

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION



18 AAC 50 AIR QUALITY CONTROL

Response to Comments on September 10, 2020, Proposed Regulations:

November 18, 2020

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Introduction

This document provides the Alaska Department of Environmental Conservation's (ADEC) response to public comments received regarding the September 10, 2020 draft regulations pertaining to regulation changes applicable to air quality and the Serious State Implementation Plan (SIP) for the Fairbanks North Star Borough (FNSB) nonattainment area. The proposed technical amendments are needed to demonstrate that the SIP will meet the requirements of CAA Section 189(d), in addition to the requirements of CAA sections 172 and 189(b) including the annual five percent emission reduction requirement.

The details describing the proposed regulation changes were presented in ADEC's public notice dated September 10, 2020, and the supplemental public notice dated October 2, 2020, which added additional phone numbers for the virtual public hearing. ADEC received emailed comments, oral testimony at ADEC's public hearing, and comments submitted via the Air Quality Division's online comment system.

This document responds to comments from:

- Public Hearing Comments from October 15, 2020
 - Barbara Haney
- Jakob Theurich
- Fairbanks North Star Borough Assembly (FNSBA)
- Fairbanks Economic Development Corporation (FEDC)
- Petro Star
- B. Hoffman
- Lynn Larsen
- Joan Franz
- Mary Ann Nickles
- John Davies
- Linda Schandelmeier
- Adam Moser
- Greater Fairbanks Chamber of Commerce
- Aurora Energy, LLC
- Environmental Protection Agency (EPA)
- M. Vanslyke
- Mary Kay Teel
- Citizens for Clean Air and Alaska Community Action on Toxics (CCA/ACAT)
- Patrice Lee

This document does not respond to comments received after the October 29, 2020, 11:59 p.m. deadline.

Opportunities for Public Comment

The public notice dated September 10, 2020, provided information on the opportunities for the public to submit comments. The deadline to submit comments was October 29, 2020 at 11:59 p.m. This provided a 49-day period for the public to review the proposal and submit comments.

Opportunities to submit written comments included submitting electronic comments using the Air Quality Division's online comment form, submitting electronic comments via email, submitting written comments via facsimile, and submitting written comments via email.

The Division provided an opportunity for individuals to provide oral comments at an evening public hearing held telephonically using the Alaska Legislature's Legislative Information Office hearing system on October 15, 2020.

Comments from the Environmental Protection Agency

(Note: EPA specific comments presented are verbatim and not summarized by ADEC. ADEC responses follow each set of EPA comments.)

Summary of 2020 DEC Proposed Regulations & SIP Amendments

The Alaska Department of Environmental Conservation (ADEC) submitted the Serious Area Plan for the Fairbanks PM_{2.5} nonattainment area on December 13, 2019. The EPA determined the plan met the completeness criteria on January 9, 2020 (85 FR 7760). Subsequently, the EPA found that the Fairbanks PM_{2.5} nonattainment area failed to attain by the applicable Serious area attainment date of December 31, 2019 (85 FR 54509). Alaska is now proposing this plan, comprised of revisions to state regulations and the State Air Quality Control Plan, to meet the requirements of CAA Section 189(d), in addition to the requirements of CAA sections 172 and 189(b) (“Proposed 189(d) Plan”).

Scope and Basis of EPA’s Review

The EPA shares these comments to provide continuing guidance and support to the state in the development of the Proposed 189(d) Plan and any necessary subsequent plans or support materials for the Fairbanks PM_{2.5} nonattainment area. The EPA reviewed the Proposed 189(d) Plan against the requirements of Sections 171-173, and 188-189 of the Clean Air Act (CAA), 42 U.S.C. § 7501-7503 & 7513-7514, and EPA’s implementing regulations at 40 CFR part 51, subpart Z and associated guidance. These comments are not necessarily exhaustive, however, and thus the absence of discussion of certain plan requirements should not be construed as a determination that the plan meets those requirements. The EPA’s full evaluation of the Proposed 189(d) Plan must be based on the actual SIP submission ultimately made by DEC to the agency and will be subject to notice and public comment process at that time. The comments are organized by planning requirement. Comments that raise potential approvability issues are denoted by the “***” symbol. Other comments are intended to strengthen or clarify portions of the SIP. An attainment plan that meets the requirements of the CAA and EPA’s regulations will be important to the area’s success in reaching attainment as expeditiously as possible. Mindful of the resources necessary to develop and implement such a plan, the EPA will continue to support planning efforts in the nonattainment area through technical support and regulation development. Where possible, the agency may provide financial assistance, through grant programs such as Targeted Air Sheds grants.

EPA Comments on the Proposed 189(d) Plan

Comment: i. Emissions Inventory Requirements

The Proposed 189(d) Plan includes a 2019 baseline inventory and a 2024 attainment projection inventory that includes all relevant emissions sources in the nonattainment area.

- a) Gridded emissions plots are an important visual tool for quality assurance and to determine whether the requirements under 40 CFR § 51.1008(c) have been met. Please consider including these in the final 189(d) plan SIP submission.

Response: A series of gridded emissions plots (Figure 7.6-37 through Figure 7.6-41) and accompanying narrative have been included within Section 7.6.6.8 of the 2020 Amendments Plan.

The Emissions Inventory section of the SIP was amended in response to these comments.

Comment: ii. Pollutants to be Addressed in the Plan

The Proposed 189(d) Plan includes ADEC's determination that sulfur dioxide (SO₂) and ammonia (NH₃) are significant precursors in the Fairbanks nonattainment area. The Proposed 189(d) Plan includes precursor demonstrations for VOCs and NO_x supporting ADEC's determination that these pollutants do not significantly contribute to PM_{2.5} concentrations. The Proposed 189(d) Plan includes an additional precursor demonstration model run for NO_x that replaces a semi-quantitative analysis that was previously conducted for the Serious Area Plan. The EPA provides the following comments on ADEC's determination of pollutants to be addressed in the plan:

- a) We agree with Alaska's finding in the Serious Area Plan that SO₂ emissions are a significant precursor to PM_{2.5}.
- b) The additional model run in the Proposed 189(d) Plan provides further weight of evidence for ADEC's prior conclusion in the Serious Area Plan that NO_x from all anthropogenic sources is insignificant, to meet the requirements under 40 CFR 51.1006, except 40 CFR 51.1006(a)(3) with respect to nonattainment new source review, and the guidance in the 2019 EPA memorandum, "*Fine Particulate Matter (PM_{2.5}) Precursor Demonstration Guidance*."
- c) In addition to the NO_x model run in the Proposed 189(d) Plan, ADEC is relying on the results of the precursor demonstration in the Serious Area Plan to meet the requirements under 40 CFR 51.1006. Please confirm that the Proposed 189(d) Plan builds upon the analysis in the Serious Area Plan, Section 7.8.12.

Response: Language has been added to Section 7.8.14.3 of the 2020 Amendments Plan that explicitly confirms the updated precursor demonstration builds upon the analysis documented under Section 7.8.12 of the Serious SIP to meet the requirements of 40 CFR 51.1006.

The Modelling Section of the SIP was amended in response to these comments.

Comment: iii. Control Strategy Requirements

***The Proposed 189(d) Plan includes a suite of control measures that ADEC states will achieve attainment as expeditiously as practicable and that will achieve at least a 5 percent reduction in emissions of direct PM_{2.5} or a plan precursor. Aside from the new contingency measure, the control strategy for the Proposed 189(d) Plan is comprised of the same suite of measures ADEC proposed as meeting the Best Available Control Measures (BACM) requirement for the Serious Area Plan.¹ The Proposed 189(d) Plan includes an updated control measure analysis as required

¹ Note that EPA has yet to determine whether this suite of controls, as incorporated into the previously submitted Serious Area Plan, meets the BACM requirement in Section 189(b) of the CAA and 40 CFR 51.1010(a).

under 40 CFR 51.1010(c) in support of ADEC's determination that no additional controls are necessary. Specifically, ADEC surveyed other state's SIPs for any new control measures adopted after ADEC submitted the Serious Area Plan and reevaluated BACM and Most Stringent Measures (MSM) that the state rejected as technologically or economically infeasible to implement in the Serious Area Plan.² Below are comments on the Control Strategy provisions of the Proposed 189(d) Plan based on EPA's evaluation of these provisions against the requirements of Sections 189(b) and 189(d) of the CAA, as well as 40 CFR 51.1010(a) and (c).

