

**ORAL ARGUMENT NOT YET SCHEDULED****Nos. 15-1465, 19-1024**IN THE UNITED STATES COURT OF APPEALS  
FOR THE DISTRICT OF COLUMBIA CIRCUIT

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SIERRA CLUB, *et al.*,  
*Petitioners,*

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, *et al.*,  
*Respondents.*

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ON PETITIONS FOR REVIEW OF FINAL ADMINISTRATIVE ACTION OF THE  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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**PROOF BRIEF OF *AMICI CURIAE* AMERICAN CHEMISTRY COUNCIL, AMERICAN  
PETROLEUM INSTITUTE, CHAMBER OF COMMERCE OF THE UNITED STATES OF  
AMERICA, NATIONAL ASSOCIATION OF MANUFACTURERS, AND NATIONAL  
MINING ASSOCIATION IN SUPPORT OF RESPONDENT UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY AND AFFIRMANCE**

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Dated: November 8, 2019

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**CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES**

**Parties and *Amici Curiae*.** Except for the following, all parties, intervenors, and *amici curiae* appearing before this Court are listed in Brief of Petitioners.

Caring for Pasadena Communities is an *amicus curiae* in support of Petitioners.

The South Coast Air Quality Management District is an *amicus curiae* in support of Respondents.

American Chemistry Council, American Petroleum Institute, Chamber of Commerce of the United States of America, National Association of Manufacturers, and National Mining Association are movants *amici curiae* in support of Respondents.

**Rulings Under Review.** An accurate reference to the rulings at issue appears in the Brief of Petitioners.

**Related Cases.** Related cases are as stated in the Brief of Petitioners.

Dated: November 8, 2019

**CERTIFICATE PURSUANT TO CIRCUIT RULE 29(d)**

Pursuant to Circuit Rule 29(d), undersigned counsel represent that the national business association *amici* have coordinated to join a single brief. Further, the only other *amicus curiae* supporting respondent of which we are aware is South Coast Air Quality Management District, which is a government party that is not instructed to attempt to coordinate with other *amici*. See Circuit Rule 29(d).

### **CORPORATE DISCLOSURE STATEMENT**

The American Chemistry Council (“ACC”) is a “trade association” for purposes of Circuit Rule 26.1(b). ACC has no parent corporation, and no publicly held company has 10 % or greater ownership in ACC.

The American Petroleum Institute (“API”) is a national trade association representing all aspects of America’s oil and natural gas industry. API has no parent company, and no publicly held company has a 10% or greater ownership in API.

The Chamber of Commerce of the United States of America (the “Chamber”) is a not-for-profit, tax-exempt organization incorporated in the District of Columbia. The Chamber is the world’s largest business federation, representing 300,000 direct members and indirectly representing an underlying membership of more than three million businesses and organizations. The Chamber has no parent company, and no publicly held company has 10% or greater ownership in the Chamber.

The National Association of Manufacturers (“NAM”) is the largest manufacturing association in the United States, representing small and large manufacturers in every industrial sector and in all 50 states. NAM has no parent company, and no publicly held company has 10% or greater ownership in NAM.

The National Mining Association (“NMA”) is a national trade association that represents the interests of the mining industry, including the producers of most of America’s coal, metals, and industrial and agricultural minerals. NMA has no parent corporation, and there is no publicly held company that owns 10% or more of its stock.

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**GLOSSARY**

Agency	United States Environmental Protection Agency
Act	Clean Air Act
EPA	United States Environmental Protection Agency
JA	Joint Appendix
NAAQS	National Ambient Air Quality Standards

## STATUTES AND REGULATIONS

Except for the statutes and regulations set forth in the addendum appended to this brief, all applicable statutes are contained in the Addendum to the Brief for Petitioners.

### STATEMENT AS TO THE IDENTITY OF THE *AMICI CURIAE*, THEIR INTEREST IN THESE CASES, AND THE SOURCE OF THEIR AUTHORITY TO FILE

*Amicus* American Chemistry Council (“ACC”) is the nation’s premier trade association for chemical manufacturers and is the oldest trade association of its kind. ACC represents industry leaders and innovators who employ the chemical sciences to manufacture many consumer products essential to everyday life.

*Amicus* American Petroleum Institute (“API”) is a national trade association representing more than 600 companies involved in all aspects of the natural gas and oil industry. API’s members include producers, refiners, suppliers, marketers, pipeline operators, and marine transporters, as well as service and supply companies that support all segments of the industry. API’s mission is to promote safety across the industry globally and support a strong, viable U.S. natural gas and oil industry.

*Amicus* Chamber of Commerce of the United States of America (the “Chamber”) is the world’s largest business federation. It represents 300,000 direct members and indirectly represents the interests of more than 3 million companies and professional organizations of every size, in every industry sector, and from

every region of the country. An important function of the Chamber is to represent the interests of its members in matters before Congress, the Executive Branch, and the courts. To that end, the Chamber regularly files *amicus curiae* briefs in cases that raise issues of concern to the nation's business community.

*Amicus* National Association of Manufacturers (“NAM”) is the largest manufacturing association in the United States, representing small and large manufacturers in every industrial sector and in all 50 states. Manufacturing employs more than 12 million men and women, contributes \$2.25 trillion to the U.S. economy annually, has the largest economic impact of any major sector and accounts for more than three-quarters of all private-sector research and development in the nation. The NAM is the voice of the manufacturing community and the leading advocate for a policy agenda that helps manufacturers compete in the global economy and create jobs across the United States.

*Amicus* National Mining Association (“NMA”) is a trade association representing over 260 corporations and organizations that produce most of America's coal, metals, and industrial and agricultural minerals. NMA's members include manufacturers of mining and mineral processing machinery and supplies, transporters, financial and engineering firms, and other businesses involved in the nation's mining industries.

*Amici* and their members have a substantial interest in ensuring that businesses regulated under the Clean Air Act (the “Act”) are afforded flexibility when meeting their ozone offsetting obligations under the statute in a manner that ensures environmental protection without jeopardizing economic prosperity. In support of that interest, *amici*’s brief explains that the U.S. Environmental Protection Agency’s (“EPA” or the “Agency”) decision to reaffirm its longstanding policy allowing for interprecursor trading for ozone closely aligns with various other trading programs the Agency has embraced in the past. Additionally, *amici*’s brief explains that EPA’s interprecursor trading and banking regulations ensure that meaningful emission reductions satisfying the Act’s offsetting requirements are achieved, while providing businesses flexibility to meet those requirements in a way that encourages economic development and produces additional long-term environmental benefits.

Pursuant to Circuit Rule 29(b), undersigned counsel contacted counsel for each of the parties regarding their position on this motion. Counsel for EPA represent that EPA has no objection to the participation of ACC, API, the Chamber, NAM, and NMA as *amici curiae*. Counsel for Petitioners represent that Petitioners reserve their position on the motion. Intervenors did not provide their position prior to the filing of this brief.



**STATEMENT AS TO AUTHORSHIP AND FUNDING OF THE BRIEF**

Pursuant to Federal Rule of Appellate Procedure 29(a)(4)(E), undersigned counsel hereby represent the following:

(i) No counsel to any party in these cases authored this brief in whole or in part.

(ii) Neither any party nor any party's counsel contributed money that was intended to fund the preparation or submittal of this brief.

(iii) No person—other than *amici curiae* ACC, API, the Chamber, NAM, and NMA, their members, or their counsel—contributed money that was intended to fund the preparation or submittal of this brief.

## INTRODUCTION AND SUMMARY OF ARGUMENT

EPA's rules allow interprecursor trading, including use of banked allowances, for meeting the Clean Air Act's (the "Act") ozone offset requirements in a way that realizes the dual statutory mandate of environmental protection while fostering economic expansion. The parties' briefs detail the several Act provisions that touch upon this case. But the rules and principles at issue here are actually quite straightforward.

The Act requires EPA to establish national ambient air quality standards ("NAAQS" or "standards") for "criteria" pollutants EPA has identified. 42 U.S.C. §§ 7408, 7409. One of those pollutants is ozone. When data show that an area of the country does not meet a NAAQS, EPA designates it a "nonattainment" area. That designation subjects the area to a number of requirements intended to bring it into attainment. *Id.* §§ 7502, 7503, 7511a. Among those is the requirement that newly constructed major sources or existing major sources that undergo a major "modification" within a nonattainment area obtain emission "offsets." *Id.* §§ 7502(c)(5), 7503(a)(1), (c)(1). The offset requirement is implemented through a preconstruction permitting process known as "nonattainment new source review." Under the program, covered sources cannot begin construction unless the emissions to be added by the new or modified sources are offset by emission reductions from existing sources. Typically, a company obtains those reductions

from other facilities it owns or by purchasing emission credits from another company that has reduced its emissions.

For most criteria pollutants, the offset concept is fairly simple. For example, a new source of sulfur dioxide in an area that is nonattainment for the sulfur dioxide NAAQS must secure a sufficient amount of offsetting sulfur dioxide reductions. The concept is more complicated for ozone, which facilities generally do not emit directly into the air. Instead, sources emit nitrogen oxides and volatile organic compounds, which undergo chemical reactions in the atmosphere, in the presence of sunlight, that result in formation of ozone.<sup>1</sup> Accordingly, the Act and EPA's implementing regulations refer to nitrogen oxides and volatile organic compounds as ozone precursors.

In 2015, EPA revised the ozone NAAQS by setting a new, lower level of 0.070 parts per million. 80 Fed. Reg. 65,292 (Oct. 26, 2015). Subsequently, EPA promulgated a rule governing implementation of the 2015 ozone standards. 83 Fed. Reg. 62,998 (Dec. 6, 2018) ("2018 Rule"), JA\_\_\_\_. The 2018 Rule addressed the complication of obtaining offsets intended to protect against ozone pollution when sources themselves only directly emit, and thus can only directly control,

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<sup>1</sup> See generally EPA, Ground-level Ozone Basics, <https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics> (last visited Nov. 7, 2019).

ozone's precursors. In the 2018 Rule, consistent with longstanding policy,<sup>2</sup> EPA reaffirmed that a source that will add new emissions of either ozone precursor could use reductions of either precursor to satisfy the Act's offset requirements, and therefore promulgated the interprecursor trading provisions for ozone. *Id.* at 63,017-18, JA \_\_\_ - \_\_\_.<sup>3</sup> Thus, a new source of volatile organic compounds can offset those emissions with an appropriate quantity of reductions in nitrogen oxides, and vice versa.

To make an interprecursor trade, EPA requires that states, aided by sources, demonstrate that the reductions in one precursor will have an equivalent or greater impact on ozone formation than reductions in the other precursor. Specifically, the 2018 Rule calls on states to use air quality models to develop interprecursor trading ratios and demonstrate "that such ratio(s) provide an equivalent or greater air quality benefit with respect to ground level ozone concentrations in the ozone nonattainment area than an offset of the emitted precursor would achieve." *Id.* at 63,016, JA \_\_\_.

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<sup>2</sup> The 2018 interprecursor trading provisions codify and expand upon longstanding EPA policy encouraging such trading for ozone precursors. *See* 2018 Rule at 63,016 & n.37, JA \_\_\_.

<sup>3</sup> Petitioners also challenge the interprecursor trading provisions of EPA's 2015 ozone implementation rule for the 2008 ozone NAAQS. 80 Fed. Reg. 12,264 (Mar. 6, 2015). The arguments in this brief apply with equal weight to that challenge.

Petitioners and *amicus* Caring for Pasadena Communities (“CPC”) contend the Act mandates that emissions of each precursor be offset by corresponding reductions in that precursor alone. Pet. Br. 26; CPC Br. 17. EPA fully explains and justifies the conclusion that the Act is ambiguous in this respect. EPA Br. 14-24. Moreover, EPA has provided for a process to ensure that offsets obtained under the interprecursor trading provisions will yield overall ozone benefits that are equal to or greater than the ozone reductions that would result from the approach preferred by Petitioners and CPC. Accordingly, the 2018 Rule gives full effect to the congressional intent behind the statutory offset requirements.

Further, the 2018 Rule’s interprecursor trading provisions are part of a long, successful history of using emissions trading, where authorized by the Act, to achieve air quality improvements in the most efficient manner and that may have been unrealistic or caused avoidable harms in the absence of trading. Other Clean Air Act trading programs have frequently relied, in part, on “banking” of emission reductions, an element of the interprecursor trading provisions Petitioners also challenge. *See* Pet. Br. 32-34. The longstanding use of these market-based programs and flexible mechanisms, and, as discussed below, their approval by the federal courts reinforce the conclusion that the 2018 Rule’s interprecursor trading provisions are lawful and appropriate.

Petitioners and CPC also attack the interprecursor trading provisions as unreliable on the grounds that they purportedly rest on flawed technical assumptions that will cause more air pollution in contravention of the Act. Pet. Br. 16, 28; CPC Br. 18-21. But they do not, and cannot, show this has happened or will happen. They confuse the issue by ignoring the distinction between reductions in ozone *precursors* and reductions in ozone itself, and rely on conjectural assumptions that states will not conduct the modeling or calculate resulting trading ratios correctly. *See* Pet. Br. 27-28. They dismiss EPA's exhaustive technical support for the interprecursor trading provisions.

Finally, Petitioners and CPC denigrate EPA's attempt to embrace flexibility for regulated sources and encourage economic development while satisfying the Act's objectives. Pet. Br. 31; CPC Br. 9. They ignore congressionally determined policies underlying the Act and the very real benefits already provided by interprecursor trading.

### ARGUMENT

#### **I. Emissions Banking Plays an Important and Effective Role in Satisfying the Clean Air Act Requirements at Issue.**

Petitioners oppose the banking and use of banked offsets of ozone precursors by suggesting banked reductions are not "actual" reductions and that there must be a reduction in "currently existing, real" emissions to provide a benefit. Pet. Br. 20.

Similar arguments against emissions banking have repeatedly failed because they are completely misplaced.

Section 110 of the Act, which governs development and approval of state plans to implement the NAAQS, specifically authorizes market-based economic incentive programs, including banking. 42 U.S.C. § 7410(a)(2)(A); *Wisconsin v. EPA*, 938 F.3d 303, 321 (D.C. Cir. 2019) (rejecting challenge to banking provisions of Cross State Air Pollution Update Rule) (per curiam). Indeed, over the last 40 years, EPA has established or implemented at least five significant Clean Air Act programs that allow allowance trading and banking. *See, e.g., Michigan v. EPA*, 213 F.3d 663, 686 (D.C. Cir. 2000) (per curiam) (noting NOx Budget Trading Program provided for allowance banking); *North Carolina v. EPA*, 531 F.3d 896, 902, 912 (D.C. Cir. 2008) (per curiam) (same for Acid Rain Program and Clean Air Interstate Rule). Those programs allow banking because “[b]anking of allowances for later use ... creates incentives to make early emission reductions, which often result in improved air quality earlier than otherwise required.” 81 Fed. Reg. at 74,504, 74,561 (Oct. 26, 2016).

There is nothing “unreal” about incentivizing early reductions that lead to lasting improvements. Trading and banking are established tools that states and EPA have used to achieve greater environmental improvements earlier in time and at lower cost than less flexible tools like the offset demonstrations Petitioners and

CPC advocate. For these reasons, and those explained by EPA, EPA Br. at 30-34, EPA's authorization of interprecursor trading and banked emission offsets should be upheld.

## **II. Precedent Under Other Clean Air Act Programs Supports Interprecursor Trading.**

Many of EPA's emission trading programs have been pollutant-specific, but interpollutant trading is not unique to the 2018 Rule. Precedent under other Clean Air Act programs provides support for the interprecursor trading provisions of the 2018 Rule.

The most direct analogue is the interpollutant trading provisions for nonattainment new source review offsets under EPA's 2008 New Source Review Implementation Rule for fine particulate matter.<sup>4</sup> 73 Fed. Reg. 28,321 (May 16, 2008) ("2008 Rule"). Those provisions function almost exactly as the provisions at issue here, except that under the 2008 Rule, offset ratios must be established in a state implementation plan and cannot be developed on a case-by-case basis in individual permits. *See id.* at 28,339. States have successfully used those interprecursor provisions. NMA member Kennecott Utah Copper, for instance, relied on these provisions—and banked sulfur dioxide emissions—to offset emissions for a molybdenum autoclave process facility. Those banked emission

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<sup>4</sup> Fine particulate matter (or "PM<sub>2.5</sub>") is also a criteria air pollutant subject to NAAQS. 40 C.F.R. § 50.18.



reductions offset emissions from the project, but also allowed development of a new combined heat and power system to support the facility. Utah Department of Environmental Quality, Approval Order (Mar. 18, 2013), Attachment A. In an evaluation of that project, EPA projected that system would reduce nitrogen oxide emissions by 84% and sulfur dioxide emissions by nearly 99% compared to relying on an equivalent separate heat and power system. Letter from Gary McNeil, U.S. EPA Combined Heat and Power Partnership Program, to Stephen Sands, Kennecott Utah Copper, at 1 (Oct. 28, 2010), Attachment B.

EPA has also taken conceptually similar action in other rulemakings under the Act's visibility provisions. The Act's visibility, or "regional haze," program<sup>5</sup> is relevant here because, much as ozone concentrations are affected by nitrogen oxides and volatile organic compounds, concentrations of visibility-impairing particulate matter are affected by emissions of sulfur dioxide and nitrogen oxides. And, much as the two categories of ozone precursors have variable effects on ozone formation, sulfur dioxide and nitrogen oxide emissions affect visibility in different ways and different amounts, varying due to complex factors. Nevertheless, EPA relies on models to allow sources to opt for different relative levels of control for sulfur dioxide and for nitrogen oxides, so long as the requisite

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<sup>5</sup> 42 U.S.C. §§ 7491, 7492; 40 C.F.R. §§ 51.301-.309.

level of visibility protection is achieved. This was illustrated most clearly in the regional haze state implementation plan for Coronado Generating Station (“Coronado”), which EPA approved in 2017. 82 Fed. Reg. 46,903 (Oct. 10, 2017). That plan requires Coronado to decide each year among three operating scenarios that are characterized by relatively greater control of nitrogen oxide emissions or, alternatively, of higher sulfur dioxide emissions. *See* 82 Fed. Reg. 19,333, 19,336 Tbl. 1 (Apr. 27, 2017) (proposed rule, summarizing operating scenarios). Arizona used modeling to determine that these various control strategies would produce requisite degrees of visibility protection and concluded that the flexible emission control protocol would produce better visibility results at less cost than a more traditional requirement of inflexible limits for each pollutant. *See id.* at 19,338-43 (describing state evaluation).

EPA and states have taken similar actions many times under the regional haze program. Many facilities subject to the program became subject to “alternatives” to inflexible, unit-specific emission limits for individual pollutants that would otherwise have been required under the “best available retrofit technology” requirement. Those alternative plans typically came about in the following manner:

- EPA or a state identified emission control requirements and related emission rate limits for individual units for sulfur dioxide or nitrogen oxides.

- Sources, states, and EPA developed alternative emission reduction plans that could achieve overall greater visibility improvement with different approaches to emission reduction and different resulting levels of nitrogen oxide and sulfur dioxide emissions.

These alternative plans often consisted of multi-unit facilities opting to shut down one or more units, while operating the remaining units at higher emission rates than would have been allowed under the normal rules. The result could have meant, for example, more nitrogen oxides and less sulfur dioxide, or vice versa. But in any case, the new mix of resulting pollutants would yield greater visibility improvements than the conventional unit-by-unit, pollutant-by-pollutant approach. This “alternative” approach was reflected, for example, in visibility-improvement plans for San Juan Generating Station, 79 Fed. Reg. 60,985 (Oct. 9, 2014), Navajo Generating Station, 79 Fed. Reg. 46,514 (Aug. 8, 2014), and Four Corners Power Plant, 77 Fed. Reg. 51,620 (Aug. 24, 2012); *see* 71 Fed. Reg. 60,612 (Oct. 13, 2006) (promulgating criteria for approval of alternative rules).

Interpollutant exchanges supported by modeling have allowed sources to comply with Clean Air Act programs and achieve important air quality goals at lower costs. EPA’s use of these flexible tools under other provisions of the Act supports their use in the 2018 Rule.

### **III. The Interprecursor Trading Provisions Are Designed To Ensure Sources Achieve Meaningful Emission Reductions that Satisfy the Act's Offset Requirements.**

EPA established rigorous preconditions for interprecursor trading. As the Agency noted in the 2018 Rule, the interprecursor trading program for ozone was actually the codification of “longstanding” EPA policy. 83 Fed. Reg. at 63,016, JA\_\_\_\_. That codification added new criteria that states must abide by if they implement interprecursor trading. Those criteria are designed to ensure that any trade is technically supported and is demonstrated to “have an equivalent or greater air quality benefit” than a reduction in the emitted precursor. *Id.* The methodology a state adopts for conducting interprecursor trades and, in particular, for developing trading ratios, including the model the state will use, must be added to a state’s implementation plan that is subject to EPA review and approval or disapproval. *Id.* at 63,017, JA\_\_\_\_. Any default ratios adopted by a state and included in its state implementation plan must undergo periodic reviews to ensure they remain valid. *Id.* at 63,018, JA\_\_\_\_.

Moreover, EPA has not left the states to navigate the technical matters on their own. As the 2018 Rule explains, EPA has recently updated its Guideline for Air Quality Models to “provide[] greater clarity regarding the use of chemical transport modeling to estimate single-source ozone impacts from precursors.” *Id.* EPA has also developed technical guidance advising states on how to undertake

proper demonstrations that interprecursor trading will satisfy EPA's equivalent or greater ozone reduction criterion. EPA, Technical Guidance for Demonstration of Inter-Precursor Trading (IPT) for Ozone in the Nonattainment New Source Review Program, EPA-454/R-18-004 (May 2018), EPA-HQ-OAR-2016-0202-0132 ("Technical Guidance"), JA \_\_\_ - \_\_\_.

Despite these safeguards and extensive EPA technical work, Petitioners and CPC argue the interprecursor trading provisions must be vacated because a mistake could be made and a bad trade might occur. First, they argue trading could allow more volatile organic compounds or nitrogen oxides to be emitted than a more rigid, precursor-by-precursor offset regime would allow. Pet. Br. 16; CPC Br. 15. Second, they argue that trading could lead to greater ozone concentrations than a regime that disallows trading. Pet. Br. 28; CPC Br. 4. The first argument misses the point, and the second is mere speculation.

As EPA said in the 2018 Rule, "ozone is the regulated pollutant at issue (rather than NO<sub>x</sub> or VOC, which are both recognized precursors to the formation of ground-level ozone concentrations)." 83 Fed. Reg. at 63,016, JA \_\_\_; EPA Br. 14-15. Indeed, the offset requirement applies to areas that are nonattainment for the *ozone* NAAQS. The point of the offset requirement is to help bring those areas into attainment with those ozone standards.

Petitioners argue that nitrogen oxides and volatile organic compounds are both “harmful” in their own right, and that reducing those pollutants in specific amounts is an important environmental outcome. Pet. Br. 5-6. This misses the point of the offset requirement; it is irrelevant to the goal of eliminating *ozone* concentrations that violate the NAAQS *for ozone*. Indeed, nitrogen oxides also constitute a criteria air pollutant in their own right, subject to their own NAAQS. 40 C.F.R. § 50.11 (nitrogen oxide standards with nitrogen dioxide as the indicator). That pollutant also is subject to the Act’s nonattainment provisions, including offset requirements. 42 U.S.C. § 7503(c)(1); *see also id.* §§ 7514, 7514a. As such the ozone offset requirement is not the vehicle for addressing effects of nitrogen oxide and volatile organic compounds apart from those substances’ role in forming ozone.

Regarding their argument that the interprecursor trading provisions will increase ozone, Pet. Br. 4; *accord* CPC Br. 4, Petitioners accuse EPA of merely “hypothesiz[ing] ... the tradeoff will somehow result in the same level of ozone reduction,” Pet. Br. 16. But, as the following paragraphs discuss, it is Petitioners—in speculating that EPA’s methodology might be “inconsistently applied” or “subject to manipulation,” *id.* at 24—that rest their arguments on unsupported hypotheses.

EPA has established firm requirements for interprecursor trading, done substantial technical work to support that trading, and incorporated safeguards to prevent interprecursor trades that do not achieve equal or greater ozone reductions than emission reductions achieved without trading. EPA's Technical Guidance explains what the available modeling systems can achieve. Technical Guidance at 3, JA \_\_\_\_\_. It describes a recommended process for sources and states to establish a modeling protocol, working in tandem with the appropriate EPA regional offices. *Id.* at 4, JA \_\_\_\_\_. It makes specific recommendations on numerous issues, including:

- That states use the modeling platform that was most recently used to prepare ozone attainment demonstrations to support interprecursor trading. *Id.*
- Use of meteorology data that is generally conducive to ozone formation, including meteorology during ozone season and well-characterized ozone episodes to capture relevant wind patterns and formation regimes. *Id.* at 4-5, JA \_\_\_\_ - \_\_\_\_.
- The need for model performance evaluation and how to conduct it. *Id.* at 5, JA \_\_\_\_\_.

The Technical Guidance also explains that the modeling used to support interprecursor trading and to develop appropriate trading ratios is, in fact, the same modeling used for other regulatory purposes under the Act. By specifying use of a

modeling platform that is also used for ozone attainment demonstrations, *id.* at 4, JA\_\_\_\_, EPA ensures consistency with the modeling used in “implement[ing] national policy on air quality modeling requirements as embodied in the Clean Air Act (CAA), the Ozone SIP [state implementation plan] Requirements Rule, the PM<sub>2.5</sub> [particulate matter] SIP Requirements Rule, and the Regional Haze Rule.” EPA, Modeling Guidance for Demonstrating Air Quality Goals for Ozone, PM<sub>2.5</sub>, and Regional Haze, EPA 454/R-18-009, at 8 (Nov. 2018), [https://www3.epa.gov/ttn/scram/guidance/guide/O3-PM-RH-Modeling\\_Guidance-2018.pdf](https://www3.epa.gov/ttn/scram/guidance/guide/O3-PM-RH-Modeling_Guidance-2018.pdf) (footnotes omitted). In recommending use of a chemical transport model such as the photochemical grid models Comprehensive Air Quality Model with Extensions (CAMx) and Community Multiscale Air Quality (CMAQ), Technical Guidance at 3, JA\_\_\_\_, the Technical Guidance is also consistent with the regulatory requirements of EPA’s Guideline on Air Quality Models. 40 C.F.R. pt. 51, App. W § 5.3.2 (recommending use of chemical transport models to address single-source ozone impacts).

States implementing interprecursor trading are following EPA’s lead and applying rigorous criteria in developing their interpollutant trades. CPC notes, in particular, its concern over the number of permit applications in Texas and that the Houston area has made use of one interprecursor trade per year, on average. CPC



Br. 11, 19. They fail to address the steps Texas has taken to ensure meaningful and effective interprecursor trading.

