



UNITED STATES ENVIRONMENTAL PROTECTION
AGENCY
REGION 10

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AIR & RADIATION
DIVISION

JUL 19 2019

Ms. Alice Edwards
Director, Division of Air Quality
Alaska Department of Environmental Conservation
410 Willoughby Avenue, Suite 303
Juneau, Alaska 99811-1800

Dear Ms. Edwards:

The U.S. Environmental Protection Agency, Region 10 appreciates the opportunity to comment on the Alaska Department of Environmental Conservation's 2019 proposed regulations and State Implementation Plan for the Fairbanks North Star Borough fine particulate matter Serious Nonattainment Area (proposed plan).

We support Alaska's continued efforts to develop and implement a plan to attain the fine particulate matter ambient air quality standards as expeditiously as possible, taking into consideration the needs and interests of all stakeholders and the local community.

We reviewed the proposed plan, released to the public on May 10, 2019, and supplemented on May 21, 2019, and have enclosed our comments for your consideration.

We commit to continue working with you as you develop the Fairbanks PM_{2.5} Serious Area State Implementation Plan to protect public health through improved air quality in the Fairbanks North Star Borough. We are also available to discuss and clarify our attached comments on the proposed plan. Please contact me at (206) 553-0218 or Justin Spenillo at (206) 553-6125 with any questions you may have or to arrange a meeting.

Sincerely,

A handwritten signature in blue ink that reads "Krishna Viswanathan".

Krishna Viswanathan
Acting Director

Enclosure

cc: Ms. Cindy Heil
Program Manager, Alaska DEC

EPA Comments on “2019 DEC Proposed Regulations & SIP - Fairbanks North Star Borough Fine Particulate Matter”

The attached comments are intended to provide continuing guidance and support in the development of the Serious area State Implementation Plan (hereafter SIP or proposed plan) and any necessary subsequent plans or support materials for the Fairbanks PM_{2.5} nonattainment area. The comments are divided into two sections:

- (1) **KEY COMMENTS** – Issues required to be improved or to be retained to address potential approvability issues. Improve means that new information, data and/or analysis is required on this item to comport with statutory or regulatory requirements that will support approvability. Retain means that the items need to be retained in their entirety substantially similar to the draft that was submitted for public review as of May 10 and updated on the May 21, 2019. Each comment in this section will include a Improve/Retain notation for clarity.
- (2) **GENERAL COMMENTS** – Issues that are important to address to strengthen the SIP generally and in support of issues identified in our Key Comments. We use the same Improve/Retain notation.

Framework for EPA’s Review and Future Implementation Efforts

The EPA reviewed the proposed 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. 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, EPA will continue to support ADEC’s efforts in the nonattainment area through technical support in planning and regulation development. Where possible, financial assistance, through grant programs such as Targeted Air Sheds grants may be provided. While we are encouraged that the state continues to exercise its authority and responsibility to implement the attainment plan within the nonattainment area, we remain hopeful that the Fairbanks North Star Borough will continue to be closely engaged in the development and implementation of the SIP.

KEY COMMENTS

Emissions Inventory

Base Year 2013. Consistent with what was provided for the moderate area attainment plan, condensable and filterable emissions data are required to be provided separately, where available. Where condensable emissions data are not available separately, specifically note that they are included in the total number. 40 CFR 51.1008(b)(1) & (a)(1)(iv) (Improve)

Attainment Projected Inventory. As with the base year emission inventory, the attainment projected inventory requires inclusion of separate filterable and condensable emissions data in the summary and support materials. The year of the attainment projected inventory must be the most expeditious year for which projected emissions show modeled PM_{2.5} concentrations below

the level of the NAAQS. Accordingly, the SIP must indicate how the selected attainment year was as expeditious as possible and provide all relevant sector-by-sector growth rates through the selected attainment year. 40 CFR 51.1008(b)(2) & (a)(2) (Improve)