- a) ***The Proposed 189(d) Plan includes control measures, identified in the Serious Area Plan, that will not be implemented until as late as 2024, as outlined in Table 7.7-28. These measures include a requirement to remove all uncertified woodstove devices, outdoor hydronic heaters, and coal heaters by December 31, 2024 (18 AAC 50.077(l) and 18 AAC 50.079(f)); a requirement to shift from #2 oil (i.e., 2,566 parts per million sulfur content) to #1 oil (i.e., 1,000 parts per million sulfur content) for residential and commercial space heating by September 1, 2022 (18 AAC 50.078(b)); a requirement that after October 1, 2021, commercially sold wood must be dry before sale (18 AAC 50.076(k)). In accordance with 40 CFR 51.1010(c), the State shall adopt and implement all control measures that collectively achieve attainment of the standard as expeditiously as practicable. We suggest that the Proposed 189(d) Plan includes a re-evaluation of the implementation schedule of these control measures to determine whether attainment could be achieved more expeditiously than December 31, 2024.
- b) ***The Proposed 189(d) Plan identifies Measure 51, requiring ultra-low sulfur diesel (ULSD) for liquid fuel heating devices in the nonattainment area, as technologically and economically feasible, yet the Proposed 189(d) Plan does not adopt this control measure. Alaska's justification for not adopting and implementing Measure 51 is inconsistent with the regulation under 40 CFR 51.1010 or CAA Section 189. To approve Alaska's control measure analysis in the Proposed 189(d) Plan, Alaska would need to adopt and implement this control measure or provide additional justification, consistent with the applicable regulations, for why this measure is technologically or economically infeasible.
- c) The Proposed 189(d) Plan includes an updated analysis of Measure 67, emissions controls for coffee roasters. As written, state rule 18 AAC 50.078(d) purporting to implement this measure does not appear to be enforceable as a practical matter. The rule does not require use of emissions controls once installed, specify any emission limits, nor monitoring requirements with which the subject sources must comply. In addition, the rule contains a waiver provision based on the facility providing information demonstrating that the control technology is technologically or economically infeasible. This provision is not adequately specific or bounded and, thus, may bar effective enforcement. See 81 FR 58010, 58047. In addition, the state must adopt permanent and enforceable control measures for this source category even if certain sources within the source category have existing emissions controls.
- d) ADEC should provide an explanation for its projections of enhanced compliance and penetration rates, particularly for the updated episodic solid fuel burning device

² As discussed further below, ADEC did not conduct this analysis for previously rejected best available control technologies applicable to certain stationary sources.

curtailment program. ADEC should explain whether its projections are attributable to planned enhanced enforcement, educational outreach, or some other initiative.

Response: Responses to comments a) through d) are provided separately below.

- a) Under the Serious SIP, the implementation schedule for all implemented measures, including those specifically listed in Comment iii.a above was established to reflect “earliest” feasible implementation, driven under the Serious Plan by a much higher baseline design value (132 $\mu\text{g}/\text{m}^3$) than utilized from more recent monitoring data under the 2020 Amendments (65 $\mu\text{g}/\text{m}^3$). In preparing the 2020 Amendments to the Plan, ADEC re-examined these implementation dates and found no rationale to support advancing them sooner than projected under the Serious Plan. For measures such as requiring removal of uncertified solid fuel devices (18 AAC 50.077(l) and 18 AAC 50.079(f)), switching to #1 heating oil (18 AAC 50.078(b)) and commercially-sold dry wood (18 AAC 50.076(k)), ADEC believes the lead-time requirements as determined under the Serious Plan remain unchanged.
- b) In response to EPA’s comments on the feasibility of ultra-low sulfur diesel (ULSD) as a home heating sulfur control measure and the department’s current approach of using 1000 ppmw diesel for heating oil rather than ULSD, the department notes that 40 CFR 50.1010(b)(3)(i) allows for consideration of “potential environmental impacts such as increased water pollution, waste disposal, and energy requirements” when addressing the technical feasibility of a potential control measure. To provide further justification for its decision related to the technical and economic feasibility of implementing ULSD within the nonattainment area, the department has included in Section III.D.7.7.12.4 additional information on petroleum spills associated with fuel and commercial trucking incidents on Alaska’s highways (excluding the Dalton Highway north of Fairbanks). There are no pipelines to transport fuel between the Fairbanks area and the in-state refineries that produce ULSD and importing fuel may require additional dedicated storage tanks to support such a transition. The department found that in a 10-year period from 2009-2019, 25 reported spills occurred with approximately 27,600 gallons spilled to the environment. Alaska’s highways pass through wilderness and remote terrain and spills along the roadways can impact adjacent water bodies, the roadbed, and groundwater causing environmental damage and the costs for cleanup and remediation of the spilled fuel. These vehicular incidents have also resulted in injury and death to commercial vehicle operators driving these trucks. The full importation of ULSD for heating oil in the nonattainment area would result in many more trucks and railcars transporting fuel throughout the winter months when inclement weather conditions routinely exist, an associated increased risks of fuel spills, and when spills occur the costs to mitigate and remediate those impacts to the environment.

The department also conducted additional inventory development and photochemical grid modeling to further evaluate the effects of requiring ULSD on modeled attainment. An alternative to the 2023 Control inventory described in the plan was developed in which all distillate fuel for GVEA North Pole as well as all other point sources and all residential and commercial space heating was assumed to be ULSD (15 ppmw sulfur). That “2023 ULSD” modeling analysis determined that attainment could still not be further advanced sooner than 2024 assuming a full transition to ULSD through the point and space heating sectors in 2023.

The modeled design value for the 2023 run was 37.0 $\mu\text{g}/\text{m}^3$. The modeled design value for the 2023 USLD scenario was 36.9 $\mu\text{g}/\text{m}^3$, reflecting only a 0.1 $\mu\text{g}/\text{m}^3$ reduction from a transition to ULSD.

- c) State rule 18 AAC 50.078(d) became effective on January 8, 2020 and requires the installation of either a catalytic oxidizer or thermal oxidizer on any coffee roaster emitting particulate matter at or above the 24 lb/year threshold. ADEC has implemented the rule as written and is prepared to enforce the requirement. EPA's comment raised issues with how the state rule was drafted, contending that as written the measure does not appear to be enforceable as a practical matter. ADEC acknowledges the issues raised by EPA, however ADEC is not providing a response here as no proposal was put out to public comment to revise State rule 18 AAC 50.078(d) and it is important that all parties have equal opportunity to comment. ADEC remains committed to working through issues raised by EPA related to State rule 18 AAC 50.078(d) during their review process of the Serious SIP.

Coffee roasting emissions represent a tiny fraction of the particulate inventory for Fairbanks nonattainment area. An analysis of the cost effectiveness of applying the mandated controls to coffee roasters exceeding the 24 lb/year uncontrolled PM threshold found that it would produce a \$/ton value that is more than three orders of magnitude above controls applied to other sources mandated in this plan. Given the slow growth of the community it is unlikely that any future coffee roasting source will exceed the 24 lb/year PM threshold, but if it does, a spreadsheet has been prepared to quantify the cost effectiveness of applying controls to that source.

- d) In general, increases in compliance/penetration rates for specific control measures forecasted in the 2020 Amendments (e.g., in Table 7.9-3 of Section III.D.7.9, Attainment Demonstration – 2024) reflect projections in effectiveness of on-going public outreach efforts, and in some cases additional compliance and enforcement measures. Measure-specific explanations for the projected compliance and penetration rates have been added to Section III.D.7.9.1.1. With respect to the Solid Fuel Burning Device Curtailment Program, the expected increase in compliance from 30% in 2019 to 45% in 2023 and 2024 is driven by funding anticipated under the 2019-2020 Targeted Airshed Grant (TAG). Funding under the TAG will be used to: 1) deploy roadway dynamic message sign (DMS) systems within the nonattainment area to increase public awareness of curtailment alerts; 2) purchase and use of infrared camera to enhance enforcement under dark/low-light winter conditions; 3) increase compliance staffing; and 4) perform additional in-field curtailment compliance assessment and enforcement surveys.

Section III.D.7.7.12.4.4 has been revised to address comment 'b'. Section III.D.7.9.1.1 has been revised to address comment 'd'.

Comment: iv. Control Strategy Requirements – Best Available Control Technology (BACT)

***The Serious Area Plan included a BACT analysis for applicable sources in which the state rejected several control technologies as technologically or economically infeasible. The Proposed 189(d) Plan does not include an updated BACT analysis. In accordance with 40 CFR 51.1010(c)(2)(ii), ADEC must reconsider and reassess any measure previously rejected by the state during the development of any Moderate area or Serious area attainment plan control strategy. The EPA provided comments about Alaska's BACT analysis in our July 19, 2019, comment letter during the development of the Serious Area Plan (along with previous correspondence dating back to 2013). Many of the comments in our July 19, 2019, comment letter are still applicable, most importantly our comments regarding the absence of site-specific vendor quotes or cost estimates for SO₂ control technologies. Appendix A³ contains EPA's latest comments on ADEC's BACT analysis and determinations in the Serious Area Plan. The EPA is providing these comments to assist the state in reevaluating previously rejected BACT in accordance with 40 CFR 51.1010(c)(2)(ii) and identifying, adopting, and implementing BACT consistent with Section 189(b) of the CAA and 40 CFR 51.1010(a).