Respondent-Intervenor Texas Commission on Environmental Quality prepared guidance on its implementation of the interprecursor trading provision. Guidance on the Inter-Pollutant Use of Credits for Nonattainment New Source Review Permit Offset Requirements (June 2019), <https://www.tceq.texas.gov/assets/public/implementation/air/banking/guidance/inter-pollutant.pdf>, (“Texas Guidance”), JA \_\_\_\_. The Texas Guidance goes above and beyond the EPA-imposed requirements. First, Texas will only review and approve interprecursor trades on a case-by-case basis; it will not establish default trading ratios that any source can use. Texas Guidance at 1, JA \_\_\_\_. Further, Texas notes that EPA can participate in the public comment process during the State’s review of any proposed trade, consistent with the 2018 Rule, but Texas goes further and indicates that it will treat EPA’s comments as a de facto disapproval of the interprecursor trade. *Id.* The Texas Guidance also describes the specific modeling requirements developed by the state, the state’s requirements for model verification, the criteria by which the state will judge whether a particular trade will not adversely affect air quality, and substantial documentation requirements that must be submitted to the state. *Id.* at 2-3, 6, JA \_\_\_\_ - \_\_\_\_, \_\_\_\_\_. Petitioners and CPC give no concrete reason for suspecting Texas or any state implementing

interprecursor trading will abuse the program or implement it irresponsibly, let alone an example of such an occurrence.

Finally, Petitioners claim interprecursor trading is problematic because, under some conditions, increased nitrogen oxide emissions can promote decreased ozone levels, and trading volatile organic compound reductions for nitrogen oxide reductions in those circumstances would, purportedly, be arbitrary. Pet. Br. 29-30 n.10. Of course, such a trade would not be permitted under EPA's methodology because a workable trading ratio would not exist. The point is that Petitioners' rigid pollutant-by-pollutant approach to offsets would do nothing to address the problem of reducing ozone if the precursor being offset is not the proximate cause of ozone formation. An interprecursor trade, on the other hand, can actually be used to ensure better ozone results in such a situation.

Petitioners and CPC ignore extensive technical analysis supporting interprecursor trading. They ignore that the states are taking EPA's directives to heart. They provide no evidence that trading is increasing ozone concentrations. Their petition should be denied.

#### **IV. The Flexibility that Interprecursor Trading and Banking Allows Is Crucial to Businesses and Provides Important Long-Term Environmental Benefits.**

Interprecursor trading brings much-needed flexibility to regulated sources in nonattainment areas, and it effectuates the intent of Congress to balance economic

growth and air quality improvement. The significant economic hardships nonattainment areas face make the flexibility provided by interprecursor trading especially valuable with increasingly more stringent ambient standards. The results are already apparent. States that have implemented interprecursor trading have already seen significant environmental and economic benefits.

**A. Congress Recognized the Importance of Economic Health in Nonattainment Areas.**

Petitioners and CPC challenge EPA's efforts to, as they frame it, strike a balance between providing flexibility to meet offset requirements and complying with the Act. Pet. Br. 31; CPC Br. 8-9. Their arguments disregard that Congress wrote that flexibility into law. *See Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 851 (1984). As the Supreme Court explained, in promulgating the 1977 Amendments to the Act, Congress sought "to accommodate the conflict between the economic interest in permitting capital improvements to continue and the environmental interest in improving air quality" in nonattainment areas. *Id.* Indeed, when drafting the 1977 Amendments to the provisions governing new source review, Congress recognized that a policy that "simply precludes all industrial growth in these [nonattainment] areas would be unacceptable." Hearings Before the Subcomm. on Health & the Env't of the H. Comm. on Interstate & Foreign Commerce, *reprinted in* 5 A LEGISLATIVE HISTORY OF THE CLEAN AIR ACT AMENDMENTS OF 1977, at 3545, 3549 (Aug. 1978) (statement of Hon. Douglas W.

Costle, Adm'r, EPA), JA\_\_\_\_. It codified that concern in section 101 of the Act, which declares that one of the purposes of Title I of the Act is “to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population.” 42 U.S.C. § 7401(b)(1). Similar concerns appear in section 109, which requires the Clean Air Scientific Advisory Committee, a body created to provide independent advice to EPA on the technical bases for the NAAQS, to study adverse economic effects that may result from various NAAQS implementation strategies. 42 U.S.C. § 7409(d)(2)(C).

For nearly two decades, EPA has implemented this congressional intent by allowing states to utilize ozone interprecursor trading. *See* EPA, Improving Air Quality with Economic Incentive Programs, EPA-452/R-01-001, at 244 (Jan. 2001), <https://www.epa.gov/sites/production/files/2015-07/documents/eipfin.pdf>, JA\_\_\_\_. Accordingly, the Agency is not balancing flexibility for sources with Clean Air Act compliance; flexibility is a part of compliance, and EPA is ensuring that the Act is implemented as intended by Congress.

**B. Nonattainment Areas Face Significant Economic Risks.**

Despite EPA’s best efforts to balance economic growth with improvements in air quality, it is widely recognized that nonattainment areas, relative to attainment areas, are burdened with the costs of stringent environmental regulation.

In addition to offsetting emissions, new and modified sources in nonattainment areas are subject to demanding permitting and pollution control requirements. *See* 42 U.S.C. § 7503. While these regulations have the important purpose of improving air quality, they also have unintended, far-reaching consequences that affect more than just regulated sources.

Between 1972 and 1987, it is estimated that regulation of sources in nonattainment areas caused the loss of “approximately 590,000 jobs, \$37 billion in capital stock, and \$75 billion (in 1987 dollars) of output in polluti[on-intensive] industries.” *See* Michael Greenstone, *The Impacts of Environmental Regulations on Industrial Activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufacturers*, 110 J. POL. ECON. 1175, 1213 (2002). Designation as a nonattainment area for ozone has been linked to a decline in new project construction and the loss of facilities to more advantaged areas. Randy Becker & Vernon Henderson, *Effects of Air Quality Regulations on Polluting Industries*, 108 J. POL. ECON. 379, 414-15 (2000). A study analyzing the economic effects of a nonattainment designation for the 2008 ozone NAAQS concluded that those nonattainment areas experienced cumulative “losses of \$56.5 billion in total wage earnings, \$690 in pay per worker, and 242,000 jobs between 2008 and 2013.” Sam Batkins et al., *The County-Level Effects of EPA’s 2008 Ozone Standards on Employment and Pay*, AM. ACTION FORUM (Nov. 5, 2015),

<https://www.americanactionforum.org/research/the-county-level-effects-of-epas-2008-ozone-standards-on-employment-and-pay/> (last visited Nov. 7, 2019).

The costs associated with a nonattainment designation, and the reasons why a state might try to mitigate them through interprecursor trading, are even more apparent when viewed at a more localized level. Texas did just that in a study of the impacts of the nonattainment designation for San Antonio for the 2015 ozone NAAQS. That designation was estimated to cost the area up to \$1,207,800,000 annually. Steve Nivin et al., *Potential Cost of Nonattainment in the San Antonio Metropolitan Area* at 64 (Feb. 21, 2017),

<https://www.tceq.texas.gov/assets/public/agency/nc/air/Appendix-B-for-EPA-HQ-OAR-2018-0635.pdf>. Those costs, both direct and indirect, come from additional permitting expenses, delays in construction of projects and roads, loss of business development and expansion, vehicle inspection and repair costs, and cuts in jobs. *Id.* at 29-36. Project-construction delays due to the new source review permitting process were alone estimated to reduce gross regional product by \$1.4 billion to \$1.6 billion. *Id.* at 31. The study also found that installing emissions control systems and hiring staff to maintain them would cost industrial sources \$1 million to \$1.5 million annually. *Id.* at 32. The analysis concluded that these additional costs, coupled with the potential unavailability of offsets, could deter business start-ups and expansions in the area. *Id.*

**C. States Are Recognizing the Benefits of Interprecursor Trading.**

Given the increasingly harsh economic realities facing nonattainment areas, states have increasingly recognized the environmental and economic benefits of adopting interprecursor trading. Most recently, the Maryland Department of the Environment amended its regulations to allow for ozone interprecursor trading after determining that no offsets for volatile organic compounds were available or expected to become available in the Baltimore metropolitan ozone nonattainment area. 45 Md. Reg. 129 (Jan. 19, 2018), JA\_\_\_. Maryland determined that allowing sources to offset their volatile organic compound emissions with nitrogen oxide reductions would allow businesses in the area to expand, create jobs, limit the relocation of businesses and jobs, and result in air quality improvements due to the removal of additional nitrogen oxide emissions. *Id.* at 130, JA\_\_\_. Maryland and other similarly situated states have demonstrated that interprecursor trading provides equal environmental benefits as conventional emission offsetting, while granting flexibility needed to avoid economic stagnation.

**D. Projects Developed with Interprecursor Trading Create Environmental Benefits.**

Petitioners and CPC imagine scenarios where interprecursor trading will lead to increased pollution while ignoring the real and significant environmental benefits that trading has already produced. In addition to achieving meaningful reductions in ozone precursors, interprecursor trading also allows newer, cleaner

facilities to replace older, less-efficient sources in areas with low air quality.

Several recent projects constructed with the help of interprecursor trading highlight the environmental benefits that can be achieved by granting industry this flexibility.

### **1. Jackson Generation (Illinois)**

Last year, Illinois EPA approved Jackson Generation's use of interprecursor trading to offset emissions of nitrogen oxides associated with the construction and operation of a 1,200 megawatt natural gas-fired combined cycle electric power plant located in the Chicago-Naperville ozone nonattainment area. The facility has not completed construction, but will offset its nitrogen oxide emissions with reductions in volatile organic compound emissions by shuttering five older facilities.<sup>6</sup> Illinois EPA, Bureau of Air, Permit Section, Project Summary for a Construction Permit Application from Jackson Generation, LLC for an Electrical Generating Facility in Elwood, Illinois at 10 (received Apr. 4, 2017) ("Illinois EPA Project Summary"), Attachment C. In granting the offset trade, the state agency explained that the Chicago-Naperville ozone nonattainment area is "VOM limited," meaning that levels of ozone in this area are "more effectively lowered by reducing emissions of VOM than by reducing emissions of NOx." Illinois EPA,

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<sup>6</sup> Illinois EPA refers to volatile organic compounds as volatile organic materials, or VOM.



Bureau of Air, Permit Section, Responsiveness Summary for Public Questions and Comments on the Construction Permit Application from Jackson Generation LLC for an Electric Power Plant in Elwood at 17 (Dec. 2018), Attachment D. Thus, the state agency concluded that interprecursor trading allowed for “an equivalent or greater benefit for ozone air quality” in the area. *Id.*

The project’s use of modern combined-cycle technology will enable the facility to adapt to fluctuations in electrical generation from renewable sources. Therefore, the facility will be able to operate as a backup source of power to support renewable power generation from wind and solar when it is low, and operate at less than 25% full load during times of high renewable output. Illinois EPA Project Summary at D-1.

From an economic standpoint, the facility is expected to create several hundred construction jobs during the construction phase of the project, which is expected to last 36 months, as well up to 35 full-time employees when the plant is fully operational. Jackson Generation, *Frequently Asked Questions*, <https://jacksongeneration.com/frequently-asked-questions/> (last visited Nov. 7, 2019).

## **2. Petra Nova – W.A. Parish Project (Texas)**

Interprecursor trading was crucial to the permitting and construction of the Petra Nova Carbon Capture and Sequestration project at the W.A. Parish plant in

the Houston-Galveston-Brazoria ozone nonattainment area. To build this project, the facility required approval from EPA and Texas to offset its projected volatile organic compound emission increases with banked nitrogen oxide reductions. EPA concurred with Texas's approval of the interprecursor trading in 2012. Letter from Carl Edlund, Director, Multimedia Planning and Permitting Division, EPA Region 6, to Craig Eckberg, NRG Texas Power LLC (Oct. 12, 2012), Attachment E.

The Petra Nova facility is the world's largest post-combustion carbon-capture system and began operation in January 2017. It is able to capture at least 90 percent of the carbon dioxide released from Unit 8 at the W.A. Parish plant, preventing the release of more than 5,000 tons of the greenhouse gas. *See* U.S. Energy Information Admin., Today in Energy, *Petra Nova is One of the Two Carbon Capture and Sequestration Power Plants in the World* (Oct. 31, 2017), <https://www.eia.gov/todayinenergy/detail.php?id=33552>. In total, the facility is estimated to capture over 1 million tons of carbon dioxide annually. *Id.* The Petra Nova project demonstrates that interprecursor trading can allow development of facilities that capture and sequester carbon dioxide, while also reducing ozone levels.

In these cases, applying a pollutant-by-pollutant approach to offsets would have meant more volatile organic compound emissions and less nitrogen oxide

emissions in Illinois and more nitrogen oxide emissions and fewer volatile organic compound emissions in Texas. Under a pollutant-by-pollutant approach, overall ozone levels might have been higher than they were with interpollutant trading. An interpretation of the Act that achieves the opposite of the Act's goals frustrates the statutory purpose and benefits no one.

### CONCLUSION

For the foregoing reasons and those stated by EPA, the petitions for review should be denied.

Dated: November 8, 2019

Respectfully submitted,

/s/ Aaron M. Flynn

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**CERTIFICATE OF COMPLIANCE**

Pursuant to Federal Rules of Appellate Procedure 29(a)(4)(G) and 32(g)(1), I hereby certify that the foregoing brief complies with the type-volume limitations of Federal Rules of Appellate Procedure 29(a)(5) and 32(a)(7)(B) because it contains 6,095 words (as determined by the Microsoft Word 2016 word-processing system used to prepare the brief), excluding those portions exempted by Federal Rule of Appellate Procedure 32(f) and D.C. Cir. R. 32(e)(1), which is not more than half the length of each of the principal briefs of the parties.

I further certify that this brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type-style requirements of Federal Rule of Appellate Procedure 32(a)(6) because it has been prepared in a proportionally spaced typeface using the Microsoft Word 2016 word-processing system in 14-point Times New Roman font.

*/s/ Aaron M. Flynn*

\_\_\_\_\_  
Aaron M. Flynn

**CERTIFICATE OF SERVICE**

I hereby certify that on this 8th day of November, 2019, the foregoing brief was served electronically on all counsel of record through the Court's CM/ECF system.

*/s/ Aaron M. Flynn* \_\_\_\_\_

Aaron M. Flynn

**ATTACHMENTS**

**INDEX OF ATTACHMENTS**

- Attachment A Utah Department of Environmental Quality Approval Order (Mar. 18, 2013)
- Attachment B Letter from Gary McNeil, U.S. EPA Combined Heat and Power Partnership Program, to Stephen Sands, Kennecott Utah Copper (Oct. 28, 2010)
- Attachment C Illinois EPA, Bureau of Air, Permit Section, Project Summary for a Construction Permit Application from Jackson Generation, LLC for an Electrical Generating Facility in Elwood, Illinois (received Apr. 4, 2017) (excerpt)
- Attachment D Illinois EPA, Bureau of Air, Permit Section, Responsiveness Summary for Public Questions and Comments on the Construction Permit Application from Jackson Generation LLC for an Electric Power Plant in Elwood (Dec. 2018) (excerpt)
- Attachment E Letter from Carl Edlund, Director, Multimedia Planning and Permitting Division, EPA Region 6, to Craig Eckberg, NRG Texas Power LLC (Oct. 12, 2012)



**ATTACHMENT A**



State of Utah

GARY R. HERBERT  
*Governor*

GREG BELL  
*Lieutenant Governor*

Department of  
Environmental Quality

Amanda Smith  
*Executive Director*

DIVISION OF AIR QUALITY  
Bryce C. Bird  
*Director*

DAQE-AN103460052-13

March 18, 2013

Chris Kaiser  
Kennecott Utah Copper LLC  
4700 Daybreak Parkway  
South Jordan, UT 84095

Dear Mr. Kaiser:

Re: Approval Order: Modification to Approval Order DAQE-AN0103460046-10 to Add Equipment to the Molybdenum Autoclave Process Plant  
Project Number: N10346-0052

The attached document is the Approval Order for the above-referenced project. Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. The project engineer for this action is Nando Meli Jr., who may be reached at (801) 536-4052.

Sincerely,

Bryce C. Bird  
Director

BCB:NM:kw

cc: Mike Owens  
Salt Lake Valley Health Department

**STATE OF UTAH**

**Department of Environmental Quality**

**Division of Air Quality**

**APPROVAL ORDER: Modification to Approval Order DAQE-AN0103460046-10 to Add Equipment to the Molybdenum Autoclave Process Plant**

**Prepared By: Nando Meli Jr., Engineer**  
**Phone: (801) 536-4052**  
**Email: nmeli@utah.gov**

**APPROVAL ORDER NUMBER**

**DAQE-AN103460052-13**

**Date: March 18, 2013**

**Kennecott Utah Copper LLC**  
**Smelter & Refinery**

**Source Contact:**

**Ryan Evans, Senior Environmental Engineer**  
**Phone: (801) 569-6449**  
**Email: ryan.evans@riotinto.com**



**Bryce C. Bird**  
**Director**

## Abstract

Kennecott Utah Copper LLC (KUC) is in the process of building a new Molybdenum Autoclave Process (MAP) plant. During the construction KUC has modified the design and has submitted an NOI to modify the AO DAQE-AN0103460046-10. The design changes have resulted in the modification of the cooling tower. KUC will also add a natural gas-fired boiler, calciner, reoxidizer, two dryers, and pollution control equipment.

The MAP Plant is located in Salt Lake County which is a non-attainment area of the NAAQS for PM<sub>10</sub>, PM<sub>2.5</sub> and SO<sub>2</sub>, and is a maintenance area for Ozone. Title V of the 1990 Clean Air Act applies to this source. The emissions, in TPY, will change as follows: PM<sub>10</sub> = -1.23, PM<sub>2.5</sub> = -4.35, SO<sub>2</sub> = +1.20, CO = +10.29, NO<sub>x</sub> = +7.58, VOC = +0.89 and HAPs = +0.01. The MAP Plant site wide emissions will be (TPY): PM<sub>10</sub> = 13.11, PM<sub>2.5</sub> = 9.99, SO<sub>2</sub> = 2.43, NO<sub>x</sub> = 35.57, CO = 39.54, VOC = 6.71, HAPs = 0.36 and CO<sub>2e</sub> = 74,755. R307-403-9 states that when a source is constructed or modified in stages that the allowable emission from all such stages shall be added together in determining the applicability of R307-403. The MAP plant has been constructed in stages and therefore will be required to offset the combined PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> which is 51.11 TPY at a ratio of 1.2:1. This requires an offset by KUC of 61.33 TPY for the combined PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub>. In 2010 KUC modified the MAP and increased the combined PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> PTE to 43.56 TPY and this was offset at that time. With these credits, the remaining credits required for this modification are 61.33 - 43.56 = 17.77 TPY. KUC has met this requirement with 18.0 TPY of SO<sub>2</sub> ERCs.

This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order. This AO is issued to, and applies to the following:

**Name of Permittee:**

Kennecott Utah Copper LLC  
4700 Daybreak Parkway  
South Jordan, UT 84095

**Permitted Location:**

Smelter & Refinery  
12000 West 2100 South  
Magna, UT 84044

**UTM coordinates:** 399000 m Easting, 4508000 m Northing, UTM Zone 12  
**SIC code:** 3331 (Primary Smelting & Refining of Copper)

### Section I: GENERAL PROVISIONS

- I.1 All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the five-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of five (5) years. [R307-415-6b]
- I.2 All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
- I.3 The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]

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- I.4 Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]
- I.5 At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]
- I.6 The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
- I.7 The owner/operator shall comply with UAC R307-150 Series. Inventories, Testing and Monitoring. [R307-150]

## Section II: SPECIAL PROVISIONS

### **II.A The approved installations shall consist of the following equipment:**

#### **II.A.1 Plantwide**

MAP Plant

#### **II.A.2 Combined Heat and Power (CHP) Unit (Turbine)**

Manufacturer	Solar Turbines, Inc.
Model	Taurus 70-10301S axial turbine with Turbine Electric Generator (TEG)
Fuel	One natural gas turbine
Maximum turbine burner rating	75.0 MMBtu/hr at 0°F and 60% relative humidity 9.0 ppm NO <sub>x</sub> @ 15% oxygen 25.0 ppm CO @ 15% oxygen

#### **II.A.3 CHP Unit (Duct Burner)**

Manufacturer	CB Energy
Model	Duct burner and heat recovery steam generator
Fuel	Natural gas
Maximum duct burner rating with TEG firing	36.0 MMBtu/hr at 0°F and 60% relative humidity 0.065 lb NO <sub>x</sub> /MMBTU/hr 0.050 lb CO /MMBTU/hr
with fresh air firing	86.0 MMBtu/hr at 0°F and 60% relative humidity 0.150 lb NO <sub>x</sub> /MMBTU/hr 0.050 lb CO /MMBTU/hr

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**II.A.4 One MAP Steam Start-up Boiler**

Maximum heat input per boiler	30.1 MMBTU/hr
Fuel type	Natural Gas
Maximum burner rating	20 ppm NO <sub>x</sub> @ 15% oxygen

**II.A.5 Support Boiler**

Maximum heat input per boiler	12 MMBTU/hr
Fuel type	Natural Gas
NO <sub>x</sub> control	Low NO <sub>x</sub> burners with FGR
Maximum burner rating	9 ppm NO <sub>x</sub> @ 15% oxygen

**II.A.6 Wet Cooling Tower with Drift Eliminator**

Maximum water flow	20,000 gallons per minute
--------------------	---------------------------

**II.A.7 Briquette Dryer**

Maximum heat input	1.85 MMBTU/hr
Fuel type	natural gas
Maximum NO <sub>x</sub> burner rating	45 ppm

One Briquette Dryer Dust Collector

Maximum air flow	19,500 actual cubic ft per minute
Filter medium	polyester felt or equivalent

**II.A.8 One Packaging Area Dust Collector**

Maximum air flow	3,200 actual cubic ft per minute
Filter medium	polyester felt or equivalent

**II.A.9 Autoclave Venturi Scrubber**

Type	Two-stage Venturi
Minimum pressure drop	38" water column
Manufacturer rated minimum control efficiency	95%*

\* This equipment specification is listed for informational purposes only.

**II.A.10 Ammonia Scrubber**

Scrubber type	Packed adsorption tower
Minimum reagent recirculation rate	60 gallons per minute
Minimum packing depth	4.5 ft*
Manufacturer rated maximum concentration to atmosphere	50 ppm by volume (ppmv) NH <sub>3</sub>

\* These equipment specifications are listed for informational purposes only.

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**II.A.11 Sulfuric Acid Scrubber**

Scrubber type	Packed adsorption tower
Minimum reagent recirculation rate	30 gallons per minute
Minimum packing depth	4 ft*
Manufacturer rated maximum concentration to atmosphere	5 ppmv H <sub>2</sub> SO <sub>4</sub>

\* These equipment specifications are listed for informational purposes only.

**II.A.12 Hydrogen Sulfide Scrubber**

Scrubber type	Packed adsorption tower
Minimum reagent recirculation rate	50 gallons per minute
Minimum packing depth	10 ft*
Manufacturer rated maximum concentration to atmosphere	5 ppmv H <sub>2</sub> S

\* These equipment specifications are listed for informational purposes only.

**II.A.13 Silos with Bin Vents and Scrubber**

Manufacturer rated minimum control efficiency	99%*
---	------

\* These equipment specifications are listed for informational purposes only.

**II.A.14 Emergency Generator**

Maximum generator rating	75 hp
Fuel Type	Propane

**II.A.15 Emergency Fire Water Pump**

Maximum generator rating	210 hp
Fuel Type	Ultra low sulfur diesel

**II.A.16 Calciner**

Maximum heat input	16 MMBTU/hr
Fuel type	natural gas
Maximum NO <sub>x</sub> burner rating	45 ppm

**II.A.17 Two Dryers**

Maximum heat input	3 MMBTU/hr (each)
Fuel type	natural gas
Maximum NO <sub>x</sub> burner rating	45 ppm

**II.A.18 Reoxidizer**

Maximum heat input	2.25 MMBTU/hr
Fuel type	natural gas
Maximum NO <sub>x</sub> burner rating	45 ppm

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**II.A.19 Solvent Extracting Lines**

Two solvent extraction lines with covers

**II.A.20 Test Lab Dust Collector**

Manufacturer rated minimum  
control efficiency 99%\*

\* These equipment specifications are listed for informational purposes only.

**II.B Requirements and Limitations****II.B.1 Limitations and Testing Requirements**

II.B.1.a Emissions to the atmosphere from the CHP Unit shall not exceed the following rates and concentrations:

Natural Gas Turbine combined with Duct Burner and with TEG Firing

Pollutant	Mass rate
NO <sub>x</sub>	5.01 lbs/hr
CO	6.34 lbs/hr

[R307-401-8]

II.B.1.b Stack testing to show compliance with the emission limitations stated in the above condition for the CHP Unit shall be performed as specified below:

Emission Point	Pollutant	Test Frequency
Natural Gas Turbine and Duct Burner with TEG Firing	NO <sub>x</sub>	#
	CO	#

# Stack testing frequency for the gas turbine and duct burner combined are at least every 12-months based on the date of the last stack test. The Director may require testing at any time.

Test required every year after initial compliance test. If a test result is less than 60.0% of the limit specified in Condition II.B.1.a for three consecutive years, then that test may be performed every three years. If at any time a test is performed that is greater than 60.0% of the limit specified in Condition II.B.1.a, then that test will be required to be performed every year. After three consecutive tests with the test results less than 60.0%, the Director may be re-petitioned for less frequent testing.

Initial compliance testing for the natural gas turbine and duct burner is required. The initial test date shall be performed within 60 days after achieving the maximum heat input capacity production rate at which the affected facility will be operated and in no case later than 180 days after the initial start up of a new emission source. [R307-401-8]



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II.B.1.c The following test methods and requirements shall be used when testing for the Combined Heat and Power Unit limitations listed above:

A. Notification

The Director shall be notified at least 30 days prior to conducting any required emission testing. A source test protocol shall be submitted to DAQ when the testing notification is submitted to the Director.

The source test protocol shall be approved by the Director prior to performing the test(s). The source test protocol shall outline the proposed test methodologies, stack to be tested, and procedures to be used. A pretest conference shall be held, if directed by the Director.

B. Sample Location

The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, or other methods as approved by the Director. An Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approved access shall be provided to the test location.

C. Volumetric Flow Rate

40 CFR 60, Appendix A, Method 2 or other testing methods approved by the Director.

D. NO<sub>x</sub> - 40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E

E. CO - 40 CFR 60, Appendix A, Method 10

F. Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above, shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Director to give the results in the specified units of the emission limitation.

G. Source Operation

For a new source/emission point, the production rate during all compliance testing shall be no less than 90% of the production capacity of the equipment. If the maximum production capacity has not been achieved at the time of the test, the following procedure shall be followed:

- 1) Testing shall be at no less than 90% of the production rate achieved to date.
- 2) If the test is passed, the new maximum allowable production rate shall be 110% of the tested achieved rate. This new allowable maximum production rate shall remain in affect until successfully tested at a higher rate. This process may be repeated until the maximum AO production rate is achieved.

For an existing source/emission point, the production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years. [R307-401-8]

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II.B.1.d After the CHP Unit becomes operational, the following limits shall not be exceeded:

- A. The amount of natural gas consumed at the MAP plant (excluding use for comfort heating) shall not exceed 1,310,153 dekatherms (MMBTU) per rolling 12-month period.
- B. The hours of operation for the duct burners firing on fresh air shall not exceed 1,314 hours per rolling 12-month period.