Modeling

Modeling. Please include in your submission to EPA all input and output files associated with the modeling for the base year and attainment projected inventories. Where you rely on information already provided to EPA as part of the moderate area plan, please identify those elements. 40 CFR part 51, appendix V, section 2.2 (Improve)

Precursor Demonstration

SO₂ Precursor Analysis. We understand that there is interest in a precursor demonstration for SO₂, but that there are information limitations that restrict the ability to make such a demonstration. On page 43 of the modeling chapter, Vol. II:III.D.7.8, it is stated that no sensitivity-based precursor demonstration was pursued for SO₂ as a result of limitations on scientific information to support such a demonstration and therefore precursor emissions are considered significant. We agree with the State's conclusion that SO₂ precursor emissions are considered significant for the reasons provided by the State. Until the informational and technological limitations are addressed, SO₂ must be assessed for BACM and BACT for all source categories. See 40 CFR 51.1010(a). We summarize some of the informational and technological limitations here.

Model development for SO₂ and sulfate formation is an active area of research and we are hopeful to have improved modeling tools in the coming years. Beginning on page 47 of the modeling chapter and continuing on page 58, an SO₂ analysis is presented that attempts to quantify the point source contribution to total observed sulfate. EPA is concerned that, while the SO₂ analysis presented is not intended as a proposed precursor demonstration, the analysis makes several unsupported assumptions that we view as serious flaws in the methodology. First, it is assumed without supporting information that sulfur oxidation occurs uniformly throughout the airshed and on all sources of SO₂ at equal rates. Second, it is assumed that currently modeled sulfate impacting the monitors is an unbiased and accurate quantification of primary sulfate impacts at the monitors, essentially assuming the modeling is perfect in regard to primary sulfate impacts but does not provide a model performance evaluation that supports this assumption.

Given the technical limitations of current modeling tools to correctly model secondary sulfate in winter environments such as Fairbanks and the flaws in the presented SO₂ analysis, we agree that it does not make sense to pursue a sensitivity-based precursor demonstration at this time. (Improve)

Attainment Demonstration

Attainment Demonstration. Under CAA Section 189, a Serious area attainment plan is required to show attainment by December 2019 or include a request for an attainment date extension. Based on the current air quality data, attainment by the 2019 attainment date is impossible given that the annual 98th percentile PM_{2.5} concentrations in 2017 and 2018 were too elevated to allow for a three-year Design Value that meets the 24-hour PM_{2.5} standard of 35 µg/m³. Although the proposed plan includes a request to extend the attainment date to 2024 (the outermost date

allowed by the CAA), it does not appear to fully meet all the CAA Section 188(e) requirements for an extension. Therefore, EPA will likely not be able to approve an extension to the attainment date. However, because CAA Section 189(b)(1)(A) requires that the state demonstrate attainment by December 31, 2019 or request an attainment date extension under CAA Section 188(e) this element must be retained for completeness.

If the Fairbanks area does not meet the relevant attainment date, CAA section 189(d) requires the state to develop a new 5% attainment plan within one year. This new 5% plan must meet the requirements of CAA Sections 172-173 and 189(d) and 40 C.F.R. part 51, subpart Z, including demonstrating attainment as expeditiously as practicable, and providing for an annual reduction in PM_{2.5} emissions within the area of not less than 5% of the amount of such emissions as reported in the most recent emissions inventory. We recommend that the attainment demonstration for this future plan establish a realistic attainment date and provide the supporting documentation on how the selected attainment date is the most expeditious date possible. (Retain/ Improve)

BACM - General

Enforcement Authority. We support the effort to grant ADEC administrative enforcement authority in a limited capacity for the Fairbanks nonattainment area. This will provide for the ability to more directly enforce its curtailment authority and expedite improvement in the air quality for all residents within the nonattainment area. (Improve)