Response: ADEC completed the required BACT determinations for the Serious SIP and submitted them to EPA Region 10 less than one year ago (in December 2019) for EPA's required, formal review and action. In completing that process, ADEC took into consideration EPA's July 19, 2019 comments and other comments received during the public comment period. As these BACT determinations are state required control measures within the Serious SIP, ADEC is currently implementing those state BACT decisions through the ADEC Air Permit Program and the SIP as drafted demonstrates attainment by 2024. Given the short timeframe since the state made the final BACT decisions and put them into regulatory effect at the state level, the department in reviewing its BACT decisions during this 189(d) process did not find it necessary to make revisions to those decisions and acknowledges that this was not documented in the SIP revisions released for public comment. The 2020 SIP Amendments will be modified to include language that certifies the department has reviewed the BACT determinations finalized in December 2019 and included in the current Serious SIP and is relying on those determinations to meet the 189(d) requirements.

With all due respect to EPA's reiteration of specific comments related to the BACT determinations made in the current serious SIP, as identified in their comment letter and Appendix A, ADEC is not responding to those comments here as no proposal was put out to public comment to revise the existing BACT determinations and it is important that all parties have equal opportunity to comment. ADEC recognizes that under the Clean Air Act that a partnership between States and EPA exists in developing and implementing SIPs, with EPA having a federal oversight role and specific obligations to act on Alaska's SIP rendering it federally enforceable. ADEC remains committed to working through issues raised by EPA related to BACT during their review process of the Serious SIP and through the state's permitting process, but the specific comments presented here are outside the scope of the current state proposal. ADEC notes that if EPA actions delay or significantly alter the state's BACT determinations, the benefits of the capital improvements associated with implementing different alternatives would not be achieved within the timeframe projected for attainment.

³ Note: EPA's Appendix A is included as an attachment at the end of this Response to Comment document.

Section III.D.7.7.12 was modified to certify the department's review of BACT decisions with respect to 189(d) requirements. No other specific edits or changes were made to the SIP in response to these comments.

Comment: v. Attainment Demonstration and Modeling Requirements

***The Proposed 189(d) Plan includes an updated precursor demonstration and an updated attainment demonstration with a projected attainment date of 2024. The attainment demonstration is based on estimating improved air quality from updated 24-hour PM_{2.5} Design Value calculations, using the most recent air quality monitor data through 2019. As required in 40 CFR 51.1003(c) and 40 CFR 51.1010(c), the Proposed 189(d) Plan includes a demonstration that the area will achieve at least 5% annual reductions of PM_{2.5} or a PM_{2.5} precursor through 2024, see Table 7.9-6. Below are additional comments:

- a) Now that the Fairbanks PM_{2.5} nonattainment area is subject to CAA section 189(d) requirements, the attainment demonstration chapter in the Proposed 189(d) Plan (State Air Quality Control Plan, Vol II, Section III.D.7.9) should reference 40 CFR 51.1004(a)(3) and demonstrate that the projected attainment date reflects attainment “as expeditiously as practicable,” in compliance with this regulation.
- b) ***As noted in the control strategy section, Alaska’s Serious Plan included revisions to the solid fuel burning appliance episodic curtailment program. Table 7.9-3 of the Proposed 189(d) Plan presents the Control Measure Phase-In Forecast for Inventory Years 2020-2024, including percent compliance with certain control measures. ADEC should include its basis for the compliance rate assumptions for each control measure category. With respect to compliance with the solid fuel burning appliance episodic curtailment program, ADEC states in Table 7.9-2, “Solid Fuel Burning Appliance (SFBA) Episodic Curtailment Program, reflects enhanced compliance by future attainment date.” ADEC should provide an explanation for its projection of enhanced compliance with this program, such as enforcement initiatives and educational outreach.
- c) ***The Proposed 189(d) Plan describes ongoing work to improve the attainment demonstration modeling, including collecting updated speciation data at the Hurst Rd. (North Pole) monitor, updating the meteorological and photochemical modeling platforms, and performing a quantitative performance evaluation for the Hurst Rd. site. We support these efforts, as they will address deficiencies with the current attainment demonstration in the Proposed 189(d) Plan and can be used to corroborate the proposed attainment date of 2024. These updated modeling efforts align with requirements under 40 CFR 51.1011, Appendix W modeling guidelines, and the 2018 EPA memorandum, “*Modeling Guidance for Demonstrating Air Quality Goals for Ozone, PM_{2.5} and Regional Haze.*”

Response: Responses to comments a) through c) are provided separately below.

- a) Narrative has been added to Section 7.9 (in the introduction and Section 7.9.3) to clarify that the attainment demonstration satisfies “as expeditiously as practicable” requirements under 40 C.F.R. § 51.1004(a)(3) for nonattainment areas subject to CAA Section 189(d).

- b) With respect to the Solid Fuel Burning Appliance Episodic Curtailment Program, the expected increase in compliance from 30% in 2019 to 45% in 2023 and 2024 is driven by funding and enhanced compliance efforts anticipated under the 2019-2020 Targeted Airshed Grant (TAG). Funding under the TAG will be used to: 1) deploy roadway dynamic message sign (DMS) systems within the nonattainment area to increase public awareness of curtailment alerts; 2) purchase and use of infrared camera to enhance enforcement under dark/low-light winter conditions; 3) increase compliance staffing; and 4) perform additional in-field curtailment compliance assessment and enforcement surveys.
- c) As noted by EPA in its comment, ADEC understands the need and importance in performing ongoing technical work to improve the performance of meteorological and photochemical grid modeling platforms under the Arctic wintertime nonattainment conditions. The State plans to continue these efforts and coordinate progress and findings with EPA.

The Attainment section was amended in response to these comments.

Comment: vi. Reasonable Further Progress/Quantitative Milestones

The Proposed 189(d) Plan includes updated Reasonable Further Progress (RFP) and Quantitative Milestones (QMs) based on the updated model attainment projections. Below are comments:

- a) ***The RFP/ QMs are based on the current model, described in Section 7.8.14. We anticipate the RFP and QMs will be updated again once the model is updated, based on the “future modeling efforts” mentioned in Section 7.8.14.4 of the Proposed 189(d) Plan.
- b) ***The RFP section includes a stepwise reduction for SO₂ emissions. According to 40 CFR 51.1012(a)(4), pollutant emissions can be at levels that reflect either generally linear progress or stepwise progress in reducing emissions on an annual basis between the base year and the attainment year. However, a demonstration of stepwise progress must be accompanied by an appropriate justification for the selected implementation schedule. We suggest that the Proposed 189(d) Plan includes a justification for the stepwise reduction for SO₂ emissions.
 - i. As part of this justification, ADEC may need to consider our comments about the phase-in schedule for transitioning to ULSD at the GVEA North Pole power plant and the requirement, under 18 AAC 50.078(b), that permits use of fuel oil containing no more than 1,000 ppmw sulfur. The requirements of 18 AAC 50.078(b) are not applicable until September 1, 2022 and do not require fuel sulfur content equal to ULSD sulfur levels (approximately 15 ppmw).

Response: Responses to comments a) and b) are provided separately below.

- a) ADEC plans to update triennial RFP/QM reports going forward based on “future modeling efforts” described in Section 7.8.14.4 that will revise and work to improve the performance of the current meteorological and photochemical grid modeling platforms. Once those upgraded platforms are completed and validated, ADEC will coordinate with EPA on “conversion” of the RFP/QM reporting from the current to the new modeling platform.

- b) Section 7.10.3.3 of the RFP/QM chapter already includes an explanation and justification for the stepwise SO₂ progress as required under 40 CFR 51.1012(a)(4). In short, controls within the space heating sector that reduce PM_{2.5} emissions by eliminating solid fuel-burning devices or reducing their use result in SO₂ increases since heating oil, the most common alternative heating fuel has higher SO₂ emissions per unit energy than wood devices. These SO₂ increases are then offset by SO₂-specific reduction measures such as shifting to #1 heating oil (STF-12) for space heating by 2023 and point source SO₂ BACT controls that phase in from 2021-2024. The net effect of the “competing SO₂ effects” of all measures thus results in stepwise progress.
- i. ADEC has reviewed the schedule for lowering fuel sulfur content at the GVEA North Pole power plant and believes the earlier BACT determination and timing from the Serious Plan (1000 ppmw sulfur by September 1, 2022) are still valid, given the need to account for lead time requirements.