Compliance with the gaseous fuel consumption limitation shall be determined by gaseous fuel supplier statements and/or heat input records. Heat input records shall be determined by the BTU value of the gaseous fuel. If natural gas is not used, daily records of the BTU value of the gaseous fuel used shall be kept. The method used to determine the BTU value shall be approved by the Director. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log. Records of monthly fuel consumption and hours of operation shall be maintained on site. Records shall include the total of the latest 12 consecutive months of gas consumed as determined by the vendor billing statements and/or heat input records and hours of operation. [R307-401-8]

II.B.1.e Visible emissions from the following emission points shall not exceed the following values:

- A. All baghouses - 10% opacity
- B. All boilers, dryers, calciners, and reoxidizers - 10% opacity
- C. All natural gas-fired engines - 10% opacity
- D. All scrubbers - 15% opacity
- E. All conveyor transfer points - 15% opacity
- F. All other points - 20% opacity

Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9.

For sources that are subject to NSPS, opacity shall be determined by conducting observations in accordance with 40 CFR 60.11(b) and 40 CFR 60, Appendix A, Method 9. [R307-401-8]

II.B.1.f The operation on the 75 hp emergency generator for maintenance and testing shall not exceed 100 hours per rolling 12-month period.

To determine compliance with a rolling 12-month total, KUC shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. An hour meter shall be installed on the generator and the hours of operation shall be maintained in an operations log which shall be maintained the supervisor. Hours of operation shall be kept on a monthly basis.

Emergency generators shall be used for electricity producing operation only during the periods when electric power from the public utilities is interrupted, or for regular maintenance of the generators. Records documenting generator usage shall be kept in a log; and they shall show the date the generator was used, the duration in hours of the generator usage, and the reason for each generator usage. [R307-401-8]

## II.B.2 **Fuels**

II.B.2.a In the boiler, CHP turbine, CHP duct burner, and dryers, reoxidizer, and calciner, KUC shall only use natural gas as a fuel. [R307-401-8]

II.B.2.b In the emergency generator, KUC shall only use LP as a fuel. [R307-401-8]

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II.B.2.c In the fire water pump, KUC shall only use ultra low sulfur diesel as a fuel. [R307-401-8]

II.B.3 **Monitoring**

II.B.3.a A manometer or magnehelic pressure gauge shall be installed to measure the differential pressure across the scrubbers and dust collector. The following operating parameters shall be maintained within the indicated ranges:

A. Autoclave Scrubber

The pressure drop shall not be less than 38" water column.

B. Ammonia Scrubber

The liquid flow rate shall not be less than 60 gpm.

C. Sulfuric Acid Scrubber

The liquid flow rate shall not be less than 30 gpm.

D. Hydrogen Sulfide Scrubber

The liquid flow rate shall not be less than 50 gpm.

E. Briquette Dryer and Packaging Area Dust Collectors

The pressure drop for each baghouse shall not be less than 4.0" water column.

They shall be monitored with equipment located such that an inspector/operator can safely read the output any time. Each operating parameter listed above shall be read and recorded at a minimum of once per week. The readings shall be accurate to within the following ranges:

F. Pressure drop - Plus or minus 0.25" water column for the Autoclave Scrubber and Briquette Dryer and Packaging Area Dust Collector.

G. Liquid flow rate - Plus or minus 5 gpm for the Ammonia Scrubber, Sulfuric Acid Scrubber and Hydrogen Sulfide Scrubber.

All instruments shall be calibrated according to the manufacturer's instructions at least once every 12 months. [R307-401-8]

II.B.4 **Miscellaneous Requirements**

II.B.4.a KUC shall notify the Director in writing when the installation of the equipment listed in Condition II.A has been completed and is operational. To insure proper credit when notifying the Director, send your correspondence to the Director, attn: Compliance Section.

AOs issued by the Director in accordance with the provisions of R307-401 will be reviewed 18 months after the date of issuance to determine the status of construction, installation, modification, relocation or establishment. In 18 months from the date of this AO, the Director shall be notified in writing on the status of the plant construction and installation of the equipment. If a continuous program of construction, installation, modification, relocation or establishment is not proceeding, the Director may revoke the AO. [R307-401]

II.B.4.b The autoclave venturi scrubber shall control process streams from the autoclave circuit. This two-stage scrubber shall be sized to handle at least 24,000 acfm. All exhaust air from the

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autoclave processes shall be routed through the two-stage scrubber before being vented to the atmosphere. [R307-401-8]

- II.B.4.c The Briquette Dryer Dust Collector shall control process streams from the Briquette Dryer. This baghouse shall be sized to handle at least 19,500 acfm. All exhaust air from the Briquette Dryer shall be routed through their respective baghouse before being vented to the atmosphere. [R307-401-8]
- II.B.4.d The Packaging Area Dust Collector shall control process streams from Packaging Area. This baghouse shall be sized to handle at least 3,200 acfm. All exhaust air from the Packaging Area shall be routed through their respective baghouse before being vented to the atmosphere. [R307-401-8]
- II.B.4.e The ammonia wet scrubber shall control process vents from the solvent extraction process, purification process, crystallization process, dryer/calcliner process and the ammonia recovery. This wet scrubber shall be sized to handle at least 6,300 acfm. Exhaust air from the aforementioned processes shall be routed through the wet scrubber before being vented to the atmosphere. [R307-401-8]
- II.B.4.f The sulfuric acid wet scrubber shall control process vents from the autoclave, alkali and acid leach tanks. This wet scrubber shall be sized to handle at least 4,000 acfm. Exhaust air from the aforementioned processes shall be routed through the wet scrubber before being vented to the atmosphere. [R307-401-8]
- II.B.4.g The hydrogen sulfide wet scrubber shall control process streams from the copper precipitation tank and thickener and NAHS storage tank. This wet scrubber shall be sized to handle at least 1,700 acfm. All exhaust air from the NAHS storage tank, copper precipitation tanks and thickener shall be routed through the wet scrubber before being vented to the atmosphere. [R307-401-8]

### **Section III: APPLICABLE FEDERAL REQUIREMENTS**

In addition to the requirements of this AO, all applicable provisions of the following federal programs have been found to apply to this installation. This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including UAC R307.

NSPS (Part 60), Db: Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units  
NSPS (Part 60), JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines  
NSPS (Part 60), KKKK: Standards of Performance for Stationary Combustion Turbines  
Title V (Part 70) major source

### **PERMIT HISTORY**

This AO is based on the following documents:

Incorporates	Additional Information dated February 1, 2013
Incorporates	Additional Information dated January 25, 2013
Incorporates	Additional Information dated January 22, 2013
Incorporates	Additional Information dated December 11, 2012
Incorporates	Additional Information dated December 6, 2012
Incorporates	Additional Information dated November 2, 2012
Incorporates	Additional Information dated October 29, 2012
Incorporates	Additional Information dated October 5, 2012
Incorporates	NOI dated September 28, 2012
Supersedes	AO DAQE-AN0103460046-10 dated August 10, 2010

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**ADMINISTRATIVE CODING**

The following information is for UDAQ internal classification use only:

Salt Lake County

CDS A

NSPS (Part 60), Nonattainment or Maintenance Area, Title V (Part 70) major source, PM<sub>10</sub> SIP / Maint Plan, Major criteria source,

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### ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by EPA to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent - 40 CFR Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ	Division of Air Quality (typically interchangeable with UDAQ)
DAQE	This is a document tracking code for internal UDAQ use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - 40 CFR 52.21 (b)(49)(i)
GWP	Global Warming Potential - 40 CFR Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/HR	Pounds per hour
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO <sub>x</sub>	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM <sub>10</sub>	Particulate matter less than 10 microns in size
PM <sub>2.5</sub>	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO <sub>2</sub>	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
UDAQ	Utah Division of Air Quality (typically interchangeable with DAQ)
VOC	Volatile organic compounds

**ATTACHMENT B**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF AIR AND RADIATION  
WASHINGTON, D.C. 20460

Climate Protection Partnership Division  
U.S. EPA 6202J  
Washington, DC 20460

October 28, 2010

Stephen Sands  
Kennecott Utah Copper  
8362 West 10200 South  
Bingham Canyon, Utah 84006

Dear Mr. Sands:

The U.S. Environmental Protection Agency (EPA) Combined Heat and Power (CHP) Partnership is a voluntary program with the goal of reducing the environmental impact of power generation in the U.S. by promoting the use of CHP. The Partnership works closely with energy users, the CHP industry, state and local governments, and other clean energy stakeholders to facilitate the development of new CHP systems and to promote their environmental and economic benefits.

Kennecott Utah Copper (Kennecott) provided the Partnership with design information for a planned 5.6 MW CHP system to be located at Kennecott's molybdenum autoclave process (MAP) facility in Bingham Canyon, Utah. The CHP system will reduce the need for grid-supplied electricity and provide steam to be used in the autoclave process. The Partnership reviewed the information and conducted an evaluation of the system using the Partnership's CHP Emission Calculator; a tool that compares the NO<sub>x</sub>, SO<sub>2</sub> and CO<sub>2</sub> emissions from the CHP system to that of an equivalent separate heat and power system. This letter provides the results of our evaluation.

The following factors were considered in the examination of the energy efficiency and emissions reduction potential of the planned natural gas-fired CHP system:

- Expected performance specifications for the CHP system,
- EPA's eGRID 2005 emissions data for fossil fuel-fired generating sources in the facility's eGRID subregion (NWPP),
- Transmission and distribution losses associated with the displaced fossil fuel-fired power generation, and
- Estimated emissions from a displaced natural gas-fired boiler.

Based on this analysis, the combustion turbine-based CHP system is expected to achieve significant emissions reductions. Specifically, we estimate that the CHP system will effectively reduce NO<sub>x</sub> emissions by 84%, SO<sub>2</sub> emissions by nearly 99% and annual CO<sub>2</sub> emissions by 39,000 tons compared to equivalent separate heat and power. The carbon emission reductions equal the CO<sub>2</sub> emissions from more than 6,800 passenger vehicles.



October 28, 2010

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By installing and operating the proposed system, Kennecott will demonstrate exceptional leadership in energy use and management by using CHP - an efficient and reliable approach to generating power and thermal energy from a single fuel source.

Sincerely,

A handwritten signature in cursive script, appearing to read "Gary McNeil".

Gary McNeil  
U.S. EPA Combined Heat and Power Partnership Program  
Climate Protection Partnership Division  
1200 Pennsylvania Ave., NW, MC-6202J  
Washington, DC 20460

cc: Bob Sidner, ERG

**ATTACHMENT C**

Illinois Environmental Protection Agency  
Bureau of Air, Permit Section

Project Summary for a  
Construction Permit Application from  
Jackson Generation, LLC, for an  
Electrical Generating Facility in  
Elwood, Illinois

Source Identification No.: 197035ABD  
Application No. 17040013  
Date Received April 4, 2017

Schedule:  
Public Comment Period Begins: September 21, 2018  
Public Hearing: November 5, 2018  
Public Comment Period Closes: December 5, 2018

Illinois EPA Contacts:  
Permit Analyst: Bob Smet  
Community Relations Coordinator: Brad Frost

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- D. ANALYSIS OF ALTERNATIVES

Illinois Environmental Protection Agency  
Bureau of Air, Permit Section

Jackson Energy Center  
Project Summary

## 1. INTRODUCTION

Jackson Generation, LLC (Jackson Generation) has applied for an air pollution control construction permit for a proposed natural gas-fired combined-cycle electric power generating facility to be known as the Jackson Energy Center. This facility would be designed to generate baseload power with the ability to rapidly respond to changes in the supply of and demand for electricity. The facility would have two combined-cycle generating units, each one with a combustion turbine and associated heat recovery steam generator. The generating units would be designed to only fire natural gas. The facility would be located in the Village of Elwood, near its northern border.

The Illinois EPA has reviewed the construction permit application for the proposed facility and made a preliminary determination that it meets all applicable requirements. The Illinois EPA has prepared a draft of the construction permit that it would propose to issue for this project. Prior to issuing any construction permit for this project, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of a permit for the proposed facility and the terms and conditions of the draft permit.

## 2. PROJECT DESCRIPTION

Jackson Generation is proposing to construct a natural gas-fired combined-cycle electric power generating facility with a nominal maximum capacity of 1,200 megawatt (MW). The facility would be designed to serve as a baseload power plant while also having the operational capabilities of an intermediate-load power plant.<sup>1</sup> These capabilities involve being able to rapidly come up to full generating levels from a low level of operation and then being able to readily adjust the level of operation. This would enable the operation of the facility to readily respond to changes in the demand for electricity, such as fluctuations in the amount of electricity being sent to the grid by other power plants and to spikes or periods of high or very high demand for electricity.

The principal emission units at the facility would be the two, natural gas-fired combined-cycle generating units, which would be used to generate electricity for the grid. In a combined-cycle combustion turbine generating unit, electricity is produced from an electrical generator that is directly powered by the combustion turbines. In addition, electricity is generated using steam that is produced from the hot exhaust from the combustion turbine in a heat recovery steam generator. The combination of direct and indirect generation of electricity results in high energy efficiency.

---

<sup>1</sup> Baseload generating units traditionally operate to provide electricity to the grid on a sustained basis to meet the basic demand for electricity. Intermediate load and peaking units are used to provide electricity to meet changes in the supply and demand for electricity. The combination of all three types of units, i.e., baseload, intermediate load, and peaking, provides a robust and economical approach to addressing changes in the supply and demand for electricity on an hourly, daily, weekly, and seasonal basis.

Illinois Environmental Protection Agency  
Bureau of Air, Permit Section

Jackson Energy Center  
Project Summary

The two generating units at this proposed facility would each have a combustion turbine, a heat recovery steam generator, a steam turbine powered by the steam from the heat recovery steam generator, and a single electrical generator. The electrical generator would be powered by both the combustion turbine and the steam turbine, which would be located on opposite sides of the electrical generator.

The generating units would be equipped with natural gas-fired "duct burners" located in the ducts between the combustion turbines and heat recovery steam generators. During periods of high electrical demand, the duct burners in a unit would be operated to raise the temperature of the exhaust from the combustion turbine and increase the amount of steam produced by the associated heat recovery steam generator. At average annual ambient conditions,<sup>2</sup> the two generating units at the facility would have a combined gross electrical output of approximately 1,100 MW at full load without firing any fuel in the duct burners. With the duct burners operating, the facility would have a gross output of approximately 1,200 MW.

The proposed generating units would also have the capability for so-called "very low load" operation, which will enhance the functionality of the facility in providing electricity to the power grid. Very low load operation will involve holding a combustion turbine at a level of generation or "load" well below the lowest load at which the turbine would be operated when it is called upon to provide power to the power grid.<sup>3</sup> This capability would enable the generating units to be returned to normal generating levels or operating "loads" quickly. The units could be brought up to normal loads without the need to first startup the units when they are next called upon for operation or "dispatched." The capability for very low load operation would likely be used by Jackson Generation when it expects that the generating units will not be dispatched to provide power for a relatively short time, such as overnight. During very low load operation, the units would be operated at the lowest loads at which stable, steady-state, compliant operation of the combustion turbines can reliably be maintained. The units would continue to operate as combined cycle units.<sup>4</sup> While electricity generated during very low load operation would go to the grid, the units would be operated at the lowest level that is practical. This is because the price paid for the electricity would be much less than when the units are actually dispatched for generation of electricity.

---

<sup>2</sup> The design power output of combustion turbines varies noticeably due to ambient conditions, being greater at lower ambient temperature and lower humidity levels.

<sup>3</sup> PJM is the entity that is responsible for managing the distribution of electricity and the power grid in northern Illinois, where the proposed facility would be located. PJM is an independent regional transmission organization overseen by the Federal Energy Regulatory Commission (FERC).

<sup>4</sup> In this regard, because the heat recovery steam generators and steam turbines will also continue in operation during very low load operation of the generating units, the full capacity of the units will be rapidly available to the grid when the units are next dispatched. Otherwise, if a combustion turbine generating unit is shut down, when it next resumes operation, the full capacity of the unit is not immediately available upon completion of the next startup of the combustion turbine. The heat recovery steam generator and the steam turbine must be brought into operation more slowly to avoid damage from excessive thermal stresses so that they reach their operational capacity well after the combustion turbine is operational.

Illinois Environmental Protection Agency  
Bureau of Air, Permit Section

Jackson Energy Center  
Project Summary

Emissions from the generating units would be controlled using a combination of combustion control measures and add-on control devices, as well as by the energy efficient design of equipment. Dry low-NOx combustors and good combustion practices would be required for the combustion turbines. The units would also be equipped with oxidation catalyst systems for emissions of carbon monoxide (CO) and volatile organic matter (VOM), and add-on selective catalytic reduction (SCR) systems for control of nitrogen oxide (NOx) emissions. These control measures will be most effective when the generating units are operating in their normal load range to provide electricity to the grid.

In addition to the generating units, other emission units at the proposed facility would include a natural gas-fired auxiliary boiler, a natural gas-fired fuel heater, diesel-fired emergency engines. In addition, the facility would have the potential for emissions from other operations at the facility, including sulfur hexafluoride (SF<sub>6</sub>) emissions, which is regulated as a greenhouse gas (GHG), from circuit breakers and electrical equipment; fugitive emissions of methane, which is also regulated as a GHG, from piping and components in the natural gas piping supplying the generating units and other emission units at the facility; and fugitive emissions of dust from vehicle traffic on roadways at the facility. A further description of the various emission units at this proposed facility is provided in Attachment A of this Project Summary.

### **3. EMISSIONS**

The potential annual emissions of regulated NSR pollutants from the Jackson Energy Center as would be allowed by the draft permit are summarized below. The facility would not be a major source for emissions of hazardous air pollutants (HAPs).<sup>5</sup> The potential emissions of the facility, as summarized below, were calculated based on a combination of operating scenarios, as would be provided for by the draft permit, that would be expected to result in the greatest annual emissions. These include (1) startups and shutdowns of the generating units taking place for only a limited number of hours per year, as limited by the permit; (2) operation of the generating units at full load with the duct burners for the greatest number of hours that are anticipated in any year; (3) very low load operation of the combustion turbines for the greatest number of hours anticipated in any year, (4) operation of the combustion turbines without duct firing for the remainder of a year. Actual emissions of the facility will be less than the potential emissions to the extent the facility does not operate at its maximum capacity, does not have as many startups and shutdowns as allowed, does not operate the duct burners as much as projected, and operates with a margin of compliance, with actual emissions that are below the applicable standards and emission limits.

The potential emissions from the proposed facility are summarized below.

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<sup>5</sup> A summary of the potential emissions from the various emission units at the facility, including emissions of HAPs, is provided in Attachments 1 and 2 of the draft construction permit for the facility.

Illinois Environmental Protection Agency  
Bureau of Air, Permit Section

Jackson Energy Center  
Project Summary

- The demonstrated ability of similar equipment to meet the proposed emission limits or control requirements;
- Compliance periods associated with limits that are consistent with guidance issued by USEPA;
- Emission limits that account for normal operational variability based on the equipment and control equipment design, when properly operated and maintained; and
- Review of emission limits and control efficiencies required of other similar facilities and emission units as reported in the USEPA's on-line *RACT/BACT/LAER Clearinghouse* (RBLC).

### 5.3 Emission Offsets

For a major project for a pollutant under MSSCAM, 35 IAC 203.302 requires the applicant to obtain emission offsets for the project's potential emissions of that pollutant. Emission offsets are reductions in the annual emissions of existing sources that have not been relied upon under the Clean Air Act to improve air quality and bring a nonattainment area into compliance with the National Ambient Air Quality Standard (NAAQS) for the pollutant for which the area in which the project would be located is designated nonattainment.<sup>11</sup> For a proposed project located in an ozone nonattainment area that is classified as moderate nonattainment for ozone, like the proposed facility, MSSCAM provides that an applicant must obtain emissions offsets in a ratio of 1.15 to 1 for the potential annual emissions of a pollutant for which the project is a major source under MSSCAM.

Jackson Generation has worked to obtain the requisite emission offset credits for the NO<sub>x</sub> emissions of the proposed facility. Based on the potential NO<sub>x</sub> emissions of the proposed facility that would be provided by the draft permit, 294 tons per year, Jackson Generation will need to secure 339.25 tons of offsets (i.e., 294 tons x 1.15 = 338.1 tons). The reductions in emissions used to meet this requirement may be both reductions in emissions of NO<sub>x</sub> and VOM. Interpollutant offsets are permissible because both NO<sub>x</sub> and VOM are precursors to ozone air quality. As such, for this project, the offset requirement may be met by reductions of emissions of either NO<sub>x</sub> or VOM, provided all other requirements for offsets are met. 40 CFR Part 51, Appendix S, IV.G.5.<sup>12</sup> For this purpose, considering the levels of emissions of ozone precursors NO<sub>x</sub> and VOM in the Greater Chicago ozone

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<sup>11</sup> The requirement for emission offsets is set forth in Section 173(a) of the CAA. It requires that an entity that is proposing to construct a new major stationary source or a major modification that is subject to NaNSR for a pollutant must obtain emission offsets equal to or greater than the allowable emissions from the proposed project sufficient to allow the permitting authority to determine that the proposed project will not interfere with reasonable further progress toward meeting the NAAQS.

<sup>12</sup> The USEPA has issued guidance confirming that interprecursor trading is possible for ozone precursors. *Improving Air Quality with Economic Incentive Programs*, EPA-452/R-01-001, January 2001, page 244 ("Ozone interprecursor trading can be used to meet NSR offset requirements, regardless of whether the NSR offset emission reductions are generated through and EIP...Under appropriate conditions, a new VOC source that is required to obtain offsets under part D NSR [of the CAA] can meet that requirement with all VOC offsets, all NO<sub>x</sub> offsets, or a combination of VOC and NO<sub>x</sub> offsets, and vice versa for a new NO<sub>x</sub> source.").



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nonattainment area, the Illinois EPA has determined that the emission reductions in VOM emissions may be used on a ton for ton basis for reductions in NOx emissions.

Jackson Generation intends to obtain emission offsets from the permanent shutdown of the following facilities:

Gas Recovery Services of Illinois, Inc. (ID 043801AAJ)  
26 West 570 Schick Road, Hanover Park  
Electrical generation facility fueled by landfill gas  
NOx: 19.65 tons

Pactiv. LLC (ID 197415AAJ)  
460 Gibraltar Drive, Bolingbrook  
Manufacture of plastic foam containers  
NOx: 33.11 tons, VOM: 86.56 tons

General Mills (ID 043090AAF)  
704 West Washington Street, West Chicago  
Manufacture of breakfast cereal  
NOx: 8.79 tons, VOM: 38.40 tons

Oxbow (ID 197803AAK)  
12308 South New Avenue, Lemont  
Calcining of petroleum coke  
NOx: 147.31 tons

Navistar (ID 031186ABK)  
10400 West North Avenue, Melrose Park  
Manufacture of truck/heavy duty engines (Engineering and development operations would continue at the site.)  
NOx: 1.67 tons, VOM: 3.30 tons

#### **5.4 Analysis of Alternatives**

An applicant for a construction permit for a major project subject to MSSCAM must analyze alternatives to the proposed project. In particular, MSSCAM requires that the applicant demonstrate the benefits of the project significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification, based upon an analysis of alternative sites, sizes, production processes and environmental control techniques.

Jackson Generation has provided the required analysis of alternatives to this proposed project. The analysis shows that the benefits of the facility would outweigh potential adverse impacts. The Illinois EPA has considered alternatives to the facility, considering the analysis provided by Jackson Generation. This analysis concludes that the potential benefits of the proposed facility outweigh its potential adverse impacts. In general, as a combined-cycle power plant, the emissions of the facility for the electricity that it provides to the grid would inherently be lower than

Illinois EPA  
Bureau of Air, Permit Section

Project Summary: Jackson Energy Center  
Attachment D: Analysis of Alternatives

## **Attachment D: Analysis of Alternatives to the Proposed Project**

### **Introduction**

An applicant for a construction permit for a major project that is subject to the substantive requirements of 35 IAC Part 203, Major Stationary Sources Construction And Modification (MSSCAM), must analyze alternatives to the proposed project. Specifically, 35 IAC 203.306 provides that:

[T]he owner or operator shall demonstrate that benefits of the new major source or major modification significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification, based upon an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source.

The fundamental goal and business objective of the project is to provide new combined-cycle generation within the ComEd region of the PJM grid to provide reliable, flexible generating capacity to the grid where the announced and anticipated retirement of older fossil fuel-fired power plants creates a need and opportunity for additional baseload capacity. In addition, the continued development of wind power in the region creates a need and opportunity for power generation technologies that can respond rapidly to fluctuations in energy supply and demand. To achieve all project goals and objectives, Jackson Generation defined the Jackson Energy Center project as a nominal 1,200 MW combined-cycle generating facility. Because combined-cycle combustion turbine technology utilizes heat energy from the turbine exhaust, combined-cycle units provide the ability to achieve higher full load efficiencies than those achievable with simple-cycle combustion turbines. In addition, combined-cycle generating units are now available with load-following capabilities that more readily respond to changes in the demand for and supply of electricity.

As a new facility, the proposed facility would compete with older facilities, contributing to the replacement of older facilities and approaches to power generation with a modern facility. If this facility and other similar facilities are not developed, it should be expected to delay this replacement process. More electricity will continue to be provided by existing less efficient and higher emitting generating units. These existing generating units are also not as compatible with the dispatch and demand-following requirements needed to backup renewable power generation. This delay in transition of generating resources should be expected to adversely affect air quality as well as potentially adversely affecting the cost of electricity.

As discussed below, the proposed project has been evaluated for:

- Alternative Project Sizes
- Alternative Electric Power Generating Processes
- Alternative Environmental Control Technologies
- Alternative Sites
- Environmental and Social Impacts and Benefits

**ATTACHMENT D**

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
BUREAU OF AIR  
PERMIT SECTION

DECEMBER 2018

RESPONSIVENESS SUMMARY FOR  
PUBLIC QUESTIONS AND COMMENTS ON THE  
CONSTRUCTION PERMIT APPLICATION FROM  
JACKSON GENERATION LLC FOR AN  
ELECTRIC POWER PLANT  
IN ELWOOD

Source Identification No.: 197035ABD

Application No.: 17040013

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## **DECISION**

On December 31, 2018, the Illinois Environmental Protection Agency (Illinois EPA) issued an air pollution control construction permit and an Acid Rain permit to Jackson Generation LLC (Jackson Generation), to construct a natural gas-fired combined-cycle electric power plant to be known as the Jackson Energy Center. The issued construction permit includes several enhancements compared to the draft permit.

Copies of the documents can be obtained from the contact listed at the conclusion of this document. The permits and additional copies of this document can also be obtained from the Illinois EPA website <https://www2.illinois.gov/epa/public-notices/boa-notices/Pages/archive.aspx>.

## **BACKGROUND**

On April 4, 2017, the Illinois EPA, Bureau of Air received a construction permit application from Jackson Generation, requesting a permit to construct a combined-cycle electric power generating plant in Elwood, Illinois. The proposed plant would be used to generate electric power using natural gas. The key emission units of the plant would be two gas-fired combustion turbines with heat recovery steam generators, an auxiliary boiler, a fuel gas heater and various ancillary and support operations.

The construction permit issued for the plant identifies the applicable rules governing emissions from the plant and establishes enforceable limitations on its emissions. The construction permit also establishes appropriate compliance procedures, including requirements for emissions testing, continuous emission monitoring, recordkeeping, and reporting. Jackson Generation will be required to carry out these procedures on an ongoing basis to demonstrate that the plant is operating within the limitations established by the construction permit and that emissions are being properly controlled.

## **COMMENT PERIOD AND PUBLIC HEARING**

The Illinois EPA Bureau of Air evaluates applications and issues permits for sources of emissions. An air permit application must appropriately address compliance with applicable air pollution control laws and regulations before a permit can be issued. Following its initial review of Jackson Generation's application, the Illinois EPA Bureau of Air made a preliminary determination that the application met the standards for issuance of a construction permit and prepared a draft permit for public review and comment.

