests that EPA include a case-by-case term in the rule to address the need for flexibility on economic feasibility which is common practice in similar NO_X control rulemakings.

XI. CEMS are Unnecessary for Non-EGUs That Are Not Part of the NO_X Trading Program.

The proposed rule requires sources to install, operate and maintain a NO_X continuous emission monitoring system (CEMS) to monitor compliance with the emission limits.[29] In the preamble, however, EPA solicits comments on alternative monitoring systems or methods that are equivalent to CEMS to demonstrate compliance with the emission limits. To the extent the final rule contains emissions limits for iron and steel emission units, AISI asserts that CEMS are not necessary and periodic stack testing along with monitoring of tons of steel production or mmbtu of fuel consumed is more appropriate. Or in the alternative, EPA should defer to state agencies in the permitting process for the new control equipment to determine, on a case-by-case basis, the most appropriate monitoring device.

In the proposed rule preamble, EPA identified the fact that non-EGUs, including iron and steel emission units, were not being included in the trading program.[30] EPA went on to state that if such units were included in the trading program, it would necessitate reporting and monitoring under Part 75, including CEMS.[31] EPA's basis to require CEMS for emissions units that are part of a trading program is to require "consistent and accurate measurement of emissions … to ensure each allowance accurately represents one ton of emissions and that one ton of reported emissions form one source would be equivalent to one ton of reported emissions from another source."[32]

Logically, therefore, since iron and steel emissions units are not part of the trading program and there is no need to impose rigorous monitoring to ensure "one to one" equivalency across source, CEMS are unnecessary. EPA nonetheless has proposed to require CEMS on all subject iron and steel emission units.

EPA's approach with this proposed rule is inconsistent with the agency's prior actions with other transport rules that include a trading program from only some sources. In particular, in 1988, EPA issued the NO_X SIP Call under the Good Neighbor provisions of the Clean Air Act.[33] One aspect of the rule included the NO_X Budget Trading Program, that applied to both EGUs and non-EGUs that were subject to the rule.[34] EPA required Part 75 monitoring and CEMS to ensure reliable, quality-assured mass emission data, consistent with EPA's other allowance trading

[28] *See, e.g.,* Ohio Admin. Code 3745-21-11 (Reasonably available control technology studies for non-CTG sources in ozone nonattainment areas); 25 Pa. Code § 129.114 (Alternative RACT proposal and petition for alternative compliance schedule).
[29] 87 Fed. Reg. at 20182 (proposed 40 C.F.R. § 52.43(d)(2)).
[30] 87 Fed. Reg. at 20141.
[31] 87 Fed. Reg. at 20141.
[32] 87 Fed. Reg. at 20141, citing 75 Fed. Reg. 45325 (August 2, 2010).
[33] 84 Fed. Reg. 8422, 8424 (March 8, 2019).
[34] 84 Fed. Reg. at 8424.

programs.[35] Successor trading programs, however, removed non-EGUs from their scope. There was therefore no longer a need for rigorous Part 75 CEMS monitoring for non-EGUs. In response to these scope changes, EPA revised its regulations to allow states greater flexibility in monitoring non-EGUs by making Part 75 CEMS requirements merely optional.[36] EPA acknowledged that CEMS were unnecessary when the emissions unit was no longer part of a trading program.

In approving changes to SIPs based on this flexibility for non-EGUs, EPA allowed more common monitoring approaches. For example, in approving the Ohio SIP revisions to the NO_X SIP Call rules, EPA allowed for new methodologies based on Part 60 monitoring procedures and based on monitoring of heat input combined with the use of an approved source-specific emission factor.[37]

Furthermore, EPA's proposed broad-brush implementation of CEMS ignores the reality that for certain sources the implementation of certified CEMS is simply infeasible. And this broad-brush propose approach also results in the potential for sources to install very costly monitoring devices to monitor de minimis source of NO_X. Either of these outcomes is flawed and in error.

Given this precedent, it is unreasonable now for EPA to require CEMS for the iron and steel emissions units. The added expense and complications of a CEMS is not offset by any need for discrete, continuous emissions data from these emissions units. AISI therefore requests that EPA rely upon the broadly-applicable, industry-standard approach for ensuring compliance with an emission limit through the requirement for periodic stack tests to develop emission factors. These emission factors can then be assessed against monitoring of tons of steel production or mmbtu of fuel consumed to assure continuous compliance.

To the extent that EPA believes that CEMS are nonetheless warranted in some circumstances, AISI requests that EPA make the use of CEMS optional and provide states with the flexibility on determining appropriate monitoring on a case-by-case basis. Doing so would make this action consistent with EPA's prior action on the NO_X SIP Call and NO_X Budget Trading Program. State agencies will be in the best position to assess emission units on a case-by-case basis and determine the most appropriate monitoring.