Regarding EPA’s comments regarding transitioning to ULSD and the existing BACT determination requiring 1000 ppmw, but not 15 ppmw sulfur fuel, ADEC conducted additional inventory development and photochemical grid modeling since publishing the Draft 2020 Amendments Plan to further evaluate the effects of requiring ULSD on modeled attainment. An alternative to the 2023 Control inventory described in the plan in which all distillate fuel for GVEA North Pole as well as all other point sources and all residential and commercial space heating was assumed to be ULSD (15 ppmw sulfur). That “2023 ULSD” modeling analysis determined that attainment could still not be further advanced sooner than 2024 assuming a full transition to ULSD through the point and space heating sectors in 2023.

Additional clarifying language has been added to that Attainment section in response to these comments. A discussion of the 2023 ULSD analysis was also added to the Control Measure section (Section 7.7.12.4.4)

Comment: vii. Contingency Measures

***The Proposed 189(d) Plan includes a contingency measure in the proposed updated Emergency Episode Plan. This measure, once triggered, would lower the Stage 2 Alert from 30 µg/m³ to 25 µg/m³, restricting the operation of wood-fired heating devices during periods of expected high PM_{2.5} concentrations.

- a) This proposed contingency measure appears to include the appropriate trigger mechanisms required by 40 CFR 51.1014. Accordingly, this contingency measure will be triggered upon any of the EPA determinations enumerated in 40 C.F.R. 1014, including that the area has failed to meet any RFP requirement in an attainment plan approved in accordance with 40 C.F.R. § 51.1012. Given this potential trigger, the EPA recommends ADEC consider adopting additional contingency measures that can be implemented with minimal further effort following any of the applicable EPA determinations.

- b) ***Under CAA Section 172(c)(9) and 40 CFR 51.1014(a), the contingency measures need to be implemented to achieve emissions reductions consistent with the overall RFP requirement, which is the need to make annual incremental reduction in emissions in the nonattainment area necessary to achieve attainment. According to the 2016 PM_{2.5} Implementation Rule (81 FR 58010), the EPA's "longstanding guidance is that contingency measures should provide approximately 1 year's worth of RFP, but this amount may vary based upon appropriate facts and circumstances of each unique nonattainment area. As discussed, states should explain the amount of anticipated emissions reductions to be accomplished by the contingency measures outlined in the plan. In the rare event that an area is unable to identify contingency measures to account for approximately 1 year's worth of emissions reductions, the state should provide a reasoned justification why the smaller amount of emissions reductions is appropriate" (81 FR 58010, 58068).
- i. We suggest that the Proposed 189(d) Plan identifies or supplies the information documenting the quantification of emissions reductions associated with this measure with particular emphasis on how the triggering of the measure will achieve sufficient reductions in PM_{2.5} emissions consistent with RFP. If the Proposed 189(d) Plan's contingency measure does not meet 1 year's worth of RFP emissions reductions, we suggest including additional contingency measures to achieve these reductions or provide justification why additional contingency measures cannot feasibly be implemented.
- c) ***In accordance with 40 C.F.R. § 51.1014(b), the contingency measures shall consist of control measures that are not otherwise included in the control strategy or that achieve emissions reductions not otherwise relied upon in the control strategy for the area. Accordingly, ADEC should include an explanation for (1) why the lower curtailment threshold is not required to meet the control strategy requirements of 40 C.F.R. § 51.1010 and (2) if earlier implementation of the lower threshold would advance the projected attainment date by one year or more.

Response (comments a, b and c): It is ADEC's understanding based on communications with EPA staff that should EPA make any of the determinations set out in 40 C.F.R. 1014 including the failure to meet any RFP requirement, the department is expected to trigger the implementation of all identified contingency measures included in the SIP at that time. Thus, the adoption of multiple contingency measures by the state at this time would not provide for contingency measures that could be used to address a potential second triggering action by EPA as the comment seems to suggest. Further, the federal rules at 40 CFR 51.1014 do not explicitly require multiple contingency measures to be included in the SIP. Given that the State has already been required to evaluate and implement all the best available control measures, there are limited control options remaining to use as new contingency measures. As a result, the department chose to include only one contingency measure in the 2020 amendments to the Serious Plan. Should that contingency measure be triggered, the department understands that a SIP revision would be needed to identify and add another contingency measure to the Plan to address the potential that

EPA could make a subsequent determination in later years. Current projections in the 2020 amendments to the SIP strongly suggest that the RFP requirements are attainable through the projected 2024 attainment date. Further, given the projection of attainment by 2024 and that many new or strengthened control measures have either been initiated within the current year or will be implemented in the next two years, waiting to identify further contingency measures allows the State and Borough to gain experience with the new measures and potentially identify strengthening opportunities that may not be apparent or warranted at this time. As a result, ADEC believes there will be time and future opportunities to consider and include additional contingency measures in the SIP should the need arise.

ADEC notes that EPA is requesting that the department demonstrate one year of emission reductions from its contingency measure, but that this request is not based in federal rule (40 CFF 51.1014) but rather in agency guidance to states. As this is not a regulatory requirement and there are significant challenges in identifying additional control measures when the state is required to implement all the Best Available Control Measures in a serious nonattainment area and has developed a plan to do so, the department requests that EPA consider the flexibilities provided in their guidance that suggest the amount of the emission reductions for SIP contingency measures “may vary based upon appropriate facts and circumstances of each unique nonattainment area.” The unique circumstances that exist for serious nonattainment areas that are required to essentially implement all available controls and for the Fairbanks North Star Borough’s specific situation that is primarily episodic and caused by the impacts of solid fuel burning related to home heating warrant the use of such flexibility given that the regulatory requirements have been met by the state in this SIP.

No specific edits or changes were made in response to these comments.

Comment: viii. Nonattainment New Source Review a) ***The Proposed 189(d) Plan does not address the nonattainment new source review element, 40 CFR 51.1003(c)(viii). Please certify in the submission whether or not the SIP-approved nonattainment new source review program (84 FR 45419) for the area meets 189(d) plan requirements, similar to Section 7.7.9 in the Serious Area Plan

Response: ADEC has not altered the state’s nonattainment new source review program through these amendments to the Serious Area Plan. The SIP-approved nonattainment new source review program described in Section 7.7.9 of the existing Serious Area Plan also meets the Clean Air Act Section 189(d) plan requirements. In response to EPA’s comment, ADEC has included a new subsection in the amendments to the Serious SIP in SIP Volume II, Section III.D.7.7.12 that restates and certifies that the nonattainment new source review program described in Section 7.7.9 meets the 189(d) requirements.

The Control Measure section was amended in response to these comments.

Comments other than EPA Comments

This portion of the document addresses the aggregated comments from private individuals, organizations, businesses, governmental officials, industry, and elected officials. For each section of the proposed regulations and for the 2020 Amendment State Implementation Plan (SIP), the document summarizes comments received, including comments received at the public hearing on October 15, 2020, and provides ADEC's responses and decisions. The comments from the Fairbanks North Star Borough Assembly are set out separately below as the Borough is the local government working in partnership with ADEC on the local air quality planning effort.

Comments from the Fairbanks North Star Borough Assembly

Comments received: The Fairbanks North Star Borough (FNSB) Assembly, in its Resolution No. 2020-37, supported the ADEC's 2020 Amendments to the Serious SIP.

Response:

The department appreciates the formal resolution of support provided by the FNSB Assembly. This resolution will be added to Appendix III.D.7.14 as part of the public involvement process.

The Air Quality Conformity and Motor Vehicle Emission Budgets Section was amended to reference the resolution and to add the resolution to Appendix III.D.7.14.

18 AAC 50.030 and the 2020 Amendment Serious SIP

Summary of Comments:

Comments received on the 2020 proposed amendments of the Serious SIP into the State Air Quality Plan expressed general support. A specific commenter asserted that the proposed amendment SIP and regulations would improve the air quality and human health. Another commenter said that it is time to advocate for clean air in the Fairbanks nonattainment area. A commenter also suggested that ADEC should organize presentations to give in-depth explanation of the regulations to public and ask for their feedback. That commenter maintained that doing so would make the public understand and appreciate what ADEC is doing. Another comment letter noted that they think the Amendments to the Serious SIP do not meet the Clean Air Act (CAA) requirements and fail to show meaningful progress toward attainment of the standard in the area. The commenter identified several deficiencies, including lack of enforcement, lack of funding, and exclusion of enforceable control measures and most stringent measures.

Response:

The department appreciates the positive feedback from commenters in support of the amendments to the SIP, which are meant to improve air quality and reduce the impacts of air pollution on public health. We also appreciate the feedback on improving our public outreach so that we can consider that for future public comment periods.