The public comment period began with the publication of a notice in the Joliet Herald-News on September 21, 2018. A public hearing was held on November 5, 2018 at the Joliet Community College, Weitendorf Agricultural Educational Center in Joliet to receive oral comments and answer questions regarding the application and draft construction permit. The comment period closed on December 5, 2018.

## AVAILABILITY OF DOCUMENTS

The permits issued to Jackson Generation and this responsiveness summary are available on the Illinois Permit Database at <https://www2.illinois.gov/epa/public-notice/boa-notice/Pages/archive.aspx>. Copies of these documents may also be obtained by contacting the Illinois EPA at the telephone numbers listed at the conclusion of this document.

## APPEAL PROVISIONS

Individuals who submitted comments on the draft of the construction permit for the plant may petition the Environmental Appeals Board of the United States Environmental Protection Agency (USEPA) to review the Prevention of Significant Deterioration (PSD) provisions of the construction permit that has been issued.

In addition, because comments were submitted on the draft of the permit for the plant, the construction permit that has now been issued will not become effective until after the period for filing a petition for review has passed. The procedures governing appeals are contained in the Code of Federal Regulations, "Appeal of RCRA, UIC and PSD Permits," 40 CFR 124.19. If an appeal will be submitted to the USEPA's Environmental Appeals Board by a means other than regular mail, refer to the website of the Environmental Appeals Board for Instructions ([http://yosemite.epa.gov/oa/EAB\\_Web\\_Docket.nsf](http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf)). If an appeal will be sent by regular mail, it should be sent in a timely manner to the following address:

Clerk of the Board  
United States Environmental Protection Agency  
Environmental Appeals Board  
1200 Pennsylvania Avenue, NW  
Mail Code 1103M  
Washington, DC 20460-0001

## COMMENTS AND QUESTIONS WITH RESPONSES BY THE ILLINOIS EPA

### LAER Determination for the Auxiliary Boiler

1. For emissions of NO<sub>x</sub>, Illinois' rules for Nonattainment New Source Review (NaNSR), as set forth in 35 IAC Part 203, Major Stationary Sources Construction And Modification, require the application of the Lowest Achievable Emission Rate (LAER). In the Draft Permit, the Illinois EPA has failed to properly explain its analysis for its proposed determination of the Lowest Achievable Emission (LAER) for the Auxiliary Boiler. Specifically, in the Project Summary, the Illinois EPA has not identified why, after noting that NO<sub>x</sub> limits for equivalent facilities are "commonly set in lb/mmBtu and lb/hr, at either 0.10 or 0.11 lb/mmBtu or equivalent," it has opted to use the higher of those two numbers, the 0.11 lb/mmBtu, for the proposed LAER limit. LAER requires imposition of the lowest possible standard, and the permit has apparently not even chosen the lowest common standard that was identified.

8. The Project Summary does not specify whether the offsets are based on the facilities actual historic emissions (and if so how that was calculated), those facilities permitted or potential emissions (which would be improper under the Clean Air Act). Thus, it is impossible for the public to assess the appropriateness of these offsets. Before the Illinois EPA finalizes the permit, it must make this information available, so that the public has an opportunity to review the offsets for their sufficiency. Failure to do so would constitute a violation of the Illinois EPA's obligation to conduct this permitting process with full transparency and availability of relevant information, so as to enable the public to meaningfully participate.

**As emission reductions used as emission offsets must be "real" reductions, as observed by this comment, the emission offsets for the plant would necessarily be based on reductions in actual emissions. This is reflected in the Project Summary, page 8, as it explained that emission offsets are based on the reduction in the annual emissions of existing sources. The Project Summary did not further describe emission offsets as being based on reductions in the "potential," "allowable" or "permitted" emissions of existing sources.**

**It was not appropriate for the Project Summary to include detailed information about the planned emission offsets, as requested by this comment. This is because the Project Summary provides summary information about a proposed project and the Illinois EPA's review of the application for that project. It does not serve in place of the application or other relevant material. In this regard, the material in the Public Repository assembled by the Illinois EPA for the public comment period on the draft permit included detailed information describing how the emission reductions were calculated for each of the five planned sources of emission offsets for the proposed plant. In each instance, the repository included the necessary assessment of the reduction in *actual* emissions from the shut down of the source or the operations at the source that would be shut down.**

9. Jackson Generation is proposing to construct a natural gas-fired combined cycle electric power plant with a nominal maximum capacity of 1,200 megawatts (MW). The plant will be located in the Chicago-Naperville, IL-IN-WI ozone nonattainment area, an area that is classified as moderate nonattainment for the 2008 National Ambient Air Quality Standard (NAAQS) for ozone. The project's potential emissions of nitrogen oxides (NOx) and volatile organic material (VOM), which are both precursors for the criteria pollutant ozone, are 294 and 85.7 tons per year, respectively. Because the potential NOx emissions of the

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**need to compensate for the emissions of a proposed project but for the effect those emissions would subsequently have on downwind ozone air quality. Accordingly, it is sufficient for offsets for the proposed plant to occur in the greater Chicago ozone nonattainment area. This is because emission offsets for purposes of ozone air quality function to compensate for the additional emissions of a proposed project as they contribute to violations of the National Ambient Air Quality Standard for ozone in that nonattainment area.**

**This is different from the circumstances for emission offsets for pollutants that directly contribute to ambient air quality. This is because the emissions of such pollutants from certain sources that are located in an area that has been designated nonattainment may not actually compensate for the impacts on air quality from the emissions of a proposed project. Accordingly, the relative locations of the proposed project and the existing sources that are providing the emission offsets may be important.**

proposed plant are more than 100 tons per year, the project is considered “major” and subject to the substantive requirements of Nonattainment New Source Review (NaNSR) for its NO<sub>x</sub> emissions.<sup>15</sup> In accordance with 35 Illinois Administrative Code (IAC) 203.302, Illinois’ NaNSR rules, Jackson must offset the proposed NO<sub>x</sub> emissions increase with a decrease in NO<sub>x</sub> emissions of at least 338.1 tons per year.<sup>16</sup> The offsets must come from actual emissions reductions from sources with emission reduction credits located in the Chicago-Naperville IL-IN-WI nonattainment area.<sup>17</sup>

According to the Project Summary and permit application, Jackson is using a combination of NO<sub>x</sub> and VOM emission reduction credits from sources that have been (or will be) shut down. VOM emission reduction credits will be used to replace a portion of the required NO<sub>x</sub> emission reduction credits on a ton-for-ton basis, or a 1:1 interprecursor trading (IPT) ratio. 40 CFR 51.165(a)(11) provides that the state implementation plan (SIP) shall require that “emissions offsets shall be of the same regulated NSR pollutant unless inter-precursor offsetting is permitted for a particular pollutant...” Consistent with USEPA guidance, *Improving Air Quality with Economic Incentive Programs Program* (USEPA Economic Incentive Program Guidance), if a permitting authority’s SIP allows IPT between VOM and NO<sub>x</sub> emissions, the permitting authority or permit applicant should provide a demonstration showing how it calculated the IPT ratios used in the permit application.<sup>18</sup> Further, according to 35 IAC 203.303, emissions offsets “[m]ust be of the same pollutant and further be of a type with approximately the same qualitative significance for public health and welfare as that attributed to the increase from a particular change.” See also 40 CFR 51.165(a)(11). Thus, to support IPT, there should be a demonstration in the permit record that addresses the equivalence of the two precursors for the pollutant ozone and shows how the particular offset ratio used will provide the same “qualitative significance” towards the plant’s ground level ozone impacts.<sup>19</sup> However, USEPA’s review of the

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<sup>15</sup> Because the potential VOM emissions of the plant are less than the major source threshold (100 tons per year), the project is not subject to the substantive requirements of NaNSR for VOM.

<sup>16</sup> Under 35 IAC 203.302, for moderate ozone nonattainment areas, the increase in emissions of a subject pollutant must be offset by a ratio of at least 1.15 to 1.

<sup>17</sup> See the definition of “Nonattainment Area,” 35 IAC 203.127. Also see Section 107 of the Clean Air Act.

<sup>18</sup> USEPA, Office of Air and Radiation, *Improving Air Quality with Economic Incentive Programs Program*, January 1, 2001, EPA-452/R-01-001, See <https://www.epa.gov/sites/production/files/2015-07/documents/eipfin.pdf>.

Section 16.9 of this guidance document addresses inter-precursor trading related to ozone air quality. As related to such trading, the guidance states the following on page 243:

Air quality modeling can determine the effects of the anticipated ozone inter-precursor trades because it is sensitive to changes in emissions throughout the region. Air quality modeling is unique in its ability to provide information on the differential impacts of VOC and NO<sub>x</sub> decreases (or foregone reductions or increases), and the impacts of decreases (or increases) that occur in different places. Therefore, you need to perform air quality modeling to determine whether VOC or NO<sub>x</sub> reductions are most effective, and the correct ratio for inter-precursor trades if you determine that a trade of one ton of VOC (or NO<sub>x</sub>) for one ton of NO<sub>x</sub> (or VOC) does not reduce or maintain ozone levels.

<sup>19</sup> This is also consistent with USEPA’s recent rulemaking titled *Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area State Implementation Plan Requirements*. The Acting Administrator of USEPA, Andrew R. Wheeler, signed the notice for this rulemaking on November 7, 2018, and USEPA has submitted the notice for publication in the Federal Register. The rule is accompanied by guidance titled *Technical Guidance for Demonstration of Inter-Precursor Trading (IPT) for Ozone in the Nonattainment New Source*



Project Summary and other information supplied by the Illinois EPA suggests that an adequate IPT demonstration may not have been conducted in this case. The Illinois EPA should include in the permit record an evaluation showing the reasoning and justification for the IPT ratio used in the trade between VOM and NO<sub>x</sub> emissions for this project. It is recommended that the Illinois EPA follow USEPA's recent guidance in supporting the ratio used for this substitution.

**As requested by this comment, the Illinois EPA has conducted a further evaluation of the IPT ratio used for the substitution of some reductions in VOM emissions when satisfying the offset requirement for NO<sub>x</sub> emissions of the proposed plant.<sup>20</sup> This evaluation confirms that ozone air quality in the Greater Chicago Ozone Nonattainment Area is VOM limited. This means that levels of ozone in the ambient air in this area are more effectively lowered by reducing emissions of VOM than by reducing emissions of NO<sub>x</sub>. In the past, this been found to often be the case for urban areas with a high population concentration. Of particular note, sensitivity modeling conducted by the Lake Michigan Air Directors Consortium for this area and presented in October 2016 for the relative effects of reductions in NO<sub>x</sub> and VOM emissions shows that reductions in VOM emissions are more effective in reducing levels of ozone in the urban center and along the lakeshore into Wisconsin than reduction of NO<sub>x</sub> emissions. Accordingly, an IPT ratio of 1:1, as is being required for the proposed plant, will ensure that the reductions in VOM emissions that are provided as emission offsets will have an equivalent or greater benefit for ozone air quality in the Greater Chicago Ozone Nonattainment Area.**

**It should also be noted that although the USEPA Economic Incentive Program Guidance discusses the use of modeling to demonstrate the effectiveness of a selected IPT ratio, it also described two circumstances where modeling may not be necessary. One of these circumstances involves the substitution of VOM for NO<sub>x</sub> in ozone nonattainment areas that are VOM limited.**

**Sources using VOC emission reductions to satisfy NO<sub>x</sub> emission reduction compliance obligations when the use and generator are both located in the same *urbanized area* if you demonstrate that the area is *VOC limited*.  
USEPA Economic Incentive Program Guidance, p. 244.**

**In addition, is it also noteworthy that USEPA has recently encouraged states to formally adopt "interpollutant offset substitution" as a mechanism to make meeting the emission reduction requirements for proposed major projects in nonattainment areas more flexible. (83 FR 62998, December 6, 2018).**

#### Compliance Certification for Other Facilities

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*Review, which addresses an air agency's air quality modeling requirements associated with the implementation of an IPT program. See <https://www3.epa.gov/ttn/scram/guidance/guide/EPA-454-R-18-004.pdf>.*

<sup>20</sup> Memorandum from Scott Leopold and Sarah Ray, Illinois EPA, Bureau of Air, Air Quality Planning Section, *Evaluation and Justification for the Interprecursor Trading Ratio for the Jackson Generation Center*, dated December 21, 2018.

**ATTACHMENT E**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

OCT 12 2012

Mr. Craig Eckberg  
Senior Manager  
NRG Texas Power LLC  
1201 Fannin  
Houston, TX 77002

Re: Request for Emission Credit Use Approval  
Flue Gas Carbon Capture Project  
W.A. Parish Electric Generating Station

Dear Mr. Eckberg:

Thank you for contacting the Environmental Protection Agency (EPA) Region 6 to determine the available options for offsetting the increased volatile organic compound (VOC) emissions related to the flue gas carbon capture project at the W.A. Parish plant. We appreciate the opportunity to work with NRG Texas Power LLC (NRG) and the Texas Commission on Environmental Quality (TCEQ) to determine a solution for offsetting VOC emissions for a beneficial environmental project under the Department of Energy's Clean Coal Power Initiative.

Region 6 has reviewed your September 27, 2012 request to offset proposed VOC emission increases in the Houston-Galveston-Brazoria (HGB) ozone nonattainment area with banked nitrogen oxide (NO<sub>x</sub>) discrete emission reduction credits (DERCs) generated in the HGB area. We agree with NRG's interpretation of the EPA-approved Texas State Implementation Plan (SIP): 30 TAC 101.376(b) provides for the use of DERCs as New Source Review (NSR) offsets, subject to specific permitting conditions and, 30 TAC 101.372(a) provides for interprecursor trading, whereby one pollutant reduction is used to satisfy the reduction requirements of another pollutant, subject to urban airshed modeling and the EPA and the TCEQ approval. Therefore, we find that the use of NO<sub>x</sub> DERCs for VOC emission increases is supported through the EPA-approved Texas SIP.

NRG has an obligation under the Clean Air Act and Texas SIP to offset the VOC emission increases in the HGB ozone nonattainment area at a 1.3:1 ratio. Pursuant to the approved Texas SIP, NRG is electing to use NO<sub>x</sub> DERCs from the HGB area in place of VOC emission offsets. We have reviewed the submitted photochemical modeling<sup>1</sup> and find that the use of NO<sub>x</sub> DERCs for VOC emission increases at a 1:1 interprecursor trading ratio will be conservative for the HGB area. Based on the submitted photochemical modeling and the approved Texas SIP, we concur with the use of HGB NO<sub>x</sub> DERCs to offset VOC emission increases at a 1:1 trading ratio in this specific situation.

<sup>1</sup> Alpine Geophysics, LLC, Ozone Impact Analysis of a Proposed Flue Gas Carbon Capture Demonstration Project at the W.A. Parish Station (September 25, 2012) ("McNally Report")

Please note that the use of NO<sub>x</sub> DERCs for VOC offset requirements under NSR will require approval from both the EPA Region 6 and the TCEQ. This letter only provides the EPA's concurrence on the identified approach and does not compel or predict future action by the TCEQ.

Your September 27, 2012 letter also included a request to modify the 1:1 interprecursor trading ratio at some point in the future based on a future finding and approval action by the TCEQ. Today's approval is based on the 1:1 interprecursor trading ratio. Any use of interprecursor trading must receive both the TCEQ and the EPA approval. See 30 TAC 101.372(a). Therefore, any future requests to revise the 1:1 interprecursor trading ratio must be substantiated by photochemical modeling and receive independent approval from the EPA. We will be happy to work with the TCEQ, if a new interprecursor trading ratio is considered.

We look forward to working with NRG as you move forward on the Flue Gas Carbon Capture Project. If you have any further questions about the EPA's review of your proposed offset scheme, please feel free to contact me at 214-665-7200 or contact Mr. Jeff Robinson of my staff at 214-665-6435.

Sincerely yours,



Carl Edlund, P.E.

Director

Multimedia Planning and Permitting Division

Cc: Mr. David Brymer, Director, Air Quality Division  
Texas Commission on Environmental Quality

Mr. Scott Mathias, Associate Director,  
Air Quality Policy Division, US EPA, OAQPS

**STATUTORY AND REGULATORY ADDENDUM**

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(1) that the predominant part of the Nation's population is located in its rapidly expanding metropolitan and other urban areas, which generally cross the boundary lines of local jurisdictions and often extend into two or more States;

(2) that the growth in the amount and complexity of air pollution brought about by urbanization, industrial development, and the increasing use of motor vehicles, has resulted in mounting dangers to the public health and welfare, including injury to agricultural crops and livestock, damage to and the deterioration of property, and hazards to air and ground transportation;

(3) that air pollution prevention (that is, the reduction or elimination, through any measures, of the amount of pollutants produced or created at the source) and air pollution control at its source is the primary responsibility of States and local governments; and

(4) that Federal financial assistance and leadership is essential for the development of cooperative Federal, State, regional, and local programs to prevent and control air pollution.

#### (b) Declaration

The purposes of this subchapter are—

(1) to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population;

(2) to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution;

(3) to provide technical and financial assistance to State and local governments in connection with the development and execution of their air pollution prevention and control programs; and

(4) to encourage and assist the development and operation of regional air pollution prevention and control programs.

#### (c) Pollution prevention

A primary goal of this chapter is to encourage or otherwise promote reasonable Federal, State, and local governmental actions, consistent with the provisions of this chapter, for pollution prevention.

(July 14, 1955, ch. 360, title I, §101, formerly §1, as added Pub. L. 88-206, §1, Dec. 17, 1963, 77 Stat. 392; renumbered §101 and amended Pub. L. 89-272, title I, §101(2), (3), Oct. 20, 1965, 79 Stat. 992; Pub. L. 90-148, §2, Nov. 21, 1967, 81 Stat. 485; Pub. L. 101-549, title I, §108(k), Nov. 15, 1990, 104 Stat. 2468.)

#### CODIFICATION

Section was formerly classified to section 1857 of this title.

#### PRIOR PROVISIONS

Provisions similar to those in this section were contained in a prior section 1857 of this title, act of July 14, 1955, ch. 360, §1, 69 Stat. 322, prior to the general amendment of this chapter by Pub. L. 88-206.

#### AMENDMENTS

1990—Subsec. (a)(3). Pub. L. 101-549, §108(k)(1), amended par. (3) generally. Prior to amendment, par. (3) read as follows: “that the prevention and control of air pol-

lution at its source is the primary responsibility of States and local governments; and”.

Subsec. (b)(4). Pub. L. 101-549, §108(k)(2), inserted “prevention and” after “pollution”.

Subsec. (c). Pub. L. 101-549, §108(k)(3), added subsec. (c).

1967—Subsec. (b)(1). Pub. L. 90-148 inserted “and enhance the quality of” after “to protect”.

1965—Subsec. (b). Pub. L. 89-272 substituted “this title” for “this Act”, which for purposes of codification has been changed to “this subchapter”.

#### EFFECTIVE DATE OF 1990 AMENDMENT

Pub. L. 101-549, title VII, §711(b), Nov. 15, 1990, 104 Stat. 2684, provided that:

“(1) Except as otherwise expressly provided, the amendments made by this Act [see Tables for classification] shall be effective on the date of enactment of this Act [Nov. 15, 1990].

“(2) The Administrator's authority to assess civil penalties under section 205(c) of the Clean Air Act [42 U.S.C. 7524(c)], as amended by this Act, shall apply to violations that occur or continue on or after the date of enactment of this Act. Civil penalties for violations that occur prior to such date and do not continue after such date shall be assessed in accordance with the provisions of the Clean Air Act [42 U.S.C. 7401 et seq.] in effect immediately prior to the date of enactment of this Act.

“(3) The civil penalties prescribed under sections 205(a) and 211(d)(1) of the Clean Air Act [42 U.S.C. 7524(a), 7545(d)(1)], as amended by this Act, shall apply to violations that occur on or after the date of enactment of this Act. Violations that occur prior to such date shall be subject to the civil penalty provisions prescribed in sections 205(a) and 211(d) of the Clean Air Act in effect immediately prior to the enactment of this Act. The injunctive authority prescribed under section 211(d)(2) of the Clean Air Act, as amended by this Act, shall apply to violations that occur or continue on or after the date of enactment of this Act.

“(4) For purposes of paragraphs (2) and (3), where the date of a violation cannot be determined it will be assumed to be the date on which the violation is discovered.”

#### EFFECTIVE DATE OF 1977 AMENDMENT; PENDING ACTIONS; CONTINUATION OF RULES, CONTRACTS, AUTHORIZATIONS, ETC.; IMPLEMENTATION PLANS

Pub. L. 95-95, title IV, §406, Aug. 7, 1977, 91 Stat. 795, as amended by Pub. L. 95-190, §14(b)(6), Nov. 16, 1977, 91 Stat. 1405, provided that:

“(a) No suit, action, or other proceeding lawfully commenced by or against the Administrator or any other officer or employee of the United States in his official capacity or in relation to the discharge of his official duties under the Clean Air Act [this chapter], as in effect immediately prior to the date of enactment of this Act [Aug. 7, 1977] shall abate by reason of the taking effect of the amendments made by this Act [see Short Title of 1977 Amendment note below]. The court may, on its own motion or that of any party made at any time within twelve months after such taking effect, allow the same to be maintained by or against the Administrator or such officer or employee.

“(b) All rules, regulations, orders, determinations, contracts, certifications, authorizations, delegations, or other actions duly issued, made, or taken by or pursuant to the Clean Air Act [this chapter], as in effect immediately prior to the date of enactment of this Act [Aug. 7, 1977], and pertaining to any functions, powers, requirements, and duties under the Clean Air Act, as in effect immediately prior to the date of enactment of this Act, and not suspended by the Administrator or the courts, shall continue in full force and effect after the date of enactment of this Act until modified or rescinded in accordance with the Clean Air Act as amended by this Act [see Short Title of 1977 Amendment note below].

6, 1975, shall not be included in the baseline and shall be counted against the maximum allowable increases in pollutant concentrations established under this part.

(July 14, 1955, ch. 360, title I, § 169, as added Pub. L. 95-95, title I, § 127(a), Aug. 7, 1977, 91 Stat. 740; amended Pub. L. 95-190, § 14(a)(54), Nov. 16, 1977, 91 Stat. 1402; Pub. L. 101-549, title III, § 305(b), title IV, § 403(d), Nov. 15, 1990, 104 Stat. 2583, 2631.)

#### AMENDMENTS

1990—Par. (1). Pub. L. 101-549, § 305(b), struck out “two hundred and” after “municipal incinerators capable of charging more than”.

Par. (3). Pub. L. 101-549, § 403(d), directed the insertion of “, clean fuels,” after “including fuel cleaning;”, which was executed by making the insertion after “including fuel cleaning” to reflect the probable intent of Congress, and inserted at end “Emissions from any source utilizing clean fuels, or any other means, to comply with this paragraph shall not be allowed to increase above levels that would have been required under this paragraph as it existed prior to November 15, 1990.”

1977—Par. (2)(C). Pub. L. 95-190 added subpar. (C).

#### STUDY OF MAJOR EMITTING FACILITIES WITH POTENTIAL OF EMITTING 250 TONS PER YEAR

Pub. L. 95-95, title I, § 127(b), Aug. 7, 1977, 91 Stat. 741, directed Administrator, within 1 year after Aug. 7, 1977, to report to Congress on consequences of that portion of definition of “major emitting facility” under this subpart which applies to facilities with potential to emit 250 tons per year or more.

#### SUBPART II—VISIBILITY PROTECTION

##### CODIFICATION

As originally enacted, subpart II of part C of subchapter I of this chapter was added following section 7478 of this title. Pub. L. 95-190, § 14(a)(53), Nov. 16, 1977, 91 Stat. 1402, struck out subpart II and inserted such subpart following section 7479 of this title.

#### § 7491. Visibility protection for Federal class I areas

##### (a) Impairment of visibility; list of areas; study and report

(1) Congress hereby declares as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution.

(2) Not later than six months after August 7, 1977, the Secretary of the Interior in consultation with other Federal land managers shall review all mandatory class I Federal areas and identify those where visibility is an important value of the area. From time to time the Secretary of the Interior may revise such identifications. Not later than one year after August 7, 1977, the Administrator shall, after consultation with the Secretary of the Interior, promulgate a list of mandatory class I Federal areas in which he determines visibility is an important value.

(3) Not later than eighteen months after August 7, 1977, the Administrator shall complete a study and report to Congress on available methods for implementing the national goal set forth in paragraph (1). Such report shall include recommendations for—

(A) methods for identifying, characterizing, determining, quantifying, and measuring visibility impairment in Federal areas referred to in paragraph (1), and

(B) modeling techniques (or other methods) for determining the extent to which manmade air pollution may reasonably be anticipated to cause or contribute to such impairment, and

(C) methods for preventing and remedying such manmade air pollution and resulting visibility impairment.

Such report shall also identify the classes or categories of sources and the types of air pollutants which, alone or in conjunction with other sources or pollutants, may reasonably be anticipated to cause or contribute significantly to impairment of visibility.

(4) Not later than twenty-four months after August 7, 1977, and after notice and public hearing, the Administrator shall promulgate regulations to assure (A) reasonable progress toward meeting the national goal specified in paragraph (1), and (B) compliance with the requirements of this section.

##### (b) Regulations

Regulations under subsection (a)(4) shall—

(1) provide guidelines to the States, taking into account the recommendations under subsection (a)(3) on appropriate techniques and methods for implementing this section (as provided in subparagraphs (A) through (C) of such subsection (a)(3)), and

(2) require each applicable implementation plan for a State in which any area listed by the Administrator under subsection (a)(2) is located (or for a State the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area) to contain such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal specified in subsection (a), including—

(A) except as otherwise provided pursuant to subsection (c), a requirement that each major stationary source which is in existence on August 7, 1977, but which has not been in operation for more than fifteen years as of such date, and which, as determined by the State (or the Administrator in the case of a plan promulgated under section 7410(c) of this title) emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area, shall procure, install, and operate, as expeditiously as practicable (and maintain thereafter) the best available retrofit technology, as determined by the State (or the Administrator in the case of a plan promulgated under section 7410(c) of this title) for controlling emissions from such source for the purpose of eliminating or reducing any such impairment, and

(B) a long-term (ten to fifteen years) strategy for making reasonable progress toward meeting the national goal specified in subsection (a).

In the case of a fossil-fuel fired generating powerplant having a total generating capacity



in excess of 750 megawatts, the emission limitations required under this paragraph shall be determined pursuant to guidelines, promulgated by the Administrator under paragraph (1).

**(c) Exemptions**

(1) The Administrator may, by rule, after notice and opportunity for public hearing, exempt any major stationary source from the requirement of subsection (b)(2)(A), upon his determination that such source does not or will not, by itself or in combination with other sources, emit any air pollutant which may reasonably be anticipated to cause or contribute to a significant impairment of visibility in any mandatory class I Federal area.

(2) Paragraph (1) of this subsection shall not be applicable to any fossil-fuel fired powerplant with total design capacity of 750 megawatts or more, unless the owner or operator of any such plant demonstrates to the satisfaction of the Administrator that such powerplant is located at such distance from all areas listed by the Administrator under subsection (a)(2) that such powerplant does not or will not, by itself or in combination with other sources, emit any air pollutant which may reasonably be anticipated to cause or contribute to significant impairment of visibility in any such area.

(3) An exemption under this subsection shall be effective only upon concurrence by the appropriate Federal land manager or managers with the Administrator's determination under this subsection.