XII. A Three-Hour Rolling Average for Compliance with the NO_X Emission Limit Dramatically Increases the Stringency of the Emission Limit and Is Unnecessary to Address Regional Ozone.

The proposed rule requires that the emission limits must be met on a 3-hour rolling average.[38] This is contrary, however, to the preamble where EPA proposed a 30-operating day rolling average, after detailed explanation.[39] While EPA has not made any official statements on this discrepancy in the docket, it is AISI's understanding from informal EPA comments that the agency intends to require a 3-hour rolling average. AISI disagrees, and to the extent the final rule

[35] 84 Fed. Reg. at 8424.
[36] 84 Fed. Reg. at 8425.
[37] 85 Fed. Reg. 19670, 19671 (April 8, 2020).
[38] 87 Fed. Reg. at 20181 (proposed 40 C.F.R. § 52.43(c)).
[39] 87 Fed. Reg. at 20181.

contains emissions limits for iron and steel emission units, AISI asserts that a 3-hour rolling average is inappropriate for several reasons and that compliance over the ozone season consistent with EGUs is most appropriate. At a minimum, though, compliance should be based on no less than a 30-operating day rolling average.

First, EPA stated in the proposed rule preamble that it assessed the averaging time from numerous industry-specific rulemakings.[40] EPA went on to state that, "based on this information, the EPA is proposing to require a 30-operating day rolling average period as the averaging time frame for this particular industry."[41] EPA justified a 30-operating day rolling average period since it provided "a reasonable balance between short term (hourly or daily) and long term (annual) averaging periods, while being flexible and responsive to fluctuations in operations and production."[42] The industry-specific regulations cited by EPA do not support a 3-hour rolling average emission limit as there are no such averaging time for emission limits in those regulations, only for operational parameters. To the contrary, the cited regulations do contain some 30-day rolling average emission limits.[43] Therefore, EPA's own statements in the proposed rule preamble support a 30-day rolling average, and do not support a 3-hour rolling average.

Second, EPA is significantly increasing the stringency of the NO_X emission limit by decreasing the averaging time. Given the detailed discussion in the proposed rule preamble, it seems clear that EPA did intend to apply a 30-day rolling average to the NO_X emissions limits. An emission standard consists of three interconnected elements: (1) the numerical limit; (2) the averaging time; and (3) the compliance demonstration method or measurement. An adjustment to any of these elements will affect the stringency of the limit. By substantially reducing the averaging time from a 30-day rolling average to a 3-hour rolling average (a 99.5 percent reduction), EPA has dramatically increased the stringency of the emission limit. Therefore, if EPA intends to change from a 30-day rolling average to a 3-hour rolling average, it needs to increase the NO_X emission limit by a commensurate amount to avoid creating a substantially more stringent limit or limit that cannot be achieved even with the proscribed control technology applied.

Third, all other non-EGU manufacturing industry categories in the proposed rule are subject to 30-day rolling averages, not 3-hour rolling averages.[44] There is no technical basis for applying a substantially more stringent averaging time to the iron and steel industry than every other industry in the proposed rule.

Finally, a 3-hour rolling average is unnecessary to address regional transport of ozone and compliance with the ozone NAAQS. Given this rule is intended to address long-range transport

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[40] 87 Fed. Reg. at 20145 (citing NESHAP for Iron and Steel Foundries codified at 40 CFR part 63 subpart EEEEE, the NESHAP for Integrated Iron and Steel manufacturing facilities codified at 40 CFR part 63 subpart FFFFF, the NESHAP for Ferroalloys Production: Ferromanganese and Silicomanganese codified at 40 CFR part 63 subpart XXX, and the NESHAP for Ferroalloys Production Facilities codified at 40 CFR part 63 subpart YYYYYY).
[41] 87 Fed. Reg. at 20145.
[42] 87 Fed. Reg. at 20145.
[43] *See*, 40 C.F.R. § 63.7790(d) (30-day rolling average for VOC emission limit for sinter plants); 40 C.F.R. § 63.1625(c)(4) (30-day rolling average for particulate matter emission limit for ferroalloy facilities).
[44] *See*, 87 Fed. Reg. 20179 (proposed 40 C.F.R. § 52.42(d) (cement and concrete product manufacturing industry); 87 Fed. Reg. 20185 (proposed 40 C.F.R. § 52.44(d)(1) (glass and glass product manufacturing industry); 87 Fed. Reg. 20186 (proposed 40 C.F.R. § 52.45(c) (basic chemical manufacturing, petroleum and coal products manufacturing and pulp, paper and paperboard mill industries).

of ozone, it is technically obvious that short-term variability in emissions has no appreciable impacts on ozone concentrations hundreds or thousands of miles downwind. The lengthy transport time, climatology, atmospheric mixing, and reaction chemistry render hour to hour variations in NO_X emissions from upwind sources meaningless. Therefore, there is no basis for this rulemaking to require short-term averaging periods to achieve its intended outcome.