With regard to the comments received identifying potential deficiencies of the 2020 Amendments and the Serious SIP, ADEC maintains that the SIP and its amendments meet all the required elements in the Clean Air Act and associated rules and ADEC continues to meet all the requirements with respect to the implementation of the adopted plan, including conducting compliance and enforcement activities for enforceable control programs. Under the Clean Air Act, EPA has an oversight role and will take actions, subject to public review, to determine if a SIP has deficiencies or meets Clean Air Act requirements. With EPA's 2020 finding of the area's failure to attain by the Serious nonattainment area deadline of 2019 and following the requirements to submit a revised plan under Section 189(d) of the Clean Air Act, ADEC has made an attainment demonstration in these SIP revisions that shows attainment in 2024, within five years of the 2019 Serious area attainment date. ADEC understands the frustration expressed by commenters about the speed in which the community is projected to come into attainment; however significant reductions in PM_{2.5} concentrations have been observed over the past several years with the implementation of the initial moderate SIP, and with the design value at the maximum impact monitor dropping by more than 50%. Continuing declines in emissions and concentrations are projected in the next few years with the implementation of the measures in the Serious SIP.

The Clean Air Act and its associated regulations for Serious nonattainment areas are complex. ADEC consults regularly with EPA during the development of SIPs and works to ensure that the plans developed are complete and approvable. The EPA provides an oversight role in the SIP process and ultimately takes actions on SIPs making them federally enforceable. There are processes under the Clean Air Act to allow states to address deficiencies identified by the EPA and ultimately, if deficiencies are not resolved, for EPA to sanction states and implement Federal Implementation Plans. These SIP amendments and the original Serious SIP were developed in partnership with the Borough to address the specific needs of the community as well as the federal requirements. Ultimately, the Serious SIP and these 2020 Amendments to the SIP are subject to future EPA review and action which will clarify whether, in EPA's view, the SIP is sufficient to meet the federal requirements.

No specific edits or changes were made in response to these supportive comments.

Section III.D.7.06 Emission Inventory Data

Summary of Comments:

Some comments received on the emission inventory data expressed support for the inventory data presented and pressed for immediate clean air in the area. A specific comment noted there are discrepancies in actual emission inventory for 2013 and 2019 as reported in the Amended SIP for Aurora. The commenter therefore requested that ADEC update the emission inventories to reflect the actual emissions provided by them for the purposes of consistency, compliance, and modeling. A comment stated that lifetime registration of older vehicles should have been considered when modeling because older vehicles produce the worst emissions.

Response:

Aurora Energy emission estimates: Aurora Energy's comments included reported emissions discrepancies for 2013 and 2019 that were reviewed and compared to emissions for the facility in the SIP inventories. Emission factors for the Chena Power Plant in the SIP inventories are based on data provided to ADEC from a November 2011 source test. These source test-based emission factors were used since they included emission factors for both filterable and condensable particulate matter from the Chena plant's combined boiler stack. The differences in PM_{2.5} and PM₁₀ emissions reported by Aurora in their comment appear to be due to the fact that the Aurora-reported annual emissions only include the filterable component and not the condensable component, which per the source test data has a PM_{2.5} emission factor that is nearly eight times that of that of the filterable PM_{2.5} component. The reason these source test-based emission factors were used for the Chena plant (for all pollutants) is that they included both filterable and condensable PM. Annual emissions reported by Aurora to ADEC under permitting requirements (e.g., 7.0 tpy in 2013) appear to only include filterable PM emissions. The smaller differences in Aurora-reported vs. SIP inventory emissions for NO_x and SO₂ appear to be the result of nominal differences in coal energy content for 2013 and 2019 used in the SIP versus that reported for permitting coupled with the SO₂ emission factor ADEC used for 2019, which was 0.301 lb/mmBTU and represents the calculated SO₂ BACT limit for the Chena Plan from the Serious SIP. ADEC believes the emission factors and calculated emissions for the Chena plant for 2013 and 2019 are correct as explained above.

No specific edits or changes were made in response to these comments.

Older vehicle emissions: With respect to the older vehicles comment, older vehicles and their impact on emissions are accounted for in development of the emission inventory as described in Section 7.06. Specifically, DMV-based registrations include counts of older vehicles that, given their age/deterioration and the fact that when new were certified to less stringent Federal new vehicle emission standards than new vehicles today, emit more pollution per mile than a modern vehicle. The emission inventory also accounts for the fact that there are fewer older vehicles in operation than newer vehicles and that on average they tend to be driven less than newer vehicles particularly under winter conditions.

No specific edits or changes were made in response to these comments.

Section III.D.7.07 Control Strategies**Summary of Comments:**

Many of the commenters supported the control strategies. Some of the comments expressed appreciation to ADEC for putting the suggestions from the "sustainability task force" into good use. Other commenters appreciated ADEC for striking a balance between the needs and challenges of the community regarding heat and power costs. One comment letter, however, stated that the control measure package failed to analyze and include enforceable control measures and most stringent measures (MSMs). That comment letter suggested that this contradicts the CAA requirements. Another commenter suggested the removal of outdoor hydronic heaters by December 31, 2020, instead of December 31, 2024. The commenter stated that only a quicker removal date of the highest-emitting devices can improve public health. Some

commenters, however, expressed a few concerns with existing control measures. A comment letter stated that the removal of devices from the state's approved list based on higher (above 4.0 and 6.0 g/hr) 1-hr filter is self-defeating to the community. That commenter suggested that the SIP should provide a contingency for those stoves that may emit more than 4.0 or 6.0 g/h in any rolling hour or 1-hour filter pull yet retain an overall performance of less than 2.0 g/h. The commenter further stated that ADEC should focus on the emission rates per unit energy instead of banning specific devices. Another commenter, who also expressed concerns over the determination of approved wood stoves, suggested that ADEC should continue dialogue with the community to strike a balance between continued usage of wood stoves and attainment. Another commenter noted that there should be clarification of the implementation date of #2 heating oil regulation. The commenter also stated that there should be reconsideration of the ban on #2 heating oil if future data proves there are no significant benefits.

The FNSB Assembly, in its Resolution No. 2020-37, affirmed that the control measure package contains the necessary mitigation measures for the residential wood combustion source for the FNSB remote arctic environment. It also stated that the control measures on the point sources and residential fuel are not appropriate at this time as they are lesser contributing source sectors. The Assembly pledged support to a coordinated effort with ADEC and committed to providing resources, as allowable under FNSB code, for implementing the control measure package with the goal of attaining the 24-hr PM_{2.5} standard by 2024.

Response: The department appreciates the variety of feedback received on the existing suite of control strategies being implemented through the existing Serious SIP and will consider that feedback as we continue to progress in implementing programs. As this package did not propose changes to wood heater emission standards in the current adopted Serious SIP, no changes were made to address these comments in the final 2020 SIP amendment package. However, ADEC offers the following clarifications and information:

- **Most Stringent Measures:** ADEC notes that the SIP does contain Most Stringent Measures (MSMs) for a number of source controls that are primarily focused on the primary source of concern: solid fuel heating device operations. MSMs being implemented are identified in Table 7.7.26 and discussed in section 7.7.12.6. A total of nine MSMs are identified (Measure #'s 8,20,27,28,29,31,32,42, & 67).
- **Solid fuel heating requirements:** Wood heating standards, ADEC appreciates the comments regarding the wood heater 1-hr standards, emission ratings, and suggestions regarding emission rates as units of energy. However, these comments were addressed in the response to comments in the original Serious SIP, which can be found in the "11/19/19 Adoption Section" at: <http://dec.alaska.gov/air/anpms/sip/fbks-pm2-5-regs-amends-2019/>. ADEC is now implementing the programs as required by the adopted SIP.
- **Conversion of heating oil from #2 to #1:** The implementation date for the conversion to Diesel #1 heating oil is found in state regulation at 18 AAC 50.078(b). The conversion date is September 1, 2022. ADEC reviewed the SIP document to ensure that the final plan amendments are consistent with this regulatory date. Because the conversion occurs in the middle of 2022, any emission benefits for this control measure are identified in the SIP analyses as starting in 2023 as benefits are taken in the first full year of implementation (those measures in place on January 1 of each year). For this reason, certain emission

related tables showed 2023 as the “start year.” ADEC clarified this in the emission tables (7.6-32 and 7.7-28) identified by the commenter to remove the appearance of an inconsistency in the start date for the requirement.

ADEC appreciates the efforts made by the local refinery to work toward meeting the September 1, 2022 heating oil conversion date. The state is unable to revisit the implementation of this control measure because of the federal Serious SIP requirement to implement all Best Available Control Measures found in other PM_{2.5} nonattainment areas. Lower sulfur heating oil (1000 ppm) was found to be a technologically and economically feasible measure and therefore it is included for implementation in the FNSB nonattainment area. Based on comments received, ADEC did adjust the timing of that measure in the final Serious SIP to allow time for residents and the local refinery to make and implement plans related to supply and the associated cost to use 1000 ppm diesel (Diesel #1). ADEC understands the concerns about whether this measure will produce the expected sulfate emission benefits. Sulfate is a component of the PM_{2.5} observed in the local area and the reduction in sulfur in fuel being combusted and having emissions near ground level should reduce sulfate and result in lower overall PM_{2.5} in the ambient airshed.