**(d) Consultations with appropriate Federal land managers**

Before holding the public hearing on the proposed revision of an applicable implementation plan to meet the requirements of this section, the State (or the Administrator, in the case of a plan promulgated under section 7410(c) of this title) shall consult in person with the appropriate Federal land manager or managers and shall include a summary of the conclusions and recommendations of the Federal land managers in the notice to the public.

**(e) Buffer zones**

In promulgating regulations under this section, the Administrator shall not require the use of any automatic or uniform buffer zone or zones.

**(f) Nondiscretionary duty**

For purposes of section 7604(a)(2) of this title, the meeting of the national goal specified in subsection (a)(1) by any specific date or dates shall not be considered a "nondiscretionary duty" of the Administrator.

**(g) Definitions**

For the purpose of this section—

(1) in determining reasonable progress there shall be taken into consideration the costs of compliance, the time necessary for compliance, and the energy and nonair quality environmental impacts of compliance, and the remaining useful life of any existing source subject to such requirements;

(2) in determining best available retrofit technology the State (or the Administrator in determining emission limitations which re-

flect such technology) shall take into consideration the costs of compliance, the energy and nonair quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology;

(3) the term "manmade air pollution" means air pollution which results directly or indirectly from human activities;

(4) the term "as expeditiously as practicable" means as expeditiously as practicable but in no event later than five years after the date of approval of a plan revision under this section (or the date of promulgation of such a plan revision in the case of action by the Administrator under section 7410(c) of this title for purposes of this section);

(5) the term "mandatory class I Federal areas" means Federal areas which may not be designated as other than class I under this part;

(6) the terms "visibility impairment" and "impairment of visibility" shall include reduction in visual range and atmospheric discoloration; and

(7) the term "major stationary source" means the following types of stationary sources with the potential to emit 250 tons or more of any pollutant: fossil-fuel fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (thermal dryers), kraft pulp mills, Portland Cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production facilities, chemical process plants, fossil-fuel boilers of more than 250 million British thermal units per hour heat input, petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels, taconite ore processing facilities, glass fiber processing plants, charcoal production facilities.

(July 14, 1955, ch. 360, title I, §169A, as added Pub. L. 95-95, title I, §128, Aug. 7, 1977, 91 Stat. 742.)

**EFFECTIVE DATE**

Subpart effective Aug. 7, 1977, except as otherwise expressly provided, see section 406(d) of Pub. L. 95-95, set out as an Effective Date of 1977 Amendment note under section 7401 of this title.

**§ 7492. Visibility**

**(a) Studies**

(1) The Administrator, in conjunction with the National Park Service and other appropriate Federal agencies, shall conduct research to identify and evaluate sources and source regions of

both visibility impairment and regions that provide predominantly clean air in class I areas. A total of \$8,000,000 per year for 5 years is authorized to be appropriated for the Environmental Protection Agency and the other Federal agencies to conduct this research. The research shall include—

(A) expansion of current visibility related monitoring in class I areas;

(B) assessment of current sources of visibility impairing pollution and clean air corridors;

(C) adaptation of regional air quality models for the assessment of visibility;

(D) studies of atmospheric chemistry and physics of visibility.

(2) Based on the findings available from the research required in subsection (a)(1) as well as other available scientific and technical data, studies, and other available information pertaining to visibility source-receptor relationships, the Administrator shall conduct an assessment and evaluation that identifies, to the extent possible, sources and source regions of visibility impairment including natural sources as well as source regions of clear air for class I areas. The Administrator shall produce interim findings from this study within 3 years after November 15, 1990.

**(b) Impacts of other provisions**

Within 24 months after November 15, 1990, the Administrator shall conduct an assessment of the progress and improvements in visibility in class I areas that are likely to result from the implementation of the provisions of the Clean Air Act Amendments of 1990 other than the provisions of this section. Every 5 years thereafter the Administrator shall conduct an assessment of actual progress and improvement in visibility in class I areas. The Administrator shall prepare a written report on each assessment and transmit copies of these reports to the appropriate committees of Congress.

**(c) Establishment of visibility transport regions and commissions**

**(1) Authority to establish visibility transport regions**

Whenever, upon the Administrator's motion or by petition from the Governors of at least two affected States, the Administrator has reason to believe that the current or projected interstate transport of air pollutants from one or more States contributes significantly to visibility impairment in class I areas located in the affected States, the Administrator may establish a transport region for such pollutants that includes such States. The Administrator, upon the Administrator's own motion or upon petition from the Governor of any affected State, or upon the recommendations of a transport commission established under subsection (b) of this section<sup>1</sup> may—

(A) add any State or portion of a State to a visibility transport region when the Administrator determines that the interstate transport of air pollutants from such State

significantly contributes to visibility impairment in a class I area located within the transport region, or

(B) remove any State or portion of a State from the region whenever the Administrator has reason to believe that the control of emissions in that State or portion of the State pursuant to this section will not significantly contribute to the protection or enhancement of visibility in any class I area in the region.

**(2) Visibility transport commissions**

Whenever the Administrator establishes a transport region under subsection (c)(1), the Administrator shall establish a transport commission comprised of (as a minimum) each of the following members:

(A) the Governor of each State in the Visibility Transport Region, or the Governor's designee;

(B) The<sup>2</sup> Administrator or the Administrator's designee; and

(C) A<sup>2</sup> representative of each Federal agency charged with the direct management of each class I area or areas within the Visibility Transport Region.

**(3) Ex officio members**

All representatives of the Federal Government shall be ex officio members.

**(4) Federal Advisory Committee Act**

The visibility transport commissions shall be exempt from the requirements of the Federal Advisory Committee Act [5 U.S.C. App.].

**(d) Duties of visibility transport commissions**

A Visibility Transport Commission—

(1) shall assess the scientific and technical data, studies, and other currently available information, including studies conducted pursuant to subsection (a)(1), pertaining to adverse impacts on visibility from potential or projected growth in emissions from sources located in the Visibility Transport Region; and

(2) shall, within 4 years of establishment, issue a report to the Administrator recommending what measures, if any, should be taken under this chapter to remedy such adverse impacts. The report required by this subsection shall address at least the following measures:

(A) the establishment of clean air corridors, in which additional restrictions on increases in emissions may be appropriate to protect visibility in affected class I areas;

(B) the imposition of the requirements of part D of this subchapter affecting the construction of new major stationary sources or major modifications to existing sources in such clean air corridors specifically including the alternative siting analysis provisions of section 7503(a)(5) of this title; and

(C) the promulgation of regulations under section 7491 of this title to address long range strategies for addressing regional haze which impairs visibility in affected class I areas.

**(e) Duties of Administrator**

(1) The Administrator shall, taking into account the studies pursuant to subsection (a)(1)

<sup>1</sup> So in original. Words "subsection (b) of this section" probably should be "paragraph (2)".

<sup>2</sup> So in original. Probably should not be capitalized.

and the reports pursuant to subsection (d)(2) and any other relevant information, within eighteen months of receipt of the report referred to in subsection (d)(2) of this section, carry out the Administrator's regulatory responsibilities under section 7491 of this title, including criteria for measuring "reasonable progress" toward the national goal.

(2) Any regulations promulgated under section 7491 of this title pursuant to this subsection shall require affected States to revise within 12 months their implementation plans under section 7410 of this title to contain such emission limits, schedules of compliance, and other measures as may be necessary to carry out regulations promulgated pursuant to this subsection.

**(f) Grand Canyon visibility transport commission**

The Administrator pursuant to subsection (c)(1) shall, within 12 months, establish a visibility transport commission for the region affecting the visibility of the Grand Canyon National Park.

(July 14, 1955, ch. 360, title I, §169B, as added Pub. L. 101-549, title VIII, §816, Nov. 15, 1990, 104 Stat. 2695.)

REFERENCES IN TEXT

The Clean Air Act Amendments of 1990, referred to in subsec. (b), probably means Pub. L. 101-549, Nov. 15, 1990, 104 Stat. 2399. For complete classification of this Act to the Code, see Short Title note set out under section 7401 of this title and Tables.

The Federal Advisory Committee Act, referred to in subsec. (c)(4), is Pub. L. 92-463, Oct. 6, 1972, 86 Stat. 770, as amended, which is set out in the Appendix to Title 5, Government Organization and Employees.

PART D—PLAN REQUIREMENTS FOR  
NONATTAINMENT AREAS

SUBPART 1—NONATTAINMENT AREAS IN GENERAL

**§ 7501. Definitions**

For the purpose of this part—

(1) REASONABLE FURTHER PROGRESS.—The term "reasonable further progress" means such annual incremental reductions in emissions of the relevant air pollutant as are required by this part or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date.

(2) NONATTAINMENT AREA.—The term "nonattainment area" means, for any air pollutant, an area which is designated "nonattainment" with respect to that pollutant within the meaning of section 7407(d) of this title.

(3) The term "lowest achievable emission rate" means for any source, that rate of emissions which reflects—

(A) the most stringent emission limitation which is contained in the implementation plan of any State for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable, or

(B) the most stringent emission limitation which is achieved in practice by such class or category of source, whichever is more stringent.

In no event shall the application of this term permit a proposed new or modified source to emit any pollutant in excess of the amount allowable under applicable new source standards of performance.

(4) The terms "modifications" and "modified" mean the same as the term "modification" as used in section 7411(a)(4) of this title.

(July 14, 1955, ch. 360, title I, §171, as added Pub. L. 95-95, title I, §129(b), Aug. 7, 1977, 91 Stat. 745; amended Pub. L. 101-549, title I, §102(a)(2), Nov. 15, 1990, 104 Stat. 2412.)

AMENDMENTS

1990—Pub. L. 101-549, §102(a)(2)(A), struck out "and section 7410(a)(2)(I) of this title" after "purpose of this part".

Pars. (1), (2), Pub. L. 101-549, §102(a)(2)(B), (C), amended pars. (1) and (2) generally. Prior to amendment, pars. (1) and (2) read as follows:

"(1) The term 'reasonable further progress' means annual incremental reductions in emissions of the applicable air pollutant (including substantial reductions in the early years following approval or promulgation of plan provisions under this part and section 7410(a)(2)(I) of this title and regular reductions thereafter) which are sufficient in the judgment of the Administrator, to provide for attainment of the applicable national ambient air quality standard by the date required in section 7502(a) of this title.

"(2) The term 'nonattainment area' means, for any air pollutant an area which is shown by monitored data or which is calculated by air quality modeling (or other methods determined by the Administrator to be reliable) to exceed any national ambient air quality standard for such pollutant. Such term includes any area identified under subparagraphs (A) through (C) of section 7407(d)(1) of this title."

EFFECTIVE DATE

Part effective Aug. 7, 1977, except as otherwise expressly provided, see section 406(d) of Pub. L. 95-95, set out as an Effective Date of 1977 Amendment note under section 7401 of this title.

**§ 7502. Nonattainment plan provisions in general**

**(a) Classifications and attainment dates**

**(1) Classifications**

(A) On or after the date the Administrator promulgates the designation of an area as a nonattainment area pursuant to section 7407(d) of this title with respect to any national ambient air quality standard (or any revised standard, including a revision of any standard in effect on November 15, 1990), the Administrator may classify the area for the purpose of applying an attainment date pursuant to paragraph (2), and for other purposes. In determining the appropriate classification, if any, for a nonattainment area, the Administrator may consider such factors as the severity of nonattainment in such area and the availability and feasibility of the pollution control measures that the Administrator believes may be necessary to provide for attainment of such standard in such area.

(B) The Administrator shall publish a notice in the Federal Register announcing each classification under subparagraph (A), except the Administrator shall provide an opportunity for at least 30 days for written comment. Such classification shall not be subject to the provisions of sections 553 through 557 of title 5 (con-

Administrator shall require. The Administrator shall determine whether or not a State's demonstration under this subsection is adequate within 90 days after the Administrator's receipt of a demonstration which contains the information and analysis required by the Administrator.

(3) If a State fails to submit a demonstration under paragraph (2) with respect to a milestone within the required period or if the Administrator determines that the area has not met any applicable milestone, the Administrator shall require the State, within 9 months after such failure or determination to submit a plan revision that assures that the State will achieve the next milestone (or attain the national ambient air quality standard for PM-10, if there is no next milestone) by the applicable date.

**(d) Failure to attain**

In the case of a Serious PM-10 nonattainment area in which the PM-10 standard is not attained by the applicable attainment date, the State in which such area is located shall, after notice and opportunity for public comment, submit within 12 months after the applicable attainment date, plan revisions which provide for attainment of the PM-10 air quality standard and, from the date of such submission until attainment, for an annual reduction in PM-10 or PM-10 precursor emissions within the area of not less than 5 percent of the amount of such emissions as reported in the most recent inventory prepared for such area.

**(e) PM-10 precursors**

The control requirements applicable under plans in effect under this part for major stationary sources of PM-10 shall also apply to major stationary sources of PM-10 precursors, except where the Administrator determines that such sources do not contribute significantly to PM-10 levels which exceed the standard in the area. The Administrator shall issue guidelines regarding the application of the preceding sentence.

(July 14, 1955, ch. 360, title I, § 189, as added Pub. L. 101-549, title I, § 105(a), Nov. 15, 1990, 104 Stat. 2460.)

**§ 7513b. Issuance of RACM and BACM guidance**

The Administrator shall issue, in the same manner and according to the same procedure as guidance is issued under section 7408(c) of this title, technical guidance on reasonably available control measures and best available control measures for urban fugitive dust, and emissions from residential wood combustion (including curtailments and exemptions from such curtailments) and prescribed silvicultural and agricultural burning, no later than 18 months following November 15, 1990. The Administrator shall also examine other categories of sources contributing to nonattainment of the PM-10 standard, and determine whether additional guidance on reasonably available control measures and best available control measures is needed, and issue any such guidance no later than 3 years after November 15, 1990. In issuing guidelines and making determinations under this section, the Administrator (in consultation with the State) shall take into account emission reductions achieved, or expected to be achieved, under sub-

chapter IV-A and other provisions of this chapter.

(July 14, 1955, ch. 360, title I, § 190, as added Pub. L. 101-549, title I, § 105(a), Nov. 15, 1990, 104 Stat. 2462.)

SUBPART 5—ADDITIONAL PROVISIONS FOR AREAS DESIGNATED NONATTAINMENT FOR SULFUR OXIDES, NITROGEN DIOXIDE, OR LEAD

**§ 7514. Plan submission deadlines**

**(a) Submission**

Any State containing an area designated or redesignated under section 7407(d) of this title as nonattainment with respect to the national primary ambient air quality standards for sulfur oxides, nitrogen dioxide, or lead subsequent to November 15, 1990, shall submit to the Administrator, within 18 months of the designation, an applicable implementation plan meeting the requirements of this part.

**(b) States lacking fully approved State implementation plans**

Any State containing an area designated nonattainment with respect to national primary ambient air quality standards for sulfur oxides or nitrogen dioxide under section 7407(d)(1)(C)(i) of this title, but lacking a fully approved implementation plan complying with the requirements of this chapter (including this part) as in effect immediately before November 15, 1990, shall submit to the Administrator, within 18 months of November 15, 1990, an implementation plan meeting the requirements of subpart 1 (except as otherwise prescribed by section 7514a of this title).

(July 14, 1955, ch. 360, title I, § 191, as added Pub. L. 101-549, title I, § 106, Nov. 15, 1990, 104 Stat. 2463.)

**§ 7514a. Attainment dates**

**(a) Plans under section 7514(a)**

Implementation plans required under section 7514(a) of this title shall provide for attainment of the relevant primary standard as expeditiously as practicable but no later than 5 years from the date of the nonattainment designation.

**(b) Plans under section 7514(b)**

Implementation plans required under section 7514(b) of this title shall provide for attainment of the relevant primary national ambient air quality standard within 5 years after November 15, 1990.

**(c) Inadequate plans**

Implementation plans for nonattainment areas for sulfur oxides or nitrogen dioxide with plans that were approved by the Administrator before November 15, 1990, but, subsequent to such approval, were found by the Administrator to be substantially inadequate, shall provide for attainment of the relevant primary standard within 5 years from the date of such finding.

(July 14, 1955, ch. 360, title I, § 192, as added Pub. L. 101-549, title I, § 106, Nov. 15, 1990, 104 Stat. 2463.)

**§ 50.11**

by a reference method based on appendix D to this part and designated in accordance with part 53 of this chapter, is 0.08 parts per million (ppm), daily maximum 8-hour average.

(b) The 8-hour primary and secondary ozone ambient air quality standards are met at an ambient air quality monitoring site when the average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to 0.08 ppm, as determined in accordance with appendix I to this part.

(c) Until the effective date of the final Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements Rule (final SIP Requirements Rule) to be codified at 40 CFR 51.1100 *et seq.*, the 1997 ozone NAAQS set forth in this section will continue in effect, notwithstanding the promulgation of the 2008 ozone NAAQS under § 50.15. The 1997 ozone NAAQS set forth in this section will no longer apply upon the effective date of the final SIP Requirements Rule. For purposes of the anti-backsliding requirements of § 51.1105, § 51.165 and Appendix S to part 51, the area designations and classifications with respect to the revoked 1997 ozone NAAQS are codified in 40 CFR part 81.

[62 FR 38894, July 18, 1997, as amended at 77 FR 30170, May 21, 2012; 80 FR 12312, Mar. 6, 2015]

**§ 50.11 National primary and secondary ambient air quality standards for oxides of nitrogen (with nitrogen dioxide as the indicator).**

(a) The level of the national primary annual ambient air quality standard for oxides of nitrogen is 53 parts per billion (ppb, which is 1 part in 1,000,000,000), annual average concentration, measured in the ambient air as nitrogen dioxide.

(b) The level of the national primary 1-hour ambient air quality standard for oxides of nitrogen is 100 ppb, 1-hour average concentration, measured in the ambient air as nitrogen dioxide.

(c) The level of the national secondary ambient air quality standard for nitrogen dioxide is 0.053 parts per million (100 micrograms per cubic

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meter), annual arithmetic mean concentration.

(d) The levels of the standards shall be measured by:

(1) A reference method based on appendix F to this part; or

(2) By a Federal equivalent method (FEM) designated in accordance with part 53 of this chapter.

(e) The annual primary standard is met when the annual average concentration in a calendar year is less than or equal to 53 ppb, as determined in accordance with appendix S of this part for the annual standard.

(f) The 1-hour primary standard is met when the three-year average of the annual 98th percentile of the daily maximum 1-hour average concentration is less than or equal to 100 ppb, as determined in accordance with appendix S of this part for the 1-hour standard.

(g) The secondary standard is attained when the annual arithmetic mean concentration in a calendar year is less than or equal to 0.053 ppm, rounded to three decimal places (fractional parts equal to or greater than 0.0005 ppm must be rounded up). To demonstrate attainment, an annual mean must be based upon hourly data that are at least 75 percent complete or upon data derived from manual methods that are at least 75 percent complete for the scheduled sampling days in each calendar quarter.

[75 FR 6531, Feb. 9, 2010]

**§ 50.12 National primary and secondary ambient air quality standards for lead.**

(a) National primary and secondary ambient air quality standards for lead and its compounds, measured as elemental lead by a reference method based on appendix G to this part, or by an equivalent method, are: 1.5 micrograms per cubic meter, maximum arithmetic mean averaged over a calendar quarter.

(b) The standards set forth in this section will remain applicable to all areas notwithstanding the promulgation of lead national ambient air quality standards (NAAQS) in § 50.16. The lead NAAQS set forth in this section will no longer apply to an area one

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(c) The level of the standard shall be measured by a reference method based on appendix A or A-1 of this part, or by a Federal Equivalent Method (FEM) designated in accordance with part 53 of this chapter.

[75 FR 35592, June 22, 2010]

**§ 50.18 National primary ambient air quality standards for PM<sub>2.5</sub>.**

(a) The national primary ambient air quality standards for PM<sub>2.5</sub> are 12.0 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) annual arithmetic mean concentration and 35  $\mu\text{g}/\text{m}^3$  24-hour average concentration measured in the ambient air as PM<sub>2.5</sub> (particles with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers) by either:

(1) A reference method based on appendix L to this part and designated in accordance with part 53 of this chapter; or

(2) An equivalent method designated in accordance with part 53 of this chapter.

(b) The primary annual PM<sub>2.5</sub> standard is met when the annual arithmetic mean concentration, as determined in accordance with appendix N of this part, is less than or equal to 12.0  $\mu\text{g}/\text{m}^3$ .

(c) The primary 24-hour PM<sub>2.5</sub> standard is met when the 98th percentile 24-hour concentration, as determined in accordance with appendix N of this part, is less than or equal to 35  $\mu\text{g}/\text{m}^3$ .

[78 FR 3277, Jan. 15, 2013]

**§ 50.19 National primary and secondary ambient air quality standards for ozone.**

(a) The level of the national 8-hour primary ambient air quality standard for ozone (O<sub>3</sub>) is 0.070 parts per million (ppm), daily maximum 8-hour average, measured by a reference method based on appendix D to this part and designated in accordance with part 53 of this chapter or an equivalent method designated in accordance with part 53 of this chapter.

(b) The 8-hour primary O<sub>3</sub> ambient air quality standard is met at an ambient air quality monitoring site when the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentration is less than or equal to 0.070 ppm, as determined in

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accordance with appendix U to this part.

(c) The level of the national secondary ambient air quality standard for O<sub>3</sub> is 0.070 ppm, daily maximum 8-hour average, measured by a reference method based on appendix D to this part and designated in accordance with part 53 of this chapter or an equivalent method designated in accordance with part 53 of this chapter.

(d) The 8-hour secondary O<sub>3</sub> ambient air quality standard is met at an ambient air quality monitoring site when the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentration is less than or equal to 0.070 ppm, as determined in accordance with appendix U to this part.

[80 FR 65452, Oct. 26, 2015]

**APPENDIX A-1 TO PART 50—REFERENCE MEASUREMENT PRINCIPLE AND CALIBRATION PROCEDURE FOR THE MEASUREMENT OF SULFUR DIOXIDE IN THE ATMOSPHERE (ULTRAVIOLET FLUORESCENCE METHOD)**

**1.0 APPLICABILITY**

1.1 This ultraviolet fluorescence (UVF) method provides a measurement of the concentration of sulfur dioxide (SO<sub>2</sub>) in ambient air for determining compliance with the national primary and secondary ambient air quality standards for sulfur oxides (sulfur dioxide) as specified in § 50.4, § 50.5, and § 50.17 of this chapter. The method is applicable to the measurement of ambient SO<sub>2</sub> concentrations using continuous (real-time) sampling. Additional quality assurance procedures and guidance are provided in part 58, appendix A, of this chapter and in Reference 3.

**2.0 PRINCIPLE**

2.1 This reference method is based on automated measurement of the intensity of the characteristic fluorescence released by SO<sub>2</sub> in an ambient air sample contained in a measurement cell of an analyzer when the air sample is irradiated by ultraviolet (UV) light passed through the cell. The fluorescent light released by the SO<sub>2</sub> is also in the ultraviolet region, but at longer wavelengths than the excitation light. Typically, optimum instrumental measurement of SO<sub>2</sub> concentrations is obtained with an excitation wavelength in a band between approximately 190 to 230 nm, and measurement of the SO<sub>2</sub> fluorescence in a broad band around 320 nm, but these wavelengths are not necessarily

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(2) Ways in which the public can participate in regulatory and other efforts to improve air quality.

[44 FR 27569, May 10, 1979]

**§ 51.286 Electronic reporting.**

States that wish to receive electronic documents must revise the State Implementation Plan to satisfy the requirements of 40 CFR Part 3—(Electronic reporting).

[70 FR 59887, Oct. 13, 2005]

**Subpart P—Protection of Visibility**

**AUTHORITY:** Secs. 110, 114, 121, 160–169, 169A, and 301 of the Clean Air Act, (42 U.S.C. 7410, 7414, 7421, 7470–7479, and 7601).

**SOURCE:** 45 FR 80089, Dec. 2, 1980, unless otherwise noted.

**§ 51.300 Purpose and applicability.**

(a) *Purpose.* The primary purposes of this subpart are to require States to develop programs to assure reasonable progress toward meeting the national goal of preventing any future, and remedying any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution; and to establish necessary additional procedures for new source permit applicants, States and Federal Land Managers to use in conducting the visibility impact analysis required for new sources under § 51.166. This subpart sets forth requirements addressing visibility impairment in its two principal forms: “reasonably attributable” impairment (*i.e.*, impairment attributable to a single source/small group of sources) and regional haze (*i.e.*, widespread haze from a multitude of sources which impairs visibility in every direction over a large area).

(b) *Applicability.* The provisions of this subpart are applicable to all States as defined in section 302(d) of the Clean Air Act (CAA) except Guam, Puerto Rico, American Samoa, and the Northern Mariana Islands.

[45 FR 80089, Dec. 2, 1980, as amended at 64 FR 35763, July 1, 1999; 82 FR 3122, Jan. 10, 2017]

**§ 51.301 Definitions.**

For purposes of this subpart:

*Adverse impact on visibility* means, for purposes of section 307, visibility impairment which interferes with the management, protection, preservation, or enjoyment of the visitor’s visual experience of the Federal Class I area. This determination must be made on a case-by-case basis taking into account the geographic extent, intensity, duration, frequency and time of visibility impairments, and how these factors correlate with (1) times of visitor use of the Federal Class I area, and (2) the frequency and timing of natural conditions that reduce visibility. This term does not include effects on integral vistas.

*Agency* means the U.S. Environmental Protection Agency.

*BART-eligible source* means an *existing stationary facility* as defined in this section.

*Baseline visibility condition* means the average of the five annual averages of the individual values of daily visibility for the period 2000–2004 unique to each Class I area for either the most impaired days or the clearest days.

*Best Available Retrofit Technology (BART)* means an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by an existing stationary facility. The emission limitation must be established, on a case-by-case basis, taking into consideration the technology available, the costs of compliance, the energy and nonair quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

*Building, structure, or facility* means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities must be

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considered as part of the same industrial grouping if they belong to the same *Major Group* (i.e., which have the same two-digit code) as described in the *Standard Industrial Classification Manual, 1972* as amended by the 1977 Supplement (U.S. Government Printing Office stock numbers 4101-0066 and 003-005-00176-0 respectively).

*Clearest days* means the twenty percent of monitored days in a calendar year with the lowest values of the deciview index.

*Current visibility condition* means the average of the five annual averages of individual values of daily visibility for the most recent period for which data are available unique to each Class I area for either the most impaired days or the clearest days.

*Deciview* is the unit of measurement on the deciview index scale for quantifying in a standard manner human perceptions of visibility.

*Deciview index* means a value for a day that is derived from calculated or measured light extinction, such that uniform increments of the index correspond to uniform incremental changes in perception across the entire range of conditions, from pristine to very obscured. The deciview index is calculated based on the following equation (for the purposes of calculating deciview using IMPROVE data, the atmospheric light extinction coefficient must be calculated from aerosol measurements and an estimate of Rayleigh scattering):

$$\text{Deciview index} = 10 \ln (b_{\text{ext}}/10 \text{ Mm}^{-1}).$$

$b_{\text{ext}}$  = the atmospheric light extinction coefficient, expressed in inverse megameters ( $\text{Mm}^{-1}$ ).

*End of the applicable implementation period* means December 31 of the year in which the next periodic comprehensive implementation plan revision is due under § 51.308(f).