Adequate Funding. We recommend the State of Alaska to continue to provide funding for implementation activities in the Fairbanks nonattainment area. The state has committed to strong measures through both the Moderate and Serious area attainment plans, but these measures can only be successful if they are funded and supported by the regulating agency. We commend the effort taken by the state in 2018/19 to take the lead on implementing the curtailment program. Success will continue to depend on the state's involvement in that program and the close coordination with the local governments. (Improve)

Selected Control Measures. The BACM Analysis, Control Strategies Chapter, and draft Regulations show that ADEC has made a conscientious effort to select a suite of controls on the residential wood burning source category. The CAA requires that all measures deemed BACM must be implemented, and it provides that the obligation to impose BACM on all source categories is generally independent of attainment needs. CAA Section 189(b)(1)(B) & 40 CFR 51.1010(a). Adoption and implementation of these measures will be critical to the approvability of the control strategy element of the plan. See Table 1. (Retain)

Economic Infeasibility. A number of measures were dismissed as being economically infeasible. Please provide the supporting documentation and spreadsheets used to assess BACM economic feasibility as identified in Table 9 page 140 of the BACM analysis in Appendix III.D.7.07. (Improve)

Information Collection. A limited number of proposed regulations require certain sources to provide information to ADEC, rather than implementing controls on certain source categories. Collecting facility-specific information is an important step in the BACM selection process but

does not in and of itself constitute BACM. See 40 CFR 51.1010(a)(4). We suggest completing the information collection process, analyzing identified controls, and adopting feasible controls or demonstrating infeasibility for each of these source categories. (Improve)

BACM – Fuels

Ultra-Low Sulfur Diesel (ULSD)

To support approvability of the BACM portion of the proposed plan, we recommend ADEC provide further consideration of ULSD as BACM for heating oil in the Fairbanks nonattainment area. As stated under the Precursor Demonstration section, above, SO₂ is a PM_{2.5} precursor and, therefore, measures to control SO₂ emissions must be evaluated and implemented. The proposed ADEC regulation requiring the switch from #2 Diesel (2,566 ppm) to #1 Diesel (896 ppm) will reduce fuel sulfur content in Fairbanks. Because this measure has been found to be cost effective, it will be required for purposes of meeting the requirement to implement BACM. 40 CFR 51.1010(a).

However, the ADEC BACM analysis (Measure 51, page 92-93 of the BACM analysis in Appendix III.D.7.07) of this measure identifies that ULSD (15ppm) is technologically feasible nationwide and has been widely available in Alaska since 2010. As the future emissions inventories show an increase in sulfur and with increased conversion to liquid fuel home heating devices, it will be important to address reduced sulfur in two contributing source sectors, industrial and residential boilers.

The ADEC analysis also points to an economic assessment (Residential Fuel Expenditure Assessment of a Transition to Ultra-Low Sulfur and High Sulfur No. 1 Heating Oil for the Fairbanks PM-2.5 Serious Nonattainment Area, pdf page 183 in Appendix III.D.7.07) that concludes that ULSD is currently not economically feasible as the cost of switching to ULSD from #2 diesel would be on average \$329 per device per season. The BACM analysis (Table 9 on page 140 of the Appendix III.D.7.07) cited a \$25,765/ton cost as the basis for economic infeasibility. In your final attainment plan submission to EPA, please provide the supporting spreadsheets and documentation. Understanding how this figure was calculated is particularly important given that, based on the State's own analysis, ULSD was selected as BACT for two point sources and the State's BACM analysis identifies that ULSD is available and in use in Alaska.

While the ADEC economic assessment was a helpful short run analysis based on 18 months of data, we recommend a more defensible assessment that also analyzes a longer run analysis to better understand price differentiation over time. Additionally, the study would benefit from an update to better understand local fuel price elasticity. This is especially true given the nature of the local markets in this area. Finally, the study in the future should utilize existing tools to better understand changes in the market.

If ULSD is found to be economically feasible, the existing Targeted Air Shed grant program could provide an opportunity to provide incentives on the device side to allow for boiler retrofits, upgrades, and/or cleaning to allow for conversion to this cleaner fuel. (Improve)