In conclusion, AISI asserts that there is no technical reason to treat non-EGUs differently than EGUs as it relates to compliance averaging times. EGUs, as the largest NO_X emitters in the proposed rule, are subject to limitations across the entire ozone season (May to September). As such, an equivalent compliance averaging time should likewise apply to non-EGUs. At a minimum, however, to the extent iron and steel emission units remain in the rule, the averaging time should be no less than a 30-operating day rolling average. Anything more stringent is inconsistent with other portions of the proposed rule and thus arbitrary and capricious.

XIII. Installation of All Required Control Equipment By the 2026 Ozone Season is Not Practical, and the Rule Should Allow for Extensions of Compliance.

The proposed rule requires sources to comply with the new NO_X emission limits starting with the 2026 ozone season.[45] To the extent the final rule contains emission limits for iron and steel emission units, AISI asserts that compliance by 2026 is impracticable. Instead, AISI requests that the rule require compliance on a case-by-case basis in conjunction with state permitting agencies that can assess the practicalities of installing potential multiple control devices across a single steel mill. However, to the extent the rule includes a set date for compliance (which must be substantially later than 2026), the rule must include a provision whereby a source can request additional time to achieve compliance with the emissions limits based on a demonstrated source-specific need.

AISI contends that EPA has vastly underestimated the time and effort involved in installing controls and monitoring devices. While AISI believes that most or all iron and steel emissions units should not be regulated under this rule as discussed elsewhere in these comments, *if* all identified units are in fact regulated, then iron and steel companies are facing a formidable challenge to comply by 2026. Given anticipated extent of public comments and EPA's timeframe for issuing a final rule for prior Ozone Transport rules, it seems likely that EPA will not be able to issue a final rule until mid to late 2023.[46] That will leave a mere 3 years from the presumed final rule date until compliance or the start of the 2026 ozone season, as suggested by EPA in the proposed rule preamble.[47]

In that short time period, iron and steel companies would have numerous detailed and complicated tasks to complete:

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[45] 87 Fed. Reg. 20181 (proposed 40 C.F.R. § 52.43(c)).
[46] *See, e.g.*, Clean Air Interstate Rule, 16 months between proposed rule (69 Fed. Reg. 4566 (January 30, 2004)) and final rule (70 Fed. Reg. 25162 (May 12, 2005) and Cross State Air Pollution Rule, 12 months between proposed rule (75 Fed. Reg. 45210 (July 6, 2010) and final rule (76 Fed. Reg. 48208 (July 6, 2011)).
[47] 87 Fed. Reg. 20104.

- For many emissions units, a company will first have to conduct a stack test and other process and emissions studies to identify the baseline emissions and the extent of emission reduction necessary to achieve the emissions limit. Note that stack testing companies continue to have long lead-times on scheduling tests and that will be exacerbated by this rulemaking among others EPA is contemplating.

- It will be necessary to complete detailed engineering evaluations to determine the control device(s) that would achieve the emission limit based on the existing baseline emissions. The engineering evaluation would also have to determine whether an identified control device can physically be installed for a particular emission unit. While some of this engineering assessment could be conducted in-house, it will be necessary for much of it to be conducted by third-party engineering companies. There are certain engineering firms that have specific expertise with iron and steel companies. AISI expects a strain on their resources.

- After determining appropriate controls, a companies will need to proceed through their capital expenditure or other corporate approval process, which can be time-consuming.

- Once approved, the control devices must be procured. There continue to be massive supply-chain disruptions across the global economy that could impact control device availability, and it is unclear when such disruptions might subside.

- Depending on the control device, an air permit may be necessary. In some circumstances, a New Source Review air permit may be necessary. While some minor source air permits can be obtained in three to six months, a New Source Review permit can at times take over a year to obtain. And substantial time to prepare and submit a New Source Review application would add timing complications.

- After the control device is procured and any necessary air permits issued, the control device must be installed. In some instances, this may be straight-forward. But in many instances, it likely will be a complicated process, necessitating skilled labor, and may involve changes to surrounding infrastructure. Few, if any of these activities, can begin until a final pre-construction permit is issued.

- Finally, the installed control equipment must undergo a “shake-out” period, and any monitoring device must be calibrated.

The above process is a substantial undertaking for one control device on a single process unit. But the rule as proposed is much more far-reaching. Such wide-ranging demand on resources all at once is simply unprecedented. The number of affected units at each facility would essentially require a steelmaking outage of a few months or longer to install all of the proposed control equipment. In addition to an impact of $1 billion to the iron and steel industry of installed control equipment, this rule could mean there would be no steelmaking across much of the United States for nearly a calendar quarter of 2025, if it was even feasible to meet this schedule. This is simply unprecedented.