*Existing stationary facility* means any of the following stationary sources of air pollutants, including any reconstructed source, which was not in operation prior to August 7, 1962, and was in existence on August 7, 1977, and has the potential to emit 250 tons per year or more of any air pollutant. In determining potential to emit, fugitive emissions, to the extent quantifiable, must be counted.

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Fossil-fuel fired steam electric plants of more than 250 million British thermal units per hour heat input,

Coal cleaning plants (thermal dryers),

Kraft pulp mills,

Portland cement plants,

Primary zinc smelters,

Iron and steel mill plants,

Primary aluminum ore reduction plants,

Primary copper smelters,

Municipal incinerators capable of charging more than 250 tons of refuse per day,

Hydrofluoric, sulfuric, and nitric acid plants,

Petroleum refineries,

Lime plants,

Phosphate rock processing plants,

Coke oven batteries,

Sulfur recovery plants,

Carbon black plants (furnace process),

Primary lead smelters,

Fuel conversion plants,

Sintering plants,

Secondary metal production facilities,

Chemical process plants,

Fossil-fuel boilers of more than 250 million British thermal units per hour heat input,

Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels,

Taconite ore processing facilities,

Glass fiber processing plants, and

Charcoal production facilities.

*Federal Class I area* means any Federal land that is classified or reclassified *Class I*.

*Federal Land Manager* means the Secretary of the department with authority over the Federal Class I area (or the Secretary's designee) or, with respect to Roosevelt-Campobello International Park, the Chairman of the Roosevelt-Campobello International Park Commission.

*Federally enforceable* means all limitations and conditions which are enforceable by the Administrator under the Clean Air Act including those requirements developed pursuant to parts 60 and 61 of this title, requirements within any applicable State Implementation Plan, and any permit requirements established pursuant to



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§ 52.21 of this chapter or under regulations approved pursuant to part 51, 52, or 60 of this title.

*Fixed capital cost* means the capital needed to provide all of the depreciable components.

*Fugitive Emissions* means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

*Geographic enhancement for the purpose of § 51.308* means a method, procedure, or process to allow a broad regional strategy, such as an emissions trading program designed to achieve greater reasonable progress than BART for regional haze, to accommodate BART for reasonably attributable impairment.

*Implementation plan* means, for the purposes of this part, any State Implementation Plan, Federal Implementation Plan, or Tribal Implementation Plan.

*Indian tribe or tribe* means any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village, which is federally recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

*In existence* means that the owner or operator has obtained all necessary preconstruction approvals or permits required by Federal, State, or local air pollution emissions and air quality laws or regulations and either has (1) begun, or caused to begin, a continuous program of physical on-site construction of the facility or (2) entered into binding agreements or contractual obligations, which cannot be cancelled or modified without substantial loss to the owner or operator, to undertake a program of construction of the facility to be completed in a reasonable time.

*In operation* means engaged in activity related to the primary design function of the source.

*Installation* means an identifiable piece of process equipment.

*Integral vista* means a view perceived from within the mandatory Class I Federal area of a specific landmark or panorama located outside the boundary of the mandatory Class I Federal area.

*Least impaired days* means the twenty percent of monitored days in a cal-

endar year with the lowest amounts of visibility impairment.

*Major stationary source* and major modification mean major stationary source and major modification, respectively, as defined in § 51.166.

*Mandatory Class I Federal Area* or *Mandatory Federal Class I Area* means any area identified in part 81, subpart D of this title.

*Most impaired days* means the twenty percent of monitored days in a calendar year with the highest amounts of anthropogenic visibility impairment.

*Natural conditions* reflect naturally occurring phenomena that reduce visibility as measured in terms of light extinction, visual range, contrast, or coloration, and may refer to the conditions on a single day or a set of days. These phenomena include, but are not limited to, humidity, fire events, dust storms, volcanic activity, and biogenic emissions from soils and trees. These phenomena may be near or far from a Class I area and may be outside the United States.

*Natural visibility* means visibility (contrast, coloration, and texture) on a day or days that would have existed under natural conditions. Natural visibility varies with time and location, is estimated or inferred rather than directly measured, and may have long-term trends due to long-term trends in natural conditions.

*Natural visibility condition* means the average of individual values of daily natural visibility unique to each Class I area for either the most impaired days or the clearest days.

*Potential to emit* means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.

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*Prescribed fire* means any fire intentionally ignited by management actions in accordance with applicable laws, policies, and regulations to meet specific land or resource management objectives.

*Reasonably attributable* means attributable by visual observation or any other appropriate technique.

*Reasonably attributable visibility impairment* means visibility impairment that is caused by the emission of air pollutants from one, or a small number of sources.

*Reconstruction* will be presumed to have taken place where the fixed capital cost of the new component exceeds 50 percent of the fixed capital cost of a comparable entirely new source. Any final decision as to whether reconstruction has occurred must be made in accordance with the provisions of §60.15 (f) (1) through (3) of this title.

*Regional haze* means visibility impairment that is caused by the emission of air pollutants from numerous anthropogenic sources located over a wide geographic area. Such sources include, but are not limited to, major and minor stationary sources, mobile sources, and area sources.

*Secondary emissions* means emissions which occur as a result of the construction or operation of an existing stationary facility but do not come from the existing stationary facility. Secondary emissions may include, but are not limited to, emissions from ships or trains coming to or from the existing stationary facility.

*Significant impairment* means, for purposes of §51.303, visibility impairment which, in the judgment of the Administrator, interferes with the management, protection, preservation, or enjoyment of the visitor's visual experience of the mandatory Class I Federal area. This determination must be made on a case-by-case basis taking into account the geographic extent, intensity, duration, frequency and time of the visibility impairment, and how these factors correlate with (1) times of visitor use of the mandatory Class I Federal area, and (2) the frequency and timing of natural conditions that reduce visibility.

*State* means "State" as defined in section 302(d) of the CAA.

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*Stationary Source* means any building, structure, facility, or installation which emits or may emit any air pollutant.

*Visibility* means the degree of perceived clarity when viewing objects at a distance. Visibility includes perceived changes in contrast, coloration, and texture elements in a scene.

*Visibility impairment* or *anthropogenic visibility impairment* means any humanly perceptible difference due to air pollution from anthropogenic sources between actual visibility and natural visibility on one or more days. Because natural visibility can only be estimated or inferred, visibility impairment also is estimated or inferred rather than directly measured.

*Visibility in any mandatory Class I Federal area* includes any integral vista associated with that area.

*Wildfire* means any fire started by an unplanned ignition caused by lightning; volcanoes; other acts of nature; unauthorized activity; or accidental, human-caused actions, or a prescribed fire that has developed into a wildfire. A wildfire that predominantly occurs on wildland is a natural event.

*Wildland* means an area in which human activity and development is essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any, are widely scattered.

[45 FR 80089, Dec. 2, 1980, as amended at 64 FR 35763, 35774, July 1, 1999; 82 FR 3122, Jan. 10, 2017]

**§ 51.302 Reasonably attributable visibility impairment.**

(a) The affected Federal Land Manager may certify, at any time, that there exists reasonably attributable visibility impairment in any mandatory Class I Federal area and identify which single source or small number of sources is responsible for such impairment. The affected Federal Land Manager will provide the certification to the State in which the impairment occurs and the State(s) in which the source(s) is located. The affected Federal Land Manager shall provide the State(s) in which the source(s) is located an opportunity to consult on the basis of the planned certification, in

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person and at least 60 days prior to providing the certification to the State(s).

(b) The State(s) in which the source(s) is located shall revise its regional haze implementation plan, in accordance with the schedule set forth in paragraph (d) of this section, to include for each source or small number of sources that the Federal Land Manager has identified in whole or in part for reasonably attributable visibility impairment as part of a certification under paragraph (a) of this section:

(1) A determination, based on the factors set forth in §51.308(f)(2), of the control measures, if any, that are necessary with respect to the source or sources in order for the plan to make reasonable progress toward natural visibility conditions in the affected Class I Federal area;

(2) Emission limitations that reflect the degree of emission reduction achievable by such control measures and schedules for compliance as expeditiously as practicable; and

(3) Monitoring, recordkeeping, and reporting requirements sufficient to ensure the enforceability of the emission limitations.

(c) If a source that the Federal Land Manager has identified as responsible in whole or in part for reasonably attributable visibility impairment as part of a certification under paragraph (a) of this section is a BART-eligible source, and if there is not in effect as of the date of the certification a fully or conditionally approved implementation plan addressing the BART requirement for that source (which existing plan may incorporate either source-specific emission limitations reflecting the emission control performance of BART, an alternative program to address the BART requirement under §51.308(e)(2) through (4), or for sources of SO<sub>2</sub>, a program approved under paragraph §51.309(d)(4)), then the State shall revise its regional haze implementation plan to meet the requirements of §51.308(e) with respect to that source, taking into account current conditions related to the factors listed in §51.308(e)(1)(ii)(A). This requirement is in addition to the requirement of paragraph (b) of this section.

(d) For any existing reasonably attributable visibility impairment the

Federal Land Manager certifies to the State(s) under paragraph (a) of this section, the State(s) shall submit a revision to its regional haze implementation plan that includes the elements described in paragraphs (b) and (c) of this section no later than 3 years after the date of the certification. The State(s) is not required at that time to also revise its reasonable progress goals to reflect any additional emission reductions required from the source or sources. In no case shall such a revision in response to a reasonably attributable visibility impairment certification be due before July 31, 2021.

[82 FR 3123, Jan. 10, 2017]

**§ 51.303 Exemptions from control.**

(a)(1) Any existing stationary facility subject to the requirement under §51.302(c) or §51.308(e) to install, operate, and maintain BART may apply to the Administrator for an exemption from that requirement.

(2) An application under this section must include all available documentation relevant to the impact of the source's emissions on visibility in any mandatory Class I Federal area and a demonstration by the existing stationary facility that it does not or will not, by itself or in combination with other sources, emit any air pollutant which may be reasonably anticipated to cause or contribute to a significant impairment of visibility in any mandatory Class I Federal area.

(b) Any fossil-fuel fired power plant with a total generating capacity of 750 megawatts or more may receive an exemption from BART only if the owner or operator of such power plant demonstrates to the satisfaction of the Administrator that such power plant is located at such a distance from all mandatory Class I Federal areas that such power plant does not or will not, by itself or in combination with other sources, emit any air pollutant which may reasonably be anticipated to cause or contribute to significant impairment of visibility in any such mandatory Class I Federal area.

(c) Application under this §51.303 must be accompanied by a written concurrence from the State with regulatory authority over the source.

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(d) The existing stationary facility must give prior written notice to all affected Federal Land Managers of any application for exemption under this § 51.303.

(e) The Federal Land Manager may provide an initial recommendation or comment on the disposition of such application. Such recommendation, where provided, must be part of the exemption application. This recommendation is not to be construed as the concurrence required under paragraph (h) of this section.

(f) The Administrator, within 90 days of receipt of an application for exemption from control, will provide notice of receipt of an exemption application and notice of opportunity for public hearing on the application.

(g) After notice and opportunity for public hearing, the Administrator may grant or deny the exemption. For purposes of judicial review, final EPA action on an application for an exemption under this § 51.303 will not occur until EPA approves or disapproves the State Implementation Plan revision.

(h) An exemption granted by the Administrator under this § 51.303 will be effective only upon concurrence by all affected Federal Land Managers with the Administrator's determination.

[45 FR 80089, Dec. 2, 1980, as amended at 64 FR 35774, July 1, 1999; 82 FR 3123, Jan. 10, 2017]

**§ 51.304 Identification of integral vistas.**

(a) Federal Land Managers were required to identify any integral vistas on or before December 31, 1985, according to criteria the Federal Land Managers developed. These criteria must have included, but were not limited to, whether the integral vista was important to the visitor's visual experience of the mandatory Class I Federal area.

(b) The following integral vistas were identified by Federal Land Managers: At Roosevelt Campobello International Park, from the observation point of Roosevelt cottage and beach area, the viewing angle from 244 to 256 degrees; and at Roosevelt Campobello International Park, from the observation point of Friar's Head, the viewing angle from 154 to 194 degrees.

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(c) The State must list in its implementation plan any integral vista listed in paragraph (b) of this section.

[82 FR 3123, Jan. 10, 2017]

**§ 51.305 Monitoring for reasonably attributable visibility impairment.**

For the purposes of addressing reasonably attributable visibility impairment, if the Administrator, Regional Administrator, or the affected Federal Land Manager has advised a State containing a mandatory Class I Federal area of a need for monitoring to assess reasonably attributable visibility impairment at the mandatory Class I Federal area in addition to the monitoring currently being conducted to meet the requirements of § 51.308(d)(4), the State must include in the next implementation plan revision to meet the requirement of § 51.308(f) an appropriate strategy for evaluating reasonably attributable visibility impairment in the mandatory Class I Federal area by visual observation or other appropriate monitoring techniques. Such strategy must take into account current and anticipated visibility monitoring research, the availability of appropriate monitoring techniques, and such guidance as is provided by the Agency.

[82 FR 3124, Jan. 10, 2017]

**§ 51.306 [Reserved]****§ 51.307 New source review.**

(a) For purposes of new source review of any new major stationary source or major modification that would be constructed in an area that is designated attainment or unclassified under section 107(d) of the CAA, the State plan must, in any review under § 51.166 with respect to visibility protection and analyses, provide for:

(1) Written notification of all affected Federal Land Managers of any proposed new major stationary source or major modification that may affect visibility in any Federal Class I area. Such notification must be made in writing and include a copy of all information relevant to the permit application within 30 days of receipt of and at least 60 days prior to public hearing by the State on the application for permit to construct. Such notification must

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include an analysis of the anticipated impacts on visibility in any Federal Class I area,

(2) Where the State requires or receives advance notification (e.g. early consultation with the source prior to submission of the application or notification of intent to monitor under §51.166) of a permit application of a source that may affect visibility the State must notify all affected Federal Land Managers within 30 days of such advance notification, and

(3) Consideration of any analysis performed by the Federal Land Manager, provided within 30 days of the notification and analysis required by paragraph (a)(1) of this section, that such proposed new major stationary source or major modification may have an adverse impact on visibility in any Federal Class I area. Where the State finds that such an analysis does not demonstrate to the satisfaction of the State that an adverse impact will result in the Federal Class I area, the State must, in the notice of public hearing, either explain its decision or give notice as to where the explanation can be obtained.

(b) The plan shall also provide for the review of any new major stationary source or major modification:

(1) That may have an impact on any integral vista of a mandatory Class I Federal area listed in §51.304(b), or

(2) That proposes to locate in an area classified as nonattainment under section 107(d)(1) of the Clean Air Act that may have an impact on visibility in any mandatory Class I Federal area.

(c) Review of any major stationary source or major modification under paragraph (b) of this section, shall be conducted in accordance with paragraph (a) of this section, and §51.166(o), (p)(1) through (2), and (q). In conducting such reviews the State must ensure that the source's emissions will be consistent with making reasonable progress toward the national visibility goal referred to in §51.300(a). The State may take into account the costs of compliance, the time necessary for compliance, the energy and nonair quality environmental impacts of compliance, and the useful life of the source.

(d) The State may require monitoring of visibility in any Federal Class I area near the proposed new stationary source or major modification for such purposes and by such means as the State deems necessary and appropriate.

[45 FR 80089, Dec. 2, 1980, as amended at 64 FR 35765, 35774, July 1, 1999; 82 FR 3124, Jan. 10, 2017]

**§51.308 Regional haze program requirements.**

(a) *What is the purpose of this section?* This section establishes requirements for implementation plans, plan revisions, and periodic progress reviews to address regional haze.

(b) *When are the first implementation plans due under the regional haze program?* Except as provided in §51.309(c), each State identified in §51.300(b) must submit, for the entire State, an implementation plan for regional haze meeting the requirements of paragraphs (d) and (e) of this section no later than December 17, 2007.

(c) [Reserved]

(d) *What are the core requirements for the implementation plan for regional haze?* The State must address regional haze in each mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside the State which may be affected by emissions from within the State. To meet the core requirements for regional haze for these areas, the State must submit an implementation plan containing the following plan elements and supporting documentation for all required analyses:

(1) *Reasonable progress goals.* For each mandatory Class I Federal area located within the State, the State must establish goals (expressed in deciviews) that provide for reasonable progress towards achieving natural visibility conditions. The reasonable progress goals must provide for an improvement in visibility for the most impaired days over the period of the implementation plan and ensure no degradation in visibility for the least impaired days over the same period.

(i) In establishing a reasonable progress goal for any mandatory Class I Federal area within the State, the State must:

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(A) Consider the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected sources, and include a demonstration showing how these factors were taken into consideration in selecting the goal.

(B) Analyze and determine the rate of progress needed to attain natural visibility conditions by the year 2064. To calculate this rate of progress, the State must compare baseline visibility conditions to natural visibility conditions in the mandatory Federal Class I area and determine the uniform rate of visibility improvement (measured in deciviews) that would need to be maintained during each implementation period in order to attain natural visibility conditions by 2064. In establishing the reasonable progress goal, the State must consider the uniform rate of improvement in visibility and the emission reduction measures needed to achieve it for the period covered by the implementation plan.

(ii) For the period of the implementation plan, if the State establishes a reasonable progress goal that provides for a slower rate of improvement in visibility than the rate that would be needed to attain natural conditions by 2064, the State must demonstrate, based on the factors in paragraph (d)(1)(i)(A) of this section, that the rate of progress for the implementation plan to attain natural conditions by 2064 is not reasonable; and that the progress goal adopted by the State is reasonable. The State must provide to the public for review as part of its implementation plan an assessment of the number of years it would take to attain natural conditions if visibility improvement continues at the rate of progress selected by the State as reasonable.

(iii) In determining whether the State's goal for visibility improvement provides for reasonable progress towards natural visibility conditions, the Administrator will evaluate the demonstrations developed by the State pursuant to paragraphs (d)(1)(i) and (d)(1)(ii) of this section.

(iv) In developing each reasonable progress goal, the State must consult

with those States which may reasonably be anticipated to cause or contribute to visibility impairment in the mandatory Class I Federal area. In any situation in which the State cannot agree with another such State or group of States that a goal provides for reasonable progress, the State must describe in its submittal the actions taken to resolve the disagreement. In reviewing the State's implementation plan submittal, the Administrator will take this information into account in determining whether the State's goal for visibility improvement provides for reasonable progress towards natural visibility conditions.

(v) The reasonable progress goals established by the State are not directly enforceable but will be considered by the Administrator in evaluating the adequacy of the measures in the implementation plan to achieve the progress goal adopted by the State.

(vi) The State may not adopt a reasonable progress goal that represents less visibility improvement than is expected to result from implementation of other requirements of the CAA during the applicable planning period.

(2) *Calculations of baseline and natural visibility conditions.* For each mandatory Class I Federal area located within the State, the State must determine the following visibility conditions (expressed in deciviews):

(i) Baseline visibility conditions for the most impaired and least impaired days. The period for establishing baseline visibility conditions is 2000 to 2004. Baseline visibility conditions must be calculated, using available monitoring data, by establishing the average degree of visibility impairment for the most and least impaired days for each calendar year from 2000 to 2004. The baseline visibility conditions are the average of these annual values. For mandatory Class I Federal areas without onsite monitoring data for 2000–2004, the State must establish baseline values using the most representative available monitoring data for 2000–2004, in consultation with the Administrator or his or her designee;

(ii) For an implementation plan that is submitted by 2003, the period for establishing baseline visibility conditions for the period of the first long-

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term strategy is the most recent 5-year period for which visibility monitoring data are available for the mandatory Class I Federal areas addressed by the plan. For mandatory Class I Federal areas without onsite monitoring data, the State must establish baseline values using the most representative available monitoring data, in consultation with the Administrator or his or her designee;

(iii) Natural visibility conditions for the most impaired and least impaired days. Natural visibility conditions must be calculated by estimating the degree of visibility impairment existing under natural conditions for the most impaired and least impaired days, based on available monitoring information and appropriate data analysis techniques; and

(iv) For the first implementation plan addressing the requirements of paragraphs (d) and (e) of this section, the number of deciviews by which baseline conditions exceed natural visibility conditions for the most impaired and least impaired days.

(3) *Long-term strategy for regional haze.* Each State listed in §51.300(b) must submit a long-term strategy that addresses regional haze visibility impairment for each mandatory Class I Federal area within the State and for each mandatory Class I Federal area located outside the State that may be affected by emissions from the State. The long-term strategy must include enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals established by States having mandatory Class I Federal areas. In establishing its long-term strategy for regional haze, the State must meet the following requirements:

(i) Where the State has emissions that are reasonably anticipated to contribute to visibility impairment in any mandatory Class I Federal area located in another State or States, the State must consult with the other State(s) in order to develop coordinated emission management strategies. The State must consult with any other State having emissions that are reasonably anticipated to contribute to visibility im-

pairment in any mandatory Class I Federal area within the State.

(ii) Where other States cause or contribute to impairment in a mandatory Class I Federal area, the State must demonstrate that it has included in its implementation plan all measures necessary to obtain its share of the emission reductions needed to meet the progress goal for the area. If the State has participated in a regional planning process, the State must ensure it has included all measures needed to achieve its apportionment of emission reduction obligations agreed upon through that process.

(iii) The State must document the technical basis, including modeling, monitoring and emissions information, on which the State is relying to determine its apportionment of emission reduction obligations necessary for achieving reasonable progress in each mandatory Class I Federal area it affects. The State may meet this requirement by relying on technical analyses developed by the regional planning organization and approved by all State participants. The State must identify the baseline emissions inventory on which its strategies are based. The baseline emissions inventory year is presumed to be the most recent year of the consolidate periodic emissions inventory.

(iv) The State must identify all anthropogenic sources of visibility impairment considered by the State in developing its long-term strategy. The State should consider major and minor stationary sources, mobile sources, and area sources.

(v) The State must consider, at a minimum, the following factors in developing its long-term strategy:

(A) Emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment;

(B) Measures to mitigate the impacts of construction activities;

(C) Emissions limitations and schedules for compliance to achieve the reasonable progress goal;

(D) Source retirement and replacement schedules;

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(E) Smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the State for these purposes;

(F) Enforceability of emissions limitations and control measures; and

(G) The anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the long-term strategy.

(4) *Monitoring strategy and other implementation plan requirements.* The State must submit with the implementation plan a monitoring strategy for measuring, characterizing, and reporting of regional haze visibility impairment that is representative of all mandatory Class I Federal areas within the State. This monitoring strategy must be coordinated with the monitoring strategy required in § 51.305 for reasonably attributable visibility impairment. Compliance with this requirement may be met through participation in the Interagency Monitoring of Protected Visual Environments network. The implementation plan must also provide for the following:

(i) The establishment of any additional monitoring sites or equipment needed to assess whether reasonable progress goals to address regional haze for all mandatory Class I Federal areas within the State are being achieved.

(ii) Procedures by which monitoring data and other information are used in determining the contribution of emissions from within the State to regional haze visibility impairment at mandatory Class I Federal areas both within and outside the State.

(iii) For a State with no mandatory Class I Federal areas, procedures by which monitoring data and other information are used in determining the contribution of emissions from within the State to regional haze visibility impairment at mandatory Class I Federal areas in other States.

(iv) The implementation plan must provide for the reporting of all visibility monitoring data to the Administrator at least annually for each mandatory Class I Federal area in the State. To the extent possible, the State should report visibility monitoring data electronically.

(v) A statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any mandatory Class I Federal area. The inventory must include emissions for a baseline year, emissions for the most recent year for which data are available, and estimates of future projected emissions. The State must also include a commitment to update the inventory periodically.

(vi) Other elements, including reporting, recordkeeping, and other measures, necessary to assess and report on visibility.

(e) *Best Available Retrofit Technology (BART) requirements for regional haze visibility impairment.* The State must submit an implementation plan containing emission limitations representing BART and schedules for compliance with BART for each BART-eligible source that may reasonably be anticipated to cause or contribute to any impairment of visibility in any mandatory Class I Federal area, unless the State demonstrates that an emissions trading program or other alternative will achieve greater reasonable progress toward natural visibility conditions.

(1) To address the requirements for BART, the State must submit an implementation plan containing the following plan elements and include documentation for all required analyses:

(i) A list of all BART-eligible sources within the State.

(ii) A determination of BART for each BART-eligible source in the State that emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any mandatory Class I Federal area. All such sources are subject to BART.

(A) The determination of BART must be based on an analysis of the best system of continuous emission control technology available and associated emission reductions achievable for each BART-eligible source that is subject to BART within the State. In this analysis, the State must take into consideration the technology available, the costs of compliance, the energy and nonair quality environmental impacts of compliance, any pollution control



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equipment in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

(B) The determination of BART for fossil-fuel fired power plants having a total generating capacity greater than 750 megawatts must be made pursuant to the guidelines in appendix Y of this part (Guidelines for BART Determinations Under the Regional Haze Rule).

(C) *Exception.* A State is not required to make a determination of BART for SO<sub>2</sub> or for NO<sub>x</sub> if a BART-eligible source has the potential to emit less than 40 tons per year of such pollutant(s), or for PM<sub>10</sub> if a BART-eligible source has the potential to emit less than 15 tons per year of such pollutant.

(iii) If the State determines in establishing BART that technological or economic limitations on the applicability of measurement methodology to a particular source would make the imposition of an emission standard infeasible, it may instead prescribe a design, equipment, work practice, or other operational standard, or combination thereof, to require the application of BART. Such standard, to the degree possible, is to set forth the emission reduction to be achieved by implementation of such design, equipment, work practice or operation, and must provide for compliance by means which achieve equivalent results.

(iv) A requirement that each source subject to BART be required to install and operate BART as expeditiously as practicable, but in no event later than 5 years after approval of the implementation plan revision.

(v) A requirement that each source subject to BART maintain the control equipment required by this subpart and establish procedures to ensure such equipment is properly operated and maintained.

(2) A State may opt to implement or require participation in an emissions trading program or other alternative measure rather than to require sources subject to BART to install, operate, and maintain BART. Such an emissions trading program or other alternative measure must achieve greater reasonable progress than would be

achieved through the installation and operation of BART. For all such emission trading programs or other alternative measures, the State must submit an implementation plan containing the following plan elements and include documentation for all required analyses:

(i) A demonstration that the emissions trading program or other alternative measure will achieve greater reasonable progress than would have resulted from the installation and operation of BART at all sources subject to BART in the State and covered by the alternative program. This demonstration must be based on the following:

(A) A list of all BART-eligible sources within the State.

(B) A list of all BART-eligible sources and all BART source categories covered by the alternative program. The State is not required to include every BART source category or every BART-eligible source within a BART source category in an alternative program, but each BART-eligible source in the State must be subject to the requirements of the alternative program, have a federally enforceable emission limitation determined by the State and approved by EPA as meeting BART in accordance with section 302(c) or paragraph (e)(1) of this section, or otherwise addressed under paragraphs (e)(1) or (e)(4) of this section.

(C) An analysis of the best system of continuous emission control technology available and associated emission reductions achievable for each source within the State subject to BART and covered by the alternative program. This analysis must be conducted by making a determination of BART for each source subject to BART and covered by the alternative program as provided for in paragraph (e)(1) of this section, unless the emissions trading program or other alternative measure has been designed to meet a requirement other than BART (such as the core requirement to have a long-term strategy to achieve the reasonable progress goals established by States). In this case, the State may determine the best system of continuous emission control technology and associated emission reductions for similar

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types of sources within a source category based on both source-specific and category-wide information, as appropriate.

(D) An analysis of the projected emissions reductions achievable through the trading program or other alternative measure.

(E) A determination under paragraph (e)(3) of this section or otherwise based on the clear weight of evidence that the trading program or other alternative measure achieves greater reasonable progress than would be achieved through the installation and operation of BART at the covered sources.

(ii) [Reserved]

(iii) A requirement that all necessary emission reductions take place during the period of the first long-term strategy for regional haze. To meet this requirement, the State must provide a detailed description of the emissions trading program or other alternative measure, including schedules for implementation, the emission reductions required by the program, all necessary administrative and technical procedures for implementing the program, rules for accounting and monitoring emissions, and procedures for enforcement.

(iv) A demonstration that the emission reductions resulting from the emissions trading program or other alternative measure will be surplus to those reductions resulting from measures adopted to meet requirements of the CAA as of the baseline date of the SIP.

(v) At the State's option, a provision that the emissions trading program or other alternative measure may include a geographic enhancement to the program to address the requirement under § 51.302(b) or (c) related to reasonably attributable impairment from the pollutants covered under the emissions trading program or other alternative measure.

(vi) For plans that include an emissions trading program that establishes a cap on total annual emissions of SO<sub>2</sub> or NO<sub>x</sub> from sources subject to the program, requires the owners and operators of sources to hold allowances or authorizations to emit equal to emissions, and allows the owners and opera-

tors of sources and other entities to purchase, sell, and transfer allowances, the following elements are required concerning the emissions covered by the cap:

(A) Applicability provisions defining the sources subject to the program. The State must demonstrate that the applicability provisions (including the size criteria for including sources in the program) are designed to prevent any significant potential shifting within the State of production and emissions from sources in the program to sources outside the program. In the case of a program covering sources in multiple States, the States must demonstrate that the applicability provisions in each State cover essentially the same size facilities and, if source categories are specified, cover the same source categories and prevent any significant, potential shifting within such States of production and emissions to sources outside the program.

(B) Allowance provisions ensuring that the total value of allowances (in tons) issued each year under the program will not exceed the emissions cap (in tons) on total annual emissions from the sources in the program.

(C) Monitoring provisions providing for consistent and accurate measurements of emissions from sources in the program to ensure that each allowance actually represents the same specified tonnage of emissions and that emissions are measured with similar accuracy at all sources in the program. The monitoring provisions must require that boilers, combustion turbines, and cement kilns in the program allowed to sell or transfer allowances must comply with the requirements of part 75 of this chapter. The monitoring provisions must require that other sources in the program allowed to sell or transfer allowances must provide emissions information with the same precision, reliability, accessibility, and timeliness as information provided under part 75 of this chapter.

(D) Recordkeeping provisions that ensure the enforceability of the emissions monitoring provisions and other program requirements. The recordkeeping provisions must require that boilers, combustion turbines, and cement kilns in the program allowed to

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sell or transfer allowances must comply with the recordkeeping provisions of part 75 of this chapter. The recordkeeping provisions must require that other sources in the program allowed to sell or transfer allowances must comply with recordkeeping requirements that, as compared with the recordkeeping provisions under part 75 of this chapter, are of comparable stringency and require recording of comparable types of information and retention of the records for comparable periods of time.

(E) Reporting provisions requiring timely reporting of monitoring data with sufficient frequency to ensure the enforceability of the emissions monitoring provisions and other program requirements and the ability to audit the program. The reporting provisions must require that boilers, combustion turbines, and cement kilns in the program allowed to sell or transfer allowances must comply with the reporting provisions of part 75 of this chapter, except that, if the Administrator is not the tracking system administrator for the program, emissions may be reported to the tracking system administrator, rather than to the Administrator. The reporting provisions must require that other sources in the program allowed to sell or transfer allowances must comply with reporting requirements that, as compared with the reporting provisions under part 75 of this chapter, are of comparable stringency and require reporting of comparable types of information and require comparable timeliness and frequency of reporting.

(F) Tracking system provisions which provide for a tracking system that is publicly available in a secure, centralized database to track in a consistent manner all allowances and emissions in the program.

(G) Authorized account representative provisions ensuring that the owners and operators of a source designate one individual who is authorized to represent the owners and operators in all matters pertaining to the trading program.

(H) Allowance transfer provisions providing procedures that allow timely transfer and recording of allowances, minimize administrative barriers to

the operation of the allowance market, and ensure that such procedures apply uniformly to all sources and other potential participants in the allowance market.

(I) Compliance provisions prohibiting a source from emitting a total tonnage of a pollutant that exceeds the tonnage value of its allowance holdings, including the methods and procedures for determining whether emissions exceed allowance holdings. Such method and procedures shall apply consistently from source to source.

(J) Penalty provisions providing for mandatory allowance deductions for excess emissions that apply consistently from source to source. The tonnage value of the allowances deducted shall equal at least three times the tonnage of the excess emissions.

(K) For a trading program that allows banking of allowances, provisions clarifying any restrictions on the use of these banked allowances.

(L) Program assessment provisions providing for periodic program evaluation to assess whether the program is accomplishing its goals and whether modifications to the program are needed to enhance performance of the program.

(3) A State which opts under 40 CFR 51.308(e)(2) to implement an emissions trading program or other alternative measure rather than to require sources subject to BART to install, operate, and maintain BART may satisfy the final step of the demonstration required by that section as follows: If the distribution of emissions is not substantially different than under BART, and the alternative measure results in greater emission reductions, then the alternative measure may be deemed to achieve greater reasonable progress. If the distribution of emissions is significantly different, the State must conduct dispersion modeling to determine differences in visibility between BART and the trading program for each impacted Class I area, for the worst and best 20 percent of days. The modeling would demonstrate "greater reasonable progress" if both of the following two criteria are met:

(i) Visibility does not decline in any Class I area, and

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(ii) There is an overall improvement in visibility, determined by comparing the average differences between BART and the alternative over all affected Class I areas.

(4) A State whose sources are subject to a trading program established under part 97 of this chapter in accordance with a federal implementation plan set forth in § 52.38 or § 52.39 of this chapter or a trading program established under a SIP revision approved by the Administrator as meeting the requirements of § 52.38 or § 52.39 of this chapter need not require BART-eligible fossil fuel-fired steam electric plants in the State to install, operate, and maintain BART for the pollutant covered by such trading program in the State. A State may adopt provisions, consistent with the requirements applicable to the State's sources for such trading program, for a geographic enhancement to the trading program to address any requirement under § 51.302(b) or (c) related to reasonably attributable impairment from the pollutant covered by such trading program in that State.

(5) After a State has met the requirements for BART or implemented an emissions trading program or other alternative measure that achieves more reasonable progress than the installation and operation of BART, BART-eligible sources will be subject to the requirements of paragraphs (d) and (f) of this section, as applicable, in the same manner as other sources.

(6) Any BART-eligible facility subject to the requirement under paragraph (e) of this section to install, operate, and maintain BART may apply to the Administrator for an exemption from that requirement. An application for an exemption will be subject to the requirements of § 51.303(a)(2)–(h).

(f) *Requirements for periodic comprehensive revisions of implementation plans for regional haze.* Each State identified in § 51.300(b) must revise and submit its regional haze implementation plan revision to EPA by July 31, 2021, July 31, 2028, and every 10 years thereafter. The plan revision due on or before July 31, 2021, must include a commitment by the State to meet the requirements of paragraph (g) of this section. In each plan revision, the State must address regional haze in each

mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside the State that may be affected by emissions from within the State. To meet the core requirements for regional haze for these areas, the State must submit an implementation plan containing the following plan elements and supporting documentation for all required analyses:

(1) *Calculations of baseline, current, and natural visibility conditions; progress to date; and the uniform rate of progress.* For each mandatory Class I Federal area located within the State, the State must determine the following:

(i) *Baseline visibility conditions for the most impaired and clearest days.* The period for establishing baseline visibility conditions is 2000 to 2004. The State must calculate the baseline visibility conditions for the most impaired days and the clearest days using available monitoring data. To determine the baseline visibility condition, the State must calculate the average of the annual deciview index values for the most impaired days and for the clearest days for the calendar years from 2000 to 2004. The baseline visibility condition for the most impaired days or the clearest days is the average of the respective annual values. For purposes of calculating the uniform rate of progress, the baseline visibility condition for the most impaired days must be associated with the last day of 2004. For mandatory Class I Federal areas without on-site monitoring data for 2000–2004, the State must establish baseline values using the most representative available monitoring data for 2000–2004, in consultation with the Administrator or his or her designee. For mandatory Class I Federal areas with incomplete monitoring data for 2000–2004, the State must establish baseline values using the 5 complete years of monitoring data closest in time to 2000–2004.

(ii) *Natural visibility conditions for the most impaired and clearest days.* A State must calculate natural visibility condition by estimating the average deciview index existing under natural conditions for the most impaired days or the clearest days based on available monitoring information and appropriate data analysis techniques; and

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(iii) *Current visibility conditions for the most impaired and clearest days.* The period for calculating current visibility conditions is the most recent 5-year period for which data are available. The State must calculate the current visibility conditions for the most impaired days and the clearest days using available monitoring data. To calculate each current visibility condition, the State must calculate the average of the annual deciview index values for the years in the most recent 5-year period. The current visibility condition for the most impaired or the clearest days is the average of the respective annual values.

(iv) *Progress to date for the most impaired and clearest days.* Actual progress made towards the natural visibility condition since the baseline period, and actual progress made during the previous implementation period up to and including the period for calculating current visibility conditions, for the most impaired and for the clearest days.

(v) *Differences between current visibility condition and natural visibility condition.* The number of deciviews by which the current visibility condition exceeds the natural visibility condition, for the most impaired and for the clearest days.

(vi) *Uniform rate of progress.* (A) The uniform rate of progress for each mandatory Class I Federal area in the State. To calculate the uniform rate of progress, the State must compare the baseline visibility condition for the most impaired days to the natural visibility condition for the most impaired days in the mandatory Class I Federal area and determine the uniform rate of visibility improvement (measured in deciviews of improvement per year) that would need to be maintained during each implementation period in order to attain natural visibility conditions by the end of 2064.

(B) As part of its implementation plan submission, the State may propose (1) an adjustment to the uniform rate of progress for a mandatory Class I Federal area to account for impacts from anthropogenic sources outside the United States and/or (2) an adjustment to the uniform rate of progress for the mandatory Class I Federal area to ac-

count for impacts from wildland prescribed fires that were conducted with the objective to establish, restore, and/or maintain sustainable and resilient wildland ecosystems, to reduce the risk of catastrophic wildfires, and/or to preserve endangered or threatened species during which appropriate basic smoke management practices were applied. To calculate the proposed adjustment(s), the State must add the estimated impact(s) to the natural visibility condition and compare the baseline visibility condition for the most impaired days to the resulting sum. If the Administrator determines that the State has estimated the impact(s) from anthropogenic sources outside the United States and/or wildland prescribed fires using scientifically valid data and methods, the Administrator may approve the proposed adjustment(s) to the uniform rate of progress.

(2) *Long-term strategy for regional haze.* Each State must submit a long-term strategy that addresses regional haze visibility impairment for each mandatory Class I Federal area within the State and for each mandatory Class I Federal area located outside the State that may be affected by emissions from the State. The long-term strategy must include the enforceable emissions limitations, compliance schedules, and other measures that are necessary to make reasonable progress, as determined pursuant to (f)(2)(i) through (iv). In establishing its long-term strategy for regional haze, the State must meet the following requirements:

(i) The State must evaluate and determine the emission reduction measures that are necessary to make reasonable progress by considering the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected anthropogenic source of visibility impairment. The State should consider evaluating major and minor stationary sources or groups of sources, mobile sources, and area sources. The State must include in its implementation plan a description of the criteria it used to determine which sources or groups of sources it evaluated and how

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the four factors were taken into consideration in selecting the measures for inclusion in its long-term strategy. In considering the time necessary for compliance, if the State concludes that a control measure cannot reasonably be installed and become operational until after the end of the implementation period, the State may not consider this fact in determining whether the measure is necessary to make reasonable progress.

(ii) The State must consult with those States that have emissions that are reasonably anticipated to contribute to visibility impairment in the mandatory Class I Federal area to develop coordinated emission management strategies containing the emission reductions necessary to make reasonable progress.

(A) The State must demonstrate that it has included in its implementation plan all measures agreed to during state-to-state consultations or a regional planning process, or measures that will provide equivalent visibility improvement.

(B) The State must consider the emission reduction measures identified by other States for their sources as being necessary to make reasonable progress in the mandatory Class I Federal area.

(C) In any situation in which a State cannot agree with another State on the emission reduction measures necessary to make reasonable progress in a mandatory Class I Federal area, the State must describe the actions taken to resolve the disagreement. In reviewing the State's implementation plan, the Administrator will take this information into account in determining whether the plan provides for reasonable progress at each mandatory Class I Federal area that is located in the State or that may be affected by emissions from the State. All substantive interstate consultations must be documented.

(iii) The State must document the technical basis, including modeling, monitoring, cost, engineering, and emissions information, on which the State is relying to determine the emission reduction measures that are necessary to make reasonable progress in each mandatory Class I Federal area it

affects. The State may meet this requirement by relying on technical analyses developed by a regional planning process and approved by all State participants. The emissions information must include, but need not be limited to, information on emissions in a year at least as recent as the most recent year for which the State has submitted emission inventory information to the Administrator in compliance with the triennial reporting requirements of subpart A of this part. However, if a State has made a submission for a new inventory year to meet the requirements of subpart A in the period 12 months prior to submission of the SIP, the State may use the inventory year of its prior submission.

(iv) The State must consider the following additional factors in developing its long-term strategy:

(A) Emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment;

(B) Measures to mitigate the impacts of construction activities;

(C) Source retirement and replacement schedules;

(D) Basic smoke management practices for prescribed fire used for agricultural and wildland vegetation management purposes and smoke management programs; and

(E) The anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the long-term strategy.

(3) *Reasonable progress goals.* (i) A state in which a mandatory Class I Federal area is located must establish reasonable progress goals (expressed in deciviews) that reflect the visibility conditions that are projected to be achieved by the end of the applicable implementation period as a result of those enforceable emissions limitations, compliance schedules, and other measures required under paragraph (f)(2) of this section that can be fully implemented by the end of the applicable implementation period, as well as the implementation of other requirements of the CAA. The long-term strategy and the reasonable progress goals must provide for an improvement in visibility for the most impaired days

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since the baseline period and ensure no degradation in visibility for the clearest days since the baseline period.

(ii)(A) If a State in which a mandatory Class I Federal area is located establishes a reasonable progress goal for the most impaired days that provides for a slower rate of improvement in visibility than the uniform rate of progress calculated under paragraph (f)(1)(vi) of this section, the State must demonstrate, based on the analysis required by paragraph (f)(2)(i) of this section, that there are no additional emission reduction measures for anthropogenic sources or groups of sources in the State that may reasonably be anticipated to contribute to visibility impairment in the Class I area that would be reasonable to include in the long-term strategy. The State must provide a robust demonstration, including documenting the criteria used to determine which sources or groups or sources were evaluated and how the four factors required by paragraph (f)(2)(i) were taken into consideration in selecting the measures for inclusion in its long-term strategy. The State must provide to the public for review as part of its implementation plan an assessment of the number of years it would take to attain natural visibility conditions if visibility improvement were to continue at the rate of progress selected by the State as reasonable for the implementation period.

(B) If a State contains sources which are reasonably anticipated to contribute to visibility impairment in a mandatory Class I Federal area in another State for which a demonstration by the other State is required under (f)(3)(ii)(A), the State must demonstrate that there are no additional emission reduction measures for anthropogenic sources or groups of sources in the State that may reasonably be anticipated to contribute to visibility impairment in the Class I area that would be reasonable to include in its own long-term strategy. The State must provide a robust demonstration, including documenting the criteria used to determine which sources or groups or sources were evaluated and how the four factors required by paragraph (f)(2)(i) were taken into consideration in selecting the meas-

ures for inclusion in its long-term strategy.

(iii) The reasonable progress goals established by the State are not directly enforceable but will be considered by the Administrator in evaluating the adequacy of the measures in the implementation plan in providing for reasonable progress towards achieving natural visibility conditions at that area.

(iv) In determining whether the State's goal for visibility improvement provides for reasonable progress towards natural visibility conditions, the Administrator will also evaluate the demonstrations developed by the State pursuant to paragraphs (f)(2) and (f)(3)(ii)(A) of this section and the demonstrations provided by other States pursuant to paragraphs (f)(2) and (f)(3)(ii)(B) of this section.

(4) If the Administrator, Regional Administrator, or the affected Federal Land Manager has advised a State of a need for additional monitoring to assess reasonably attributable visibility impairment at the mandatory Class I Federal area in addition to the monitoring currently being conducted, the State must include in the plan revision an appropriate strategy for evaluating reasonably attributable visibility impairment in the mandatory Class I Federal area by visual observation or other appropriate monitoring techniques.

(5) So that the plan revision will serve also as a progress report, the State must address in the plan revision the requirements of paragraphs (g)(1) through (5) of this section. However, the period to be addressed for these elements shall be the period since the most recent progress report.

(6) *Monitoring strategy and other implementation plan requirements.* The State must submit with the implementation plan a monitoring strategy for measuring, characterizing, and reporting of regional haze visibility impairment that is representative of all mandatory Class I Federal areas within the State. Compliance with this requirement may be met through participation in the Interagency Monitoring of Protected Visual Environments network. The implementation plan must also provide for the following:

(i) The establishment of any additional monitoring sites or equipment

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needed to assess whether reasonable progress goals to address regional haze for all mandatory Class I Federal areas within the State are being achieved.

(ii) Procedures by which monitoring data and other information are used in determining the contribution of emissions from within the State to regional haze visibility impairment at mandatory Class I Federal areas both within and outside the State.

(iii) For a State with no mandatory Class I Federal areas, procedures by which monitoring data and other information are used in determining the contribution of emissions from within the State to regional haze visibility impairment at mandatory Class I Federal areas in other States.

(iv) The implementation plan must provide for the reporting of all visibility monitoring data to the Administrator at least annually for each mandatory Class I Federal area in the State. To the extent possible, the State should report visibility monitoring data electronically.

(v) A statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any mandatory Class I Federal area. The inventory must include emissions for the most recent year for which data are available, and estimates of future projected emissions. The State must also include a commitment to update the inventory periodically.

(vi) Other elements, including reporting, recordkeeping, and other measures, necessary to assess and report on visibility.

(g) *Requirements for periodic reports describing progress towards the reasonable progress goals.* Each State identified in § 51.300(b) must periodically submit a report to the Administrator evaluating progress towards the reasonable progress goal for each mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside the State that may be affected by emissions from within the State. The first progress report is due 5 years from submittal of the initial implementation plan addressing paragraphs (d) and (e) of this section. The first progress reports must be in the form of implementation plan

revisions that comply with the procedural requirements of § 51.102 and § 51.103. Subsequent progress reports are due by January 31, 2025, July 31, 2033, and every 10 years thereafter. Subsequent progress reports must be made available for public inspection and comment for at least 30 days prior to submission to EPA and all comments received from the public must be submitted to EPA along with the subsequent progress report, along with an explanation of any changes to the progress report made in response to these comments. Periodic progress reports must contain at a minimum the following elements:

(1) A description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the State.

(2) A summary of the emissions reductions achieved throughout the State through implementation of the measures described in paragraph (g)(1) of this section.

(3) For each mandatory Class I Federal area within the State, the State must assess the following visibility conditions and changes, with values for most impaired, least impaired and/or clearest days as applicable expressed in terms of 5-year averages of these annual values. The period for calculating current visibility conditions is the most recent 5-year period preceding the required date of the progress report for which data are available as of a date 6 months preceding the required date of the progress report.

(i)(A) Progress reports due before January 31, 2025. The current visibility conditions for the most impaired and least impaired days.

(B) Progress reports due on and after January 31, 2025. The current visibility conditions for the most impaired and clearest days;

(ii)(A) Progress reports due before January 31, 2025. The difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions.

(B) Progress reports due on and after January 31, 2025. The difference between current visibility conditions for



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the most impaired and clearest days and baseline visibility conditions.

(iii)(A) Progress reports due before January 31, 2025. The change in visibility impairment for the most impaired and least impaired days over the period since the period addressed in the most recent plan required under paragraph (f) of this section.

(B) Progress reports due on and after January 31, 2025. The change in visibility impairment for the most impaired and clearest days over the period since the period addressed in the most recent plan required under paragraph (f) of this section.

(4) An analysis tracking the change over the period since the period addressed in the most recent plan required under paragraph (f) of this section in emissions of pollutants contributing to visibility impairment from all sources and activities within the State. Emissions changes should be identified by type of source or activity. With respect to all sources and activities, the analysis must extend at least through the most recent year for which the state has submitted emission inventory information to the Administrator in compliance with the triennial reporting requirements of subpart A of this part as of a date 6 months preceding the required date of the progress report. With respect to sources that report directly to a centralized emissions data system operated by the Administrator, the analysis must extend through the most recent year for which the Administrator has provided a State-level summary of such reported data or an internet-based tool by which the State may obtain such a summary as of a date 6 months preceding the required date of the progress report. The State is not required to backcast previously reported emissions to be consistent with more recent emissions estimation procedures, and may draw attention to actual or possible inconsistencies created by changes in estimation procedures.

(5) An assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred since the period addressed in the most recent plan required under paragraph (f) of this section including whether or not these changes in an-

thropogenic emissions were anticipated in that most recent plan and whether they have limited or impeded progress in reducing pollutant emissions and improving visibility.

(6) An assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Class I Federal areas affected by emissions from the State, to meet all established reasonable progress goals for the period covered by the most recent plan required under paragraph (f) of this section.

(7) For progress reports for the first implementation period only, a review of the State's visibility monitoring strategy and any modifications to the strategy as necessary.

(8) For a state with a long-term strategy that includes a smoke management program for prescribed fires on wildland that conducts a periodic program assessment, a summary of the most recent periodic assessment of the smoke management program including conclusions if any that were reached in the assessment as to whether the program is meeting its goals regarding improving ecosystem health and reducing the damaging effects of catastrophic wildfires.

(h) *Determination of the adequacy of existing implementation plan.* At the same time the State is required to submit any progress report to EPA in accordance with paragraph (g) of this section, the State must also take one of the following actions based upon the information presented in the progress report:

(1) If the State determines that the existing implementation plan requires no further substantive revision at this time in order to achieve established goals for visibility improvement and emissions reductions, the State must provide to the Administrator a declaration that revision of the existing implementation plan is not needed at this time.

(2) If the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another State(s) which participated in a regional planning process, the State

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must provide notification to the Administrator and to the other State(s) which participated in the regional planning process with the States. The State must also collaborate with the other State(s) through the regional planning process for the purpose of developing additional strategies to address the plan's deficiencies.

(3) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources within the State, the State shall provide notification, along with available information, to the Administrator.

(4) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources within the State, the State shall revise its implementation plan to address the plan's deficiencies within one year.

(i) *What are the requirements for State and Federal Land Manager coordination?*

(1) By November 29, 1999, the State must identify in writing to the Federal Land Managers the title of the official to which the Federal Land Manager of any mandatory Class I Federal area can submit any recommendations on the implementation of this subpart including, but not limited to:

(i) Identification of impairment of visibility in any mandatory Class I Federal area(s); and

(ii) Identification of elements for inclusion in the visibility monitoring strategy required by § 51.305 and this section.

(2) The State must provide the Federal Land Manager with an opportunity for consultation, in person at a point early enough in the State's policy analyses of its long-term strategy emission reduction obligation so that information and recommendations provided by the Federal Land Manager can meaningfully inform the State's decisions on the long-term strategy. The opportunity for consultation will be deemed to have been early enough if the consultation has taken place at least 120 days prior to holding any public hearing or other public comment opportunity on an implementation plan (or plan revision) for regional haze required by this subpart. The oppor-

tunity for consultation on an implementation plan (or plan revision) or on a progress report must be provided no less than 60 days prior to said public hearing or public comment opportunity. This consultation must include the opportunity for the affected Federal Land Managers to discuss their:

(i) Assessment of impairment of visibility in any mandatory Class I Federal area; and

(ii) Recommendations on the development and implementation of strategies to address visibility impairment.

(3) In developing any implementation plan (or plan revision) or progress report, the State must include a description of how it addressed any comments provided by the Federal Land Managers.

(4) The plan (or plan revision) must provide procedures for continuing consultation between the State and Federal Land Manager on the implementation of the visibility protection program required by this subpart, including development and review of implementation plan revisions and progress reports, and on the implementation of other programs having the potential to contribute to impairment of visibility in mandatory Class I Federal areas.

[64 FR 35765, July 1, 1999, as amended at 70 FR 39156, July 6, 2005; 71 FR 60631, Oct. 13, 2006; 77 FR 33656, June 7, 2012; 82 FR 3124, Jan. 10, 2017]

**§ 51.309 Requirements related to the Grand Canyon Visibility Transport Commission.**

(a) What is the purpose of this section? This section establishes the requirements for the first regional haze implementation plan to address regional haze visibility impairment in the 16 Class I areas covered by the Grand Canyon Visibility Transport Commission Report. For the period through 2018, certain States (defined in paragraph (b) of this section as Transport Region States) may choose to implement the Commission's recommendations within the framework of the national regional haze program and applicable requirements of the Act by complying with the provisions of this section. If a Transport Region State submits an implementation plan which is approved by EPA as meeting

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the requirements of this section, it will be deemed to comply with the requirements for reasonable progress with respect to the 16 Class I areas for the period from approval of the plan through 2018. Any Transport Region State electing not to submit an implementation plan under this section is subject to the requirements of § 51.308 in the same manner and to the same extent as any State not included within the Transport Region. Except as provided in paragraph (g) of this section, each Transport Region State is also subject to the requirements of § 51.308 with respect to any other Federal mandatory Class I areas within the State or affected by emissions from the State.

(b) *Definitions.* For the purposes of this section:

(1) *16 Class I areas* means the following mandatory Class I Federal areas on the Colorado Plateau: Grand Canyon National Park, Sycamore Canyon Wilderness, Petrified Forest National Park, Mount Baldy Wilderness, San Pedro Parks Wilderness, Mesa Verde National Park, Weminuche Wilderness, Black Canyon of the Gunnison Wilderness, West Elk Wilderness, Maroon Bells Wilderness, Flat Tops Wilderness, Arches National Park, Canyonlands National Park, Capital Reef National Park, Bryce Canyon National Park, and Zion National Park.

(2) *Transport Region State* means one of the States that is included within the Transport Region addressed by the Grand Canyon Visibility Transport Commission (Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, and Wyoming).

(3) *Commission Report* means the report of the Grand Canyon Visibility Transport Commission entitled "Recommendations for Improving Western Vistas," dated June 10, 1996.

(4) *Fire* means wildfire, wildland fire, prescribed fire, and agricultural burning conducted and occurring on Federal, State, and private wildlands and farmlands.

(5) *Milestone* means the maximum level of annual regional SO<sub>2</sub> emissions, in tons per year, for a given year, assessed annually, through the year 2018, consistent with paragraph (d)(4) of this section.

(6) *Continuous decline in total mobile source emissions* means that the projected level of emissions from mobile sources of each listed pollutant in 2008, 2013, and 2018, are less than the projected level of emissions from mobile sources of each listed pollutant for the previous period (*i.e.*, 2008 less than 2003; 2013 less than 2008; and 2018 less than 2013).

(7) *Base year* means the year for which data for a source included within the program were used by the WRAP to calculate emissions as a starting point for development of the milestone required by paragraph (d)(4)(i) of this section.

(8)–(12) [Reserved]

(13) *Eligible renewable energy resource*, for purposes of 40 CFR 51.309, means electricity generated by non-nuclear and non-fossil low or no air emission technologies.

(c) *Implementation Plan Schedule.* Each Transport Region State electing to submit an implementation plan under this section must submit such a plan no later than December 17, 2007. Indian Tribes may submit implementation plans after this deadline.

(d) *Requirements of the first implementation plan for States electing to adopt all of the recommendations of the Commission Report.* Except as provided for in paragraph (e) of this section, each Transport Region State must submit an implementation plan that meets the following requirements:

(1) *Time period covered.* The implementation plan must be effective through December 31, 2018 and continue in effect until an implementation plan revision is approved by EPA in accordance with § 51.308(f).

(2) *Projection of visibility improvement.* For each of the 16 mandatory Class I areas located within the Transport Region State, the plan must include a projection of the improvement in visibility conditions (expressed in deciviews, and in any additional ambient visibility metrics deemed appropriate by the State) expected through the year 2018 for the most impaired and least impaired days, based on the implementation of all measures as required in the Commission report and the provisions in this section. The projection must be made in consultation

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with other Transport Region States with sources which may be reasonably anticipated to contribute to visibility impairment in the relevant Class I area. The projection may be based on a satisfactory regional analysis.

(3) *Treatment of clean-air corridors.* The plan must describe and provide for implementation of comprehensive emission tracking strategies for clean-air corridors to ensure that the visibility does not degrade on the least-impaired days at any of the 16 Class I areas. The strategy must include:

(i) An identification of clean-air corridors. The EPA will evaluate the State's identification of such corridors based upon the reports of the Commission's Meteorology Subcommittee and any future updates by a successor organization;

(ii) Within areas that are clean-air corridors, an identification of patterns of growth or specific sites of growth that could cause, or are causing, significant emissions increases that could have, or are having, visibility impairment at one or more of the 16 Class I areas.

(iii) In areas outside of clean-air corridors, an identification of significant emissions growth that could begin, or is beginning, to impair the quality of air in the corridor and thereby lead to visibility degradation for the least-impaired days in one or more of the 16 Class I areas.

(iv) If impairment of air quality in clean air corridors is identified pursuant to paragraphs (d)(3)(ii) and (iii) of this section, an analysis of the effects of increased emissions, including provisions for the identification of the need for additional emission reductions measures, and implementation of the additional measures where necessary.

(v) A determination of whether other clean air corridors exist for any of the 16 Class I areas. For any such clean air corridors, an identification of the necessary measures to protect against future degradation of air quality in any of the 16 Class I areas.

(4) *Implementation of stationary source reductions.* The first implementation plan submission must include:

(i) Provisions for stationary source emissions of SO<sub>2</sub>. The plan submission must include a SO<sub>2</sub> program that con-

tains quantitative emissions milestones for stationary source SO<sub>2</sub> emissions for each year through 2018. After the first two years of the program, compliance with the annual milestones may be measured by comparing a three-year rolling average of actual emissions with a rolling average of the emissions milestones for the same three years. During the first two years of the program, compliance with the milestones may be measured by a methodology of the States' choosing, so long as all States in the program use the same methodology. Compliance with the 2018 milestone shall be measured by comparing actual emissions from the year 2018 with the 2018 milestone. The milestones must provide for steady and continuing emissions reductions through 2018 consistent with the Commission's definition of reasonable progress, its goal of 50 to 70 percent reduction in SO<sub>2</sub> emissions from 1990 actual emission levels by 2040, applicable requirements under the CAA, and the timing of implementation plan assessments of progress and identification of any deficiencies which will be due in the years 2013 and 2018. The milestones must be shown to provide for greater reasonable progress than would be achieved by application of BART pursuant to §51.308(e)(2).

(ii) Documentation of emissions calculation methods for SO<sub>2</sub>. The plan submission must include documentation of the specific methodology used to calculate SO<sub>2</sub> emissions during the base year for each emitting unit included in the program. The implementation plan must also provide for documentation of any change to the specific methodology used to calculate emissions at any emitting unit for any year after the base year.

(iii) Monitoring, recordkeeping, and reporting of SO<sub>2</sub> emissions. The plan submission must include provisions requiring the monitoring, recordkeeping, and annual reporting of actual stationary source SO<sub>2</sub> emissions within the State. The monitoring, recordkeeping, and reporting data must be sufficient to determine annually whether the milestone for each year through 2018 is achieved. The plan submission must provide for reporting of

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these data by the State to the Administrator and to the regional planning organization. The plan must provide for retention of records for at least 10 years from the establishment of the record.

(iv) Criteria and Procedures for a Market Trading Program. The plan must include the criteria and procedures for conducting an annual evaluation of whether the milestone is achieved and, in accordance with paragraph (d)(4)(v) of this section, for activating a market trading program in the event the milestone is not achieved. A draft of the annual report evaluating whether the milestone for each year is achieved shall be completed no later than 12 months from the end of each milestone year. The plan must also provide for assessments of the program in the years 2013 and 2018.

(v) *Market trading program.* The implementation plan must include requirements for a market trading program to be implemented in the event that a milestone is not achieved. The plan shall require that the market trading program be activated beginning no later than 15 months after the end of the first year in which the milestone is not achieved. The plan shall also require that sources comply, as soon as practicable, with the requirement to hold allowances covering their emissions. Such market trading program must be sufficient to achieve the milestones in paragraph (d)(4)(i) of this section, and must be consistent with the elements for such programs outlined in §51.308(e)(2)(vi). Such a program may include a geographic enhancement to the program to address the requirement under §51.302(b) related to reasonably attributable impairment from the pollutants covered under the program.

(vi) Provision for the 2018 milestone.

(A) Unless and until a revised implementation plan is submitted in accordance with §51.308(f) and approved by EPA, the implementation plan shall prohibit emissions from covered stationary sources in any year beginning in 2018 that exceed the year 2018 milestone. In no event shall a market-based program approved under §51.308(f) allow an emissions cap for SO<sub>2</sub> that is

less stringent than the 2018 milestone, unless the milestones are replaced by a different program approved by EPA as meeting the BART and reasonable progress requirements established in §51.308.

(B) The implementation plan must provide a framework, including financial penalties for excess emissions based on the 2018 milestone, sufficient to ensure that the 2018 milestone will be met even if the implementation of the market trading program in paragraph (d)(4)(v) of this section has not yet been triggered, or the source allowance compliance provision of the trading program is not yet in effect.

(vii) Provisions for stationary source emissions of NO<sub>x</sub> and PM. The implementation plan must contain any necessary long term strategies and BART requirements for stationary source PM and NO<sub>x</sub> emissions. Any such BART provisions may be submitted pursuant to either §51.308(e)(1) or §51.308(e)(2).

(5) *Mobile sources.* The plan submission must provide for:

(i) Statewide inventories of onroad and nonroad mobile source emissions of VOC, NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, elemental carbon, and organic carbon for the years 2003, 2008, 2013, and 2018.

(A) The inventories must demonstrate a continuous decline in total mobile source emissions (onroad plus nonroad; tailpipe and evaporative) of VOC, NO<sub>x</sub>, PM<sub>2.5</sub>, elemental carbon, and organic carbon, evaluated separately. If the inventories show a continuous decline in total mobile source emissions of each of these pollutants over the period 2003–2018, no further action is required as part of this plan to address mobile source emissions of these pollutants. If the inventories do not show a continuous decline in mobile source emissions of one or more of these pollutants over the period 2003–2018, the plan submission must provide for an implementation plan revision by no later than December 31, 2008 containing any necessary long-term strategies to achieve a continuous decline in total mobile source emissions of the pollutant(s), to the extent practicable, considering economic and technological reasonableness and federal preemption of vehicle standards and fuel standards under title II of the CAA.

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(B) The plan submission must also provide for an implementation plan revision by no later than December 31, 2008 containing any long-term strategies necessary to reduce emissions of SO<sub>2</sub> from nonroad mobile sources, consistent with the goal of reasonable progress. In assessing the need for such long-term strategies, the State may consider emissions reductions achieved or anticipated from any new Federal standards for sulfur in nonroad diesel fuel.

(ii) Interim reports to EPA and the public in years 2003, 2008, 2013, and 2018 on the implementation status of the regional and local strategies recommended by the Commission Report to address mobile source emissions.

(6) *Programs related to fire.* The plan must provide for:

(i) Documentation that all Federal, State, and private prescribed fire programs within the State evaluate and address the degree visibility impairment from smoke in their planning and application. In addition the plan must include smoke management programs that include all necessary components including, but not limited to, actions to minimize emissions, evaluation of smoke dispersion, alternatives to fire, public notification, air quality monitoring, surveillance and enforcement, and program evaluation.

(ii) A statewide inventory and emissions tracking system (spatial and temporal) of VOC, NO<sub>x</sub>, elemental and organic carbon, and fine particle emissions from fire. In reporting and tracking emissions from fire from within the State, States may use information from regional data-gathering and tracking initiatives.

(iii) Identification and removal wherever feasible of any administrative barriers to the use of alternatives to burning in Federal, State, and private prescribed fire programs within the State.

(iv) Enhanced smoke management programs for fire that consider visibility effects, not only health and nuisance objectives, and that are based on the criteria of efficiency, economics, law, emission reduction opportunities, land management objectives, and reduction of visibility impact.

(v) Establishment of annual emission goals for fire, excluding wildfire, that

will minimize emission increases from fire to the maximum extent feasible and that are established in cooperation with States, tribes, Federal land management agencies, and private entities.

(7) *Area sources of dust emissions from paved and unpaved roads.* The plan must include an assessment of the impact of dust emissions from paved and unpaved roads on visibility conditions in the 16 Class I Areas. If such dust emissions are determined to be a significant contributor to visibility impairment in the 16 Class I areas, the State must implement emissions management strategies to address the impact as necessary and appropriate.

(8) *Pollution prevention.* The plan must provide for:

(i) An initial summary of all pollution prevention programs currently in place, an inventory of all renewable energy generation capacity and production in use, or planned as of the year 2002 (expressed in megawatts and megawatt-hours), the total energy generation capacity and production for the State, the percent of the total that is renewable energy, and the State's anticipated contribution toward the renewable energy goals for 2005 and 2015, as provided in paragraph (d)(8)(vi) of this section.

(ii) Programs to provide incentives that reward efforts that go beyond compliance and/or achieve early compliance with air-pollution related requirements.

(iii) Programs to preserve and expand energy conservation efforts.

(iv) The identification of specific areas where renewable energy has the potential to supply power where it is now lacking and where renewable energy is most cost-effective.

(v) Projections of the short- and long-term emissions reductions, visibility improvements, cost savings, and secondary benefits associated with the renewable energy goals, energy efficiency and pollution prevention activities.

(vi) A description of the programs relied on to achieve the State's contribution toward the Commission's goal that renewable energy will comprise 10 percent of the regional power needs by 2005 and 20 percent by 2015, and a demonstration of the progress toward achievement of the renewable energy

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goals in the years 2003, 2008, 2013, and 2018. This description must include documentation of the potential for renewable energy resources, the percentage of renewable energy associated with new power generation projects implemented or planned, and the renewable energy generation capacity and production in use and planned in the State. To the extent that it is not feasible for a State to meet its contribution to the regional renewable energy goals, the State must identify in the progress reports the measures implemented to achieve its contribution and explain why meeting the State's contribution was not feasible.

(9) *Implementation of additional recommendations.* The plan must provide for implementation of all other recommendations in the Commission report that can be practicably included as enforceable emission limits, schedules of compliance, or other enforceable measures (including economic incentives) to make reasonable progress toward remedying existing and preventing future regional haze in the 16 Class I areas. The State must provide a report to EPA and the public in 2003, 2008, 2013, and 2018 on the progress toward developing and implementing policy or strategy options recommended in the Commission Report.

(10) *Periodic implementation plan revisions and progress reports.* Each Transport Region State must submit to the Administrator periodic reports in the years 2013 and as specified for subsequent progress reports in §51.308(g). The progress report due in 2013 must be in the form of an implementation plan revision that complies with the procedural requirements of §§51.102 and 51.103.

(i) The report due in 2013 will assess the area for reasonable progress as provided in this section for mandatory Class I Federal area(s) located within the State and for mandatory Class I Federal area(s) located outside the State that may be affected by emissions from within the State. This demonstration may be based on assessments conducted by the States and/or a regional planning body. The progress report due in 2013 must contain at a minimum the following elements:

(A) A description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the State.

(B) A summary of the emissions reductions achieved throughout the State through implementation of the measures described in paragraph (d)(10)(i)(A) of this section.

(C) For each mandatory Class I Federal area within the State, an assessment of the following: the current visibility conditions for the most impaired and least impaired days; the difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions; the change in visibility impairment for the most impaired and least impaired days over the past 5 years.

(D) An analysis tracking the change over the past 5 years in emissions of pollutants contributing to visibility impairment from all sources and activities within the State. Emissions changes should be identified by type of source or activity. The analysis must be based on the most recent updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5-year period.

(E) An assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility.

(F) An assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Federal Class I areas affected by emissions from the State, to meet all established reasonable progress goals.

(G) A review of the State's visibility monitoring strategy and any modifications to the strategy as necessary.

(ii) At the same time the State is required to submit the 5-year progress report due in 2013 to EPA in accordance with paragraph (d)(10)(i) of this section, the State must also take one of the following actions based upon the information presented in the progress report:

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(A) If the State determines that the existing implementation plan requires no further substantive revision at this time in order to achieve established goals for visibility improvement and emissions reductions, the State must provide to the Administrator a negative declaration that further revision of the existing implementation plan is not needed at this time.

(B) If the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another State(s) which participated in a regional planning process, the State must provide notification to the Administrator and to the other State(s) which participated in the regional planning process with the States. The State must also collaborate with the other State(s) through the regional planning process for the purpose of developing additional strategies to address the plan's deficiencies.

(C) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another country, the State shall provide notification, along with available information, to the Administrator.

(D) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from within the State, the State shall develop additional strategies to address the plan deficiencies and revise the implementation plan no later than one year from the date that the progress report was due.

(iii) The requirements of § 51.308(g) regarding requirements for periodic reports describing progress towards the reasonable progress goals apply to States submitting plans under this section, with respect to subsequent progress reports due after 2013.

(iv) The requirements of § 51.308(h) regarding determinations of the adequacy of existing implementation plans apply to States submitting plans under this section, with respect to subsequent progress reports due after 2013.

(11) *State planning and interstate coordination.* In complying with the requirements of this section, States may

include emission reductions strategies that are based on coordinated implementation with other States. Examples of these strategies include economic incentive programs and transboundary emissions trading programs. The implementation plan must include documentation of the technical and policy basis for the individual State apportionment (or the procedures for apportionment throughout the transboundary region), the contribution addressed by the State's plan, how it coordinates with other State plans, and compliance with any other appropriate implementation plan approvability criteria. States may rely on the relevant technical, policy and other analyses developed by a regional entity (such as the Western Regional Air Partnership) in providing such documentation. Conversely, States may elect to develop their own programs without relying on work products from a regional entity.

(12) *Tribal implementation.* Consistent with 40 CFR Part 49, tribes within the Transport Region may implement the required visibility programs for the 16 Class I areas, in the same manner as States, regardless of whether such tribes have participated as members of a visibility transport commission.

(e) *States electing not to implement the commission recommendations.* Any Transport Region State may elect not to implement the Commission recommendations set forth in paragraph (d) of this section. Such States are required to comply with the timelines and requirements of § 51.308. Any Transport Region State electing not to implement the Commission recommendations must advise the other States in the Transport Region of the nature of the program and the effect of the program on visibility-impairing emissions, so that other States can take this information into account in developing programs under this section.

(f) [Reserved]

(g) Additional Class I areas. Each Transport Region State implementing the provisions of this section as the basis for demonstrating reasonable progress for mandatory Class I Federal areas other than the 16 Class I areas must include the following provisions



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in its implementation plan. If a Transport Region State submits an implementation plan which is approved by EPA as meeting the requirements of this section, it will be deemed to comply with the requirements for reasonable progress for the period from approval of the plan to 2018.

(1) A demonstration of expected visibility conditions for the most impaired and least impaired days at the additional mandatory Class I Federal area(s) based on emissions projections from the long-term strategies in the implementation plan. This demonstration may be based on assessments conducted by the States and/or a regional planning body.

(2) Provisions establishing reasonable progress goals and implementing any additional measures necessary to demonstrate reasonable progress for the additional mandatory Federal Class I areas. These provisions must comply with the provisions of § 51.308(d)(1) through (4).

(i) In developing long-term strategies pursuant to § 51.308(d)(3), the State may build upon the strategies implemented under paragraph (d) of this section, and take full credit for the visibility improvement achieved through these strategies.

(ii) The requirement under § 51.308(e) related to Best Available Retrofit Technology for regional haze is deemed to be satisfied for pollutants addressed by the milestones and backstop trading program if, in establishing the emission reductions milestones under paragraph (d)(4) of this section, it is shown that greater reasonable progress will be achieved for these additional Class I areas than would be achieved through the application of source-specific BART emission limitations under § 51.308(e)(1).

(iii) The Transport Region State may consider whether any strategies necessary to achieve the reasonable progress goals required by paragraph (g)(2) of this section are incompatible with the strategies implemented under paragraph (d) of this section to the extent the State adequately demonstrates that the incompatibility is related to the costs of the compliance, the time necessary for compliance, the energy and nonair quality environ-

mental impacts of compliance, or the remaining useful life of any existing source subject to such requirements.

[64 FR 35769, July 1, 1999, as amended at 68 FR 33784, June 5, 2003; 68 FR 39846, July 3, 2003; 68 FR 61369, Oct. 28, 2003; 68 FR 71014, Dec. 22, 2003; 71 FR 60632, Oct. 13, 2006; 82 FR 3128, Jan. 10, 2017]

**Subpart Q—Reports**

**AUTHORITY:** Secs. 110, 301(a), 313, 319, Clean Air Act (42 U.S.C. 7410, 7601(a), 7613, 7619).

**SOURCE:** 44 FR 27569, May 10, 1979, unless otherwise noted.

**AIR QUALITY DATA REPORTING****§ 51.320 Annual air quality data report.**

The requirements for reporting air quality data collected for purposes of the plan are located in subpart C of part 58 of this chapter.

**SOURCE EMISSIONS AND STATE ACTION REPORTING****§ 51.321 Annual source emissions and State action report.**

The State agency shall report to the Administrator (through the appropriate Regional Office) information as specified in §§ 51.322 through 51.326.

[67 FR 39615, June 10, 2002]

**§ 51.322 Sources subject to emissions reporting.**

The requirements for reporting emissions data under the plan are in subpart A of this part 51.

[67 FR 39615, June 10, 2002]

**§ 51.323 Reportable emissions data and information.**

The requirements for reportable emissions data and information under the plan are in subpart A of this part 51.

[67 FR 39615, June 10, 2002]

**§ 51.324 Progress in plan enforcement.**

(a) For each point source, the State shall report any achievement made during the reporting period of any increment of progress of compliance schedules required by:

(1) The applicable plan, or

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their frame of reference. Eulerian models are based on a fixed frame of reference and Lagrangian models use a frame of reference that moves with parcels of air between the source and receptor point.<sup>9</sup> Photochemical grid models are three-dimensional Eulerian grid-based models that treat chemical and physical processes in each grid cell and use diffusion and transport processes to move chemical species between grid cells.<sup>9</sup> These types of models are appropriate for assessment of near-field and regional scale reactive pollutant impacts from specific sources<sup>7 10 11 12</sup> or all sources.<sup>13 14 15</sup> In some limited cases, the secondary processes can be treated with a box model, ideally in combination with a number of other modeling techniques and/or analyses to treat individual source sectors.

c. Regardless of the modeling system used to estimate secondary impacts of ozone and/or PM<sub>2.5</sub>, model results should be compared to observation data to generate confidence that the modeling system is representative of the local and regional air quality. For ozone related projects, model estimates of ozone should be compared with observations in both time and space. For PM<sub>2.5</sub>, model estimates of speciated PM<sub>2.5</sub> components (such as sulfate ion, nitrate ion, etc.) should be compared with observations in both time and space.<sup>65</sup>

d. Model performance metrics comparing observations and predictions are often used to summarize model performance. These metrics include mean bias, mean error, fractional bias, fractional error, and correlation coefficient.<sup>65</sup> There are no specific levels of any model performance metric that indicate "acceptable" model performance. The EPA's preferred approach for providing context about model performance is to compare model performance metrics with similar contemporary applications.<sup>60 65</sup> Because model application purpose and scope vary, model users should consult with the appropriate reviewing authority (paragraph 3.0(b)) to determine what model performance elements should be emphasized and presented to provide confidence in the regulatory model application.

e. There is no preferred modeling system or technique for estimating ozone or secondary PM<sub>2.5</sub> for specific source impacts or to assess impacts from multiple sources. For assessing secondary pollutant impacts from single sources, the degree of complexity required to assess potential impacts varies depending on the nature of the source, its emissions, and the background environment. The EPA recommends a two-tiered approach where the first tier consists of using existing technically credible and appropriate relationships between emissions and impacts developed from previous modeling that is deemed sufficient for evaluating a source's impacts. The second tier consists of more sophisti-

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cated case-specific modeling analyses. The appropriate tier for a given application should be selected in consultation with the appropriate reviewing authority (paragraph 3.0(b)) and be consistent with EPA guidance.<sup>66</sup>

**5.3 Recommended Models and Approaches for Ozone**

a. Models that estimate ozone concentrations are needed to guide the choice of strategies for the purposes of a nonattainment area demonstrating future year attainment of the ozone NAAQS. Additionally, models that estimate ozone concentrations are needed to assess impacts from specific sources or source complexes to satisfy requirements for NSR and other regulatory programs. Other purposes for ozone modeling include estimating the impacts of specific events on air quality, ozone deposition impacts, and planning for areas that may be attaining the ozone NAAQS.

**5.3.1 Models for NAAQS Attainment Demonstrations and Multi-Source Air Quality Assessments**

a. Simulation of ozone formation and transport is a complex exercise. Control agencies with jurisdiction over areas with ozone problems should use photochemical grid models to evaluate the relationship between precursor species and ozone. Use of photochemical grid models is the recommended means for identifying control strategies needed to address high ozone concentrations in such areas. Judgment on the suitability of a model for a given application should consider factors that include use of the model in an attainment test, development of emissions and meteorological inputs to the model, and choice of episodes to model. Guidance on the use of models and other analyses for demonstrating attainment of the air quality goals for ozone is available.<sup>59 60</sup> Users should consult with the appropriate reviewing authority (paragraph 3.0(b)) to ensure the most current modeling guidance is applied.

**5.3.2 Models for Single-Source Air Quality Assessments**

a. Depending on the magnitude of emissions, estimating the impact of an individual source's emissions of NO<sub>x</sub> and VOC on ambient ozone is necessary for obtaining a permit. The simulation of ozone formation and transport requires realistic treatment of atmospheric chemistry and deposition. Models (*e.g.*, Lagrangian and photochemical grid models) that integrate chemical and physical processes important in the formation, decay, and transport of ozone and important precursor species should be applied. Photochemical grid models are primarily designed

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to characterize precursor emissions and impacts from a wide variety of sources over a large geographic area but can also be used to assess the impacts from specific sources.<sup>7 11 12</sup>

b. The first tier of assessment for ozone impacts involves those situations where existing technical information is available (*e.g.*, results from existing photochemical grid modeling, published empirical estimates of source specific impacts, or reduced-form models) in combination with other supportive information and analysis for the purposes of estimating secondary impacts from a particular source. The existing technical information should provide a credible and representative estimate of the secondary impacts from the project source. The appropriate reviewing authority (paragraph 3.0(b)) and appropriate EPA guidance<sup>66</sup> should be consulted to determine what types of assessments may be appropriate on a case-by-case basis.

c. The second tier of assessment for ozone impacts involves those situations where existing technical information is not available or a first tier demonstration indicates a more refined assessment is needed. For these situations, chemical transport models should be used to address single-source impacts. Special considerations are needed when using these models to evaluate the ozone impact from an individual source. Guidance on the use of models and other analyses for demonstrating the impacts of single sources for ozone is available.<sup>66</sup> This guidance document provides a more detailed discussion of the appropriate approaches to obtaining estimates of ozone impacts from a single source. Model users should use the latest version of the guidance in consultation with the appropriate reviewing authority (paragraph 3.0(b)) to determine the most suitable refined approach for single-source ozone modeling on a case-by-case basis.

### 5.4 Recommended Models and Approaches for Secondarily Formed PM<sub>2.5</sub>

a. Models that estimate PM<sub>2.5</sub> concentrations are needed to guide the choice of strategies for the purposes of a nonattainment area demonstrating future year attainment of the PM<sub>2.5</sub> NAAQS. Additionally, models that estimate PM<sub>2.5</sub> concentrations are needed to assess impacts from specific sources or source complexes to satisfy requirements for NSR and other regulatory programs. Other purposes for PM<sub>2.5</sub> modeling include estimating the impacts of specific events on air quality, visibility, deposition impacts, and planning for areas that may be attaining the PM<sub>2.5</sub> NAAQS.

### 5.4.1 Models for NAAQS Attainment Demonstrations and Multi-Source Air Quality Assessments

a. Models for PM<sub>2.5</sub> are needed to assess the adequacy of a proposed strategy for meeting the annual and 24-hour PM<sub>2.5</sub> NAAQS. Modeling primary and secondary PM<sub>2.5</sub> can be a multi-faceted and complex problem, especially for secondary components of PM<sub>2.5</sub> such as sulfates and nitrates. Control agencies with jurisdiction over areas with secondary PM<sub>2.5</sub> problems should use models that integrate chemical and physical processes important in the formation, decay, and transport of these species (*e.g.*, photochemical grid models). Suitability of a modeling approach or mix of modeling approaches for a given application requires technical judgment as well as professional experience in choice of models, use of the model(s) in an attainment test, development of emissions and meteorological inputs to the model, and selection of days to model. Guidance on the use of models and other analyses for demonstrating attainment of the air quality goals for PM<sub>2.5</sub> is available.<sup>59 60</sup> Users should consult with the appropriate reviewing authority (paragraph 3.0(b)) to ensure the most current modeling guidance is applied.

### 5.4.2 Models for Single-Source Air Quality Assessments

a. Depending on the magnitude of emissions, estimating the impact of an individual source's emissions on secondary particulate matter concentrations may be necessary for obtaining a permit. Primary PM<sub>2.5</sub> components shall be simulated using the general modeling requirements in section 4.2.3.5. The simulation of secondary particulate matter formation and transport is a complex exercise requiring realistic treatment of atmospheric chemistry and deposition. Models should be applied that integrate chemical and physical processes important in the formation, decay, and transport of these species (*e.g.*, Lagrangian and photochemical grid models). Photochemical grid models are primarily designed to characterize precursor emissions and impacts from a wide variety of sources over a large geographic area and can also be used to assess the impacts from specific sources.<sup>7 10</sup> For situations where a project source emits both primary PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors, the contribution from both should be combined for use in determining the source's ambient impact. Approaches for combining primary and secondary impacts are provided in appropriate guidance for single source permit related demonstrations.<sup>66</sup>

b. The first tier of assessment for secondary PM<sub>2.5</sub> impacts involves those situations where existing technical information is available (*e.g.*, results from existing photochemical grid modeling, published empirical