With respect to the commenters questioning whether the Serious SIP and these SIP amendments satisfy Clean Air Act Requirements, ADEC notes that the Clean Air Act and its associated regulations for Serious nonattainment areas are complex and will not speculate on the validity of the assertions made by the commenters related to whether the plan fully meets Clean Air Act requirements. ADEC consults regularly with EPA during the development of SIPs and works to ensure that the plans developed are complete and approvable. The EPA provides an oversight role in the SIP process and ultimately takes actions on SIPs making them federally enforceable. There are processes under the Clean Air Act to allow states to address deficiencies identified by the EPA and ultimately, if deficiencies are not resolved, for EPA to sanction states and implement Federal Implementation Plans. These SIP amendments and the original Serious SIP were developed in partnership with the Borough to address the specific needs of the community as well as the federal requirements. Ultimately, the Serious SIP and these 2020 Amendments to the SIP are subject to future EPA review and action which will clarify whether, in EPA’s view, the SIP is sufficient to meet the federal requirements.

The Emission Inventory and Control Strategy Sections of the SIP were amended in response comments received to clarify existing regulatory dates related to fuel oil conversion; no other specific edits or changes were made in response to these comments.

Section III.D.7.08 Modeling

Summary of Comments:

Several commenters appreciated and supported the modeling data. A specific comment expressed appreciation over the modeling data that shows expected attainment by 2024 and thanked ADEC for eliminating the decision to switch to ULSD. Another commenter noted that the modeling data should have shown expected results from the Aurora Energy Solutions Wood Kiln. The commenter, however, believed that the updated modeling would bring improvements with time.

Response: ADEC appreciates the feedback on these modeling data comments. With respect to commenters who were expecting the modeling analysis in this SIP amendment to show improved performance related to sulfur emissions and allow for additional analysis of sulfur impacts from various sources and control strategies, ADEC is working to update and improve the model platform; however, this work on the model takes time and could not be completed in time for use in these SIP amendments and meet the federal deadline (December 2020) for a Clean Air Act 189(d) SIP submittal to EPA. These model update efforts are discussed in the amended modeling section. ADEC remains committed to completing its work to establish a new model platform for use in future SIP revisions.

Regarding the comment that the modeling data should have shown expected results from the Aurora kiln, the “with control measure” inventories and subsequent modeling data already account for the use of dried commercially sold wood under Measure STF-13 (18 AAC 50.076) as explained in Section 7.6, 7.7 and 7.9. This measure requires all commercially sold wood to be dried to a moisture level of 20% prior to sale. Based on preliminary estimates of kiln activity provided by Aurora, DEC has determined that emission reductions from the kiln would be a subset of that already modeled to account for STF-13 (18. AAC 50.076).

No specific edits or changes were made in response to these comments.

Section III.D.7.09 Attainment Demonstration

Summary of Comments:

The only comment received on the attainment demonstration called for immediate implementation of “clean air.”

Response: The department and the Fairbanks North Star Borough are continuing to implement the suite of control measures previously adopted in the Serious SIP with a goal of reducing fine particulate matter air pollution in the area to meet the ambient air quality standard as quickly as possible.

No specific edits or changes were made in response to these comments.

Section III.D.7.10 Reasonable Further Progress

Summary of Comments:

No comments were received on the reasonable further progress.

Section III.D.7.11 Contingency Measures

Summary of Comments:

While one of the comments received indicated that contingency measures are not detailed, all other comments supported the lowering of the Stage 2 alert threshold to 25 mg/m³. Several commenters also expressed that this measure should be implemented now rather than being used as a contingency measure.

Response: ADEC appreciates the comments received regarding lowering the curtailment threshold now. Doing so, however, would move this from a contingency measure to a modification of an existing control measure. Such an action would leave the plan without a required contingency measure and is outside the scope of the proposed amendments out for public comment.

No specific edits or changes were made in response to these comments.

Section III.D.7.12 Emergency Episode Plan

Summary of Comments:

A number of commenters expressed support for the lowering of the Stage 2 curtailment threshold from 30 ug/m³ to 25 mg/m³, which is included as a contingency measure and described in the emergency episode plan, Section III.D.7.12. Several commenters also expressed that this measure should be implemented now rather than being used as a contingency measure.

Response: ADEC appreciates the comments received regarding lowering the curtailment threshold now. Doing so, however, would move this from a contingency measure to a modification of an existing control measure. Such an action would leave the plan without a required contingency measure. Lowering the curtailment threshold is also outside the scope of the proposed amendments noticed for public comment.

No specific edits or changes were made in response to these comments.

Section III.D.7.14 Conformity and Motor Vehicle Emission Budget

Summary of Comments:

No comments were received on conformity and the motor vehicle emission budget.

General Proposal Comments Summarized by Topic

General Comments

Comments received in response to the proposals for the 2020 Amendments to Serious SIP for the nonattainment area for PM_{2.5} NAAQS standards in Fairbanks North Star Borough (FNSB) represented the views of the public, businesses, and special interest groups. Comments were submitted via email, Air Online Services comment system, public hearing, and in writing. General comments are categorized and summarized as follows:

- **Transportation Control Strategies**

Summary of Comments:

A comment noted that there are no detailed transportation control strategies in the Proposed 2020 Amendment Serious SIP. The commenter stated the ADEC should have used the CMAQ funding to identify transportation control strategies and projects that can bring emission benefits for the nonattainment area.

Response: The current adopted Serious SIP discusses various programs that reduce emissions for transportation sources and no new strategies were identified for the 2020 Amendment. While transportation/mobile sources may account for roughly 10% of the emission inventory, they are not the primary contributing source. For this reason, mandatory, enforceable transportation control measures such as vehicle inspection programs, were not included in the 2020 Amendment. Other control strategies in the SIP are voluntary. FAST Planning, the Metropolitan Transportation Organization (MPO), has identified CMAQ funding for a highway sign that will be used to assist in announcing air quality alerts and curtailments. CMAQ funding is also used within the community for projects that are eligible for congestion and air quality in general. Within the 2020 Amendments to the Serious SIP, Section III.D.7.7.12.5.5 describes Fairbanks North Star Borough (FNSB) efforts to transition the FNSB transit fleet to natural gas. Since submission of the Serious Area SIP, significant progress has been made toward the transition and CMAQ funding has been identified to help assist in the Borough's efforts to replace the bus fleet with CNG vehicles and install the CNG fueling infrastructure. These and other CMAQ projects are expected to provide additional emission benefits within the nonattainment area. The department will consider those emission benefits as it evaluates and reports on Reasonable Further Progress every three years moving forward.

No specific edits or changes were made in response to these comments.

- **Compliance and Enforcement**

Summary of Comments:

Several of the comments received expressed concerns on the compliance and enforcement of the control measures. A commenter stated that there are continued violations because many of the control measures are voluntary, and there is not strong enforcement authority to ensure compliance. A comment noted that the State lacks statutory administrative penalty authority and asserted that the plan lacks enforcement mechanisms. The commenter stated that the A.S. 46.14.030 permits ADEC to adopt the regulations necessary for the implementation of the state plan. The commenter further suggested that there is a need for funding and education of the homeowners about 20% opacity to encourage compliance. Another commenter noted that local enforcement authority can improve the effectiveness of the control measures but expressed concerns with the Prop 4 initiative that limits effectiveness of compliance.

Response: The department appreciates the feedback on the implementation of measures related to compliance, enforcement, and public outreach as the Division of Air Quality continually seeks to improve its programs and processes. Funding through a new targeted airshed grant from EPA will provide additional resources to the department and the Borough to advance efforts related to compliance with solid-fuel heating regulations, public outreach, and the change out of older and higher-emitting solid-fuel heaters. Funding under the grant will be used for changeout and conversions of solid fuel heating devices as well as to: 1) deploy roadway dynamic message sign (DMS) systems within the nonattainment area to increase public awareness of curtailment alerts; 2) purchase and use of infrared camera to enhance enforcement under dark/low-light winter conditions; 3) increase compliance staffing; and 4) perform additional in-field curtailment compliance assessment and enforcement surveys.

The comment that the state plan lacks enforcement mechanisms is unsupported. Staff start the compliance process by using compliance assistance activities to help individuals and businesses understand the regulatory requirements and how they can comply. When compliance assistance is not successful in resolving a compliance issue, department staff have a variety of administrative enforcement tools they can use such as written notices of violation, compliance agreements, nuisance abatement orders, inspection warrants, injunctive remedies, and civil and criminal enforcement actions. ADEC's current approach is to follow compliance assistance with notices of violation and expedited settlement agreements to resolve curtailment non-compliance.

With respect to the specific comment related to public confusion on the regulatory opacity requirements that are continuing to be implemented from the initial moderate SIP alongside the wood heater curtailment requirements that were detailed in the Serious SIP and implemented first by the Borough and then ADEC, the requirement for wood burning to occur with no more than 20% opacity continues to remain a regulatory requirement in the nonattainment during the winter and must also be met by those who have received Stage 1 or No Other Adequate Source of Heat waivers to burn during curtailments. ADEC appreciates the suggestion that more education would reduce confusion about the opacity measure. The department provides the public with information and photos to help them understand opacity and how to tell whether they are meeting requirements at: <https://dec.alaska.gov/air/burnwise/opacity/>. The department will seek ways to improve public outreach to assist individuals in understanding and meeting the opacity requirements. ADEC is obligated to continue to implement the requirement in the meantime.

No specific edits or changes were made to the SIP amendments in response to these comments.

- **Impacts of Air Quality on Health**

Summary of Comments:

Several commenters noted that PM_{2.5} emissions cause chronic health problems. Many of the comments stated that research has implicated PM_{2.5} pollution as the cause of detrimental health effects such as heart and lung diseases, diabetes, asthma, stroke, kidney disease, cancer, cognitive decline in children, and premature death. A specific comment stated that a study, conducted by Alaska Department of Health and Social Services, associated the PM_{2.5} pollution with increased risk of hospitalizations. The commenter therefore emphasized the need for improved regulations to protect the health and welfare of the Fairbanks residents, especially the children. Some of the comments also cited research and expressed concerns that the increased exposure to air pollution may increase risks to those contracting COVID-19. Many of the commenters claimed that air pollution in the area has a huge fiscal burden on them and provided examples of those fiscal impacts. Those examples included substantial medical costs for air pollution preventive care and costs for traveling and living outside the nonattainment area during wintertime and when the air quality is bad. A commenter said that quality of life and health effects should be considered as much as the economic consequences of air pollution control. Another commenter noted that the State of Alaska should use the Royalty gas to help the residents of Fairbanks and the North Pole to reduce energy costs.

Response: The department understands the comments and concerns expressed about the health impacts and associated costs that result from exposures to high levels of PM_{2.5}. The regulation of PM_{2.5} and other pollutants by the EPA and ADEC in the State seeks to address public health issues including stroke, kidney diseases, lung and heart complications, which may arise from the inhalation of PM_{2.5} pollutants. The SIP itself is meant to reduce air pollution to healthy levels and gain health benefits for individuals in the community. The department and the Borough are continuing to implement the suite of control measures previously adopted in the Serious SIP with a goal of reducing fine particulate matter air pollution in the area to meet the ambient air quality standard as quickly as possible. With respect to the suggestion that the State of Alaska use royalty gas to help residents reduce energy costs, this suggestion would require broader actions that are beyond the measures proposed in the 2020 SIP amendment.

No specific edits or changes were made to the SIP amendments in response to these comments.

- **Electrostatic Precipitators (ESP)**

Summary of Comments:

The only comment received on the ESP advised ADEC to continue to explore and test the control technology as it has been proven to be effective in some European countries.

Response: The department appreciates the continued interest in ESPs as a technology that could assist in reducing wood heater emissions and has been working in conjunction with the Borough this past year on additional testing of ESPs to determine the potential benefits associated with that technology. The results of the laboratory testing and a community-based pilot project showed mixed emission benefits for the addition of ESP technology depending on the type of wood heater (catalytic, non-catalytic, pellet). In addition, some potential safety concerns were identified associated with creosote buildup in the stacks. (for the testing study reports see: <http://dec.alaska.gov/air/anpms/projects-reports/#nogo>) These issues were brought to the ESP manufacturer's attention for further research and follow up. As a result of the uncertainties that arose in the research and pilot project over the past year, the 2020 amendments to the Serious SIP removed a provision within the Emergency Episode plan's curtailment waiver program that would have allowed for a longer waiver duration for heaters that are retrofitted with ESPs. Should further research and improvements prove that ESP technology is safe and effective for control of wood heater emissions under Fairbanks area conditions, this technology could be revisited as a control in future updates to the air quality plan.

No specific edits or changes were made to the SIP amendments in response to these comments.

- **Air Monitoring**

Summary of Comments:

The only comment received on monitoring requested that DEC ensure that data remain transparent and accessible to the public so that they can continue to monitor for changes for their own planning purposes

Response:

The department agrees that the local air monitoring data must remain transparent and available to the public, industry, and others. ADEC is required to report regulatory data to the EPA where it is made available through their database and the department remains committed to providing data through the internet in an easily accessible manner for all in the community.

No specific edits or changes were made to the SIP amendments in response to these comments

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• Impact of COVID-19**Summary of Comments:**

A commenter requested that ADEC should be lenient with the solid fuels standards as remote working and students distance learning caused by the COVID-19 pandemic would increase solid fuel burning.

Response: The COVID-19 pandemic has created changes in school, work, business activity, and day to day life within the community, which can impact emissions and create uncertainties for programs within the SIP. It is not clear at this time whether the pandemic will result in increased emissions from solid fuel burning or whether there will be longer term impacts to effectiveness of control programs. With respect to compliance, the department is continuing to implement the required control programs and will be conducting its usual compliance assistance activities and follow up enforcement. Each compliance case is treated on a case by case basis, so there are opportunities to work through individual situations. The curtailment waiver program does have provisions to consider economic hardship and may be an option for some residents that need to rely more heavily on their wood heat. Again, this is handled on a case by case basis. No specific edits or changes were made in response to these comments.

No specific edits or changes were made to the SIP amendments in response to these comments.

• Best Available Control Technology (BACT)**Summary of Comments:**

While the 2020 DEC Proposed Regulation and SIP does not include any proposed revisions to the Best Available Control Technology (BACT) requirement, some comments were received on it. These include:

- Appreciation of ADEC's decision for not imposing additional measures on the point sources and for realizing that they are not the primary source of PM_{2.5} pollution in the area. The commenter indicated that additional measures would have created burden for the sources and force them to close.
- Another commenter requested that BACT requirements should be retroactively amended if the newest modeling data indicate point sources are not the significant contributors of PM_{2.5} pollution.
- A commenter expressed concerns on why the 2020 Amendment Serious SIP does not include an opportunity to comment on the BACT requirements and sulfur dioxide (SO₂) emission limit for their source.

- A commenter requested that ADEC include in the Amendment SIP language regarding the use of quarterly block averaging periods to demonstrate compliance with the 0.25% coal sulfur limit.

Response: The department appreciates the feedback from commenters on the need for and implementation of BACT for point sources. Because this package did not propose changes to the BACT determinations and supporting information found in the current adopted Serious SIP finalized in December 2019, no changes were made to address these comments in the final 2020 SIP amendment package. Nonetheless, the department will continue to work with the industrial sources as BACT is being implemented. Modifications to the air permits for the BACT facilities may address and clarify most or all of the specific comments by affected companies. EPA is currently reviewing the original Serious SIP including the BACT determinations for federal approvability. There will be opportunity for public comment on EPA's formal action on the Serious SIP as well as these amendments. There will also be opportunities for public comment on the permit revisions for individual sources that implement the department's BACT determinations as outlined in the Serious SIP. ADEC acknowledges that future revisions to the SIP BACT determinations may ultimately be needed to address issues that arise during implementation of the state's BACT decisions or as a result of EPA's action on the Serious SIP and these 2020 amendments to the SIP.

No specific edits or changes were made in response to these comments.

ATTACHMENT 1

EPA Region 10 October 29, 2020 Comment Letter Appendix A

(presented verbatim)

Appendix A

Below are EPA's updated, detailed comments on ADEC's BACT analysis and determinations in the Serious Area Plan. The EPA is providing these comments to assist the state in reevaluating previously rejected BACT in accordance with 40 CFR 51.1010(c)(2)(ii) and identifying, adopting, and implementing BACT consistent with Section 189(b) of the CAA and 40 CFR 51.1010(a). Comments that raise potential approvability issues are denoted by the "****" symbol.

- a) ****Site-Specific Quotes. EPA is unable to provide detailed comments on the BACT analysis in the absence of site-specific quotes/vendor cost estimates for each SO₂ control technology previously identified in EPA comments. Site-specific quotes/vendor cost estimates are necessary in order to provide the cost and technical feasibility information that is needed to assess and select BACT, especially for retrofit applications. Where available, site-specific cost information must be used for purposes of the BACT analysis in favor of generic cost information. In the absence of a BACT analysis based on site specific quotes/vendor cost estimates, any control technologies successfully implemented nationwide on similar sources will be considered technologically and economically feasible. See 40 CFR 51.1010(a)(3), 81 FR 58081-85.
- b) ****Facility and Control Equipment Life. We recommend that the submittal document ADEC's assumptions for facility and control equipment life especially where they diverge from current assumptions in the EPA control cost manual (EPA CCM) and other EPA technical support documents. The discussion of proposed shorter control equipment lifetimes in the current plan does not contain supporting information for those lifetimes. We recommend that this evidence include such information as the actual age of currently operating or recently retired relevant process or control equipment, and design documents for such equipment.
- c) ****Control Efficiency. Calculations for each control technology must be based on a reasonable and demonstrated high end control efficiency achievable by the technology in question at other emission units, or as stated in writing by a control equipment vendor in a site-specific analysis. If a lower pollutant removal efficiency is used as the basis for the analysis, detailed technical justification must be provided establishing why a higher control efficiency is not achievable for the specific emission unit. Such technical justification is needed if the facility's analysis includes control efficiency assumptions different from those in the EPA CCM and other EPA technical support documents.
- d) ****Evaluation of available control technologies. ADEC found these SO₂ controls to be technologically feasible for the coal fired boilers: Wet Flue Gas Desulfurization (WFGD), Spray Dry Absorption (SDA), Dry Sorbent Injection (DSI). ADEC did not evaluate Circulating Dry Scrubbers (CDS) even though this

is an available technology that is generally technologically feasible for coal fired boilers, can achieve up to 98% SO₂ control, and is marketed by vendors as suitable for retrofit projects for such boilers. For all technologically feasible control options, ADEC must either impose the most efficient control or demonstrate why each rejected SO₂ control is not economically feasible (i.e., cost effective or affordable).

- e) ***Economic feasibility. An economic infeasibility determination, establishing that a control technology is not cost effective or not affordable, is a possible outcome of the BACT process. Developing an adequate economic assessment to support an approvable BACT determination should include the following:
- i. We recommend at least two site specific vendor quotes for each control technology. Site-specific quotes or vendor cost estimates must then be used to conduct cost effectiveness analyses producing estimates of at least study level (+/- 30%) accuracy, in accordance with the CCM.
 - ii. We recommend economic feasibility/affordability assessments developed using standard economic theories that include appropriate analysis of potential impacts on relevant markets and products (e.g., price elasticity of demand for fuels).
 - iii. Financial information/discussion for the facility that, when compared to the cost of the control, helps address the question concerning the economic feasibility/affordability of the control technology for the specific source. If such information is considered to be CBI, then there are mechanisms by which that information can be collected and protected from public disclosure.
 - iv. Given the technical nature of these analyses, we recommend that an economist or someone with equivalent training or expertise be involved in the development of any economic assessment intended to demonstrate the economic infeasibility/affordability of a particular control option.
- f) ***Aurora – Chena Power Plant
- v. Under the Serious Area Plan, Alaska identified DSI as a technically feasible and cost-effective control measure for Aurora’s coal-fired boilers, but ultimately rejected this measure based on economic infeasibility/affordability. Site-specific vendor quotes or cost estimates were not provided for the more effective SO₂ control technologies. Neither the facility nor ADEC have adequately demonstrated that more stringent controls are either technically infeasible to install or not cost effective, as required by the Clean Air Act (CAA) and EPA’s regulations. Additional information to help justify this determination includes:
 1. Study level (+/- 30% accuracy) site-specific vendor quotes or detailed cost estimates for: WFGD, SDA, and CDS.
 2. Cost-effectiveness calculations based on the site-specific vendor cost info.

- vi. Our review of the affordability assessment of BACT for the Chena Power Plant indicates that the financial documentation provided by Aurora does not provide a comprehensive picture of the costs of installation and operation of potential BACT controls. We recommend that the plan include an economic feasibility/affordability assessment, developed by an economist or someone with equivalent training or expertise, to substantiate the state's conclusion. It would be helpful for that assessment to address a number of factors, including economic viability given the current and projected customer base and recent financials, supporting documentation for cost estimate increases based on potential BACT controls, an assessment of price elasticity of demand, substitution possibilities, etc.

g) *Ft. Wainwright – Doyon**

- vii. Under the Serious Area Plan, Alaska identified DSI as BACT. However, neither the facility nor ADEC have adequately demonstrated that more effective controls are either technically infeasible to install or not cost effective, as required by the Clean Air Act (CAA) and EPA's regulations. Additional information to help justify this determination includes:
 1. Study level (+/- 30% accuracy) site-specific vendor quotes or detailed cost estimates for: WFGD, SDA, and CDS.
 2. Cost-effectiveness calculations based on the site-specific vendor cost info.

h) *University of Alaska-Fairbanks**

- viii. Under the Serious Area Plan, Alaska identified DSI as cost effective for the new dual fuel (coal/ biomass) boiler at UAF but rejected this control selection based on economic infeasibility/affordability. Although UAF provided site-specific vendor quotes or cost estimates for both DSI and SDA, Alaska did not utilize the vendor cost information for SDA. Site-specific vendor quotes or cost estimates were not provided for the more effective SO₂ control technologies. Neither the facility nor ADEC have adequately demonstrated that controls with a higher control efficiency are either technically infeasible to install or not cost effective, as required by the Clean Air Act (CAA) and EPA's regulations. Additional information to help justify this determination includes:
 1. Study level (+/- 30% accuracy) site-specific vendor quotes or detailed cost estimates for: WFGD, SDA, and CDS.
 2. Cost-effectiveness calculations based on the site-specific vendor cost info.
- ix. In order for EPA to review ADEC's finding that additional SO₂ controls are economically infeasible/not affordable, the state or UAF will need to provide an appropriate and comprehensive infeasibility/affordability assessment based on standard economic theory.

i) *GVEA – North Pole**

- x. According to the Serious Area Plan, ultra-low sulfur diesel (ULSD) is technologically and economically feasible to immediately implement at emission units 1 and 2 at the North Pole Power Plant. Nevertheless, the Serious Area Plan allows GVEA to burn fuel with a sulfur content of up to 1,000 ppmw until October 1, 2023, and thereafter only requires GVEA to burn ULSD between October 1 and March 31. Also, the Serious Area Plan requires GVEA, prior to October 1, 2023, to “begin taking delivery of fuel oil with a sulfur content no greater than 1,000 ppmw (S1000) immediately after the Air Quality Stage Alert 1 and 2 are announced and remain taking deliveries of exclusively S1000 for as long as the air episode exists.”
 1. ADEC should provide additional justification to explain why 2023 is the earliest date feasible for GVEA to burn only ULSD, why this requirement is seasonal rather than year-round, and further clarify how imposing a fuel requirement after an air alert is called will reduce emissions during an air alert. We note that 2017-2019 air quality data indicate that the North Pole site has a PM_{2.5} annual average of 13.7 ug/m³ and therefore is also exceeding the annual standard. Accordingly, a requirement to burn ULSD year-round would help Fairbanks reduce annual average PM_{2.5} levels. Additional site-specific cost information and a development of an enforceable agreement for a future switch to lower sulfur fuel is necessary to support the assertion that this meets BACT requirements. Moreover, the pre-October 1, 2023, requirement to only take deliveries of fuel oil with a sulfur content no greater than 1,000 ppmw (S1000) does not appear enforceable as a practicable matter.
- xi. The BACT analysis in the Serious Area Plan evaluating the cost effectiveness of ULSD includes significant capital costs for an entirely new Bulk Fuel Tank Farm and Terminal Facility and purchase of 85 railcars. The inclusion of these costs appears to be based on the assumption that ULSD would be required at all times, including supply interruption due to causes generally considered “force majeure” such as landslides, etc. In fact, the BACT requirement to switch to ULSD could be structured to allow use of locally available fuel during periods of supply interruption, with appropriate documentation. The cost effectiveness analysis for ULSD should be revised to include only the costs necessary to switch fuels, such as the delivered fuel cost difference, and specific necessary equipment at each facility to accommodate ULSD.

j) *GVEA – Zehnder**

- xii. According to ADEC’s BACT findings in the Serious Area Plan, GVEA must submit a Title I permit application to ADEC limiting the Potential to Emit (PTE) of SO₂ emissions from the Zehnder facility to less than 70 tons per year. ADEC also states that, once the

SO₂ limit goes into effect, the facility will then be subject to BACM measures, including the requirement under 18 AAC 50.078(b) that permits use of fuel oil containing no more than 1,000 ppmw sulfur by September 1, 2022.

- xiii. While ADEC concludes that the Zehnder facility is subject to BACM, an evaluation of available control technologies is still required for the emissions source. For the simple cycle turbines at the Zehnder facility, ADEC determined that the cost of switching from the 1,000 ppmw limit to ULSD is \$8,753/ ton. Similar to our comments about the North Pole facility, the significant capital costs to switch to ULSD may not be necessary. A requirement to switch to ULSD could be structured to allow use of locally available fuel during periods of supply interruption, with appropriate documentation. Therefore, the cost effectiveness analysis for ULSD should be revised to include only the costs necessary to switch fuels, such as the delivered fuel cost difference, and specific necessary equipment at each facility to accommodate ULSD.