Accordingly, AISI requests that EPA specify in the rule that compliance deadlines for each affected unit are evaluated on a case-by-case basis. As discussed above, there are many uncertainties and unknowns in the timeline, including site-specific infrastructure changes and supply chain problems that are unknown now but could create complications moving forward. As such, AISI contends it is necessary to allow for compliance schedules to be determined on a unit-by-unit basis to address unique, site-specific considerations.

However, to the extent the rule mandates a date for compliance (which would have to be well past 2026), AISI also asserts that EPA must include in the rule the opportunity to request an extension on the compliance date for any source that determines compliance by the identified date is technically impracticable, as suggested by EPA in the proposed rule preamble.[48] As stated by EPA, there is ample legal justification under the Clean Air Act to allow for extensions of time.[49] As discussed above, there are many uncertainties and unknowns in the timeline, including site-specific infrastructure changes and supply chain problems that are unknown now but could create complications moving forward. As such, AISI contends it is necessary for this rule to include an extension of time for compliance to address unique, site-specific considerations.

AISI further asserts that it is unnecessary for the rule to limit the criteria by which an extension can be granted. Other rules allowing for extensions do not do so, and simply allow for an extension if additional time is necessary for the installation of controls.[50]

XIV. Preparation and Submission of a Work Plan Is Unnecessary Due to Anticipated Air Permitting and Is Otherwise Not Practical Within 180 Days of the Effective Date.

The proposed rule requires sources to prepare within 180 days of the effective date of the rule a work plan that identifies how each affected unit will comply with the emission limits, including an identification of the control device selected, and the phased construction timeframe to design, install and consistently operate the device.[51]

EPA should remove the requirement to submit a Work Plan. As a primary matter, it is unnecessary and just seems to be a mere paperwork exercise without an express useful purpose. If an emission unit is subject to the rule, the source will be under a legal obligation to comply with the emission limit by the compliance deadline. How and when the source will achieve compliance is immaterial.

More importantly, however, as EPA concluded in the proposed rule preamble, installation of SCR or SNCR to comply with the new emission limit would be subject to air permitting requirements.[52] AISI has not undertaken an assessment of every state air construction permit requirement and therefore cannot confirm with certainty EPA's conclusion. However, it does appear that air permitting will be required for most if not all control device installations that will be required by the rule. Therefore, state agencies will be receiving air permit applications that will

[48] 87 Fed. Reg. at 20104.
[49] 87 Fed. Reg. at 20104, n. 241 (citing *Wisconsin*, 938 F.3d at 320 and *North Carolina*, 531 F.3d at 912).
[50] See, e.g., 40 C.F.R. § 63.6(i).
[51] 87 Fed. Reg. at 20182 (proposed 40 C.F.R. § 52.43(d)(1)(A)).
[52] 87 Fed. Reg. at 20140, n. 308.

outline in detail the how each affected unit will comply with the emission limits, including an identification of the control device selected. Thus, a separate report to EPA is unnecessarily duplicative.

In the alternative, to the extent the final rule contains emission limits for iron and steel emission units and EPA deems the Work Plan essential to the rule, AISI asserts that 180 days to prepare such a plan is impracticable, and instead requests 365 days. As discussed in detail above, sources have many steps they will need to complete in order to identify a selected control device. The timeframe to design, install and operate the control device is likewise something a source is not going to know until it is much further along in the process outlined above. As such, 365 days to submit the Work Plan, if the proposed rule continues to require such a plan, if more feasible and will allow for sources to provide better answers instead of pure conjecture aa would likely happen at only 180 days.

XV. Requests by AISI Regarding the Proposed Rule.

As discussed in supported detail throughout this comment letter, AISI has identified numerous deficiencies in this proposed rule. Any one of these deficiencies proves to be a fatal flaw to the rule and evidence that it is arbitrary and capricious. But compounded together, these deficiencies unequivocally demonstrate that iron and steel emissions units simply cannot be part of the final rule.

These compounded errors and lack of any support in the proposed rule further greatly hampered AISI's ability to fully understand EPA's rationale and provide even more meaningful comments. To the extent EPA is determined to regulate the iron and steel industry with an ozone transport regulation, it cannot do so with this rulemaking by purporting to address these comments and issue a final rule. Due to the vastness of the errors in this proposed rule, the lack of understanding of the iron and steel industry by EPA in the rule's technical support, and the need for massive fixes to the rule, any final rule would absolutely not be a logical outgrowth of the proposed rule, rendering it arbitrary and capricious.

Quite simply, AISI strongly asserts that EPA must remove the iron and steel industry from this rule, and if the agency is nonetheless intent on regulating these sources under an ozone transport regulation, it must start over from the beginning with fulsome input from the industry in the development of any proposal.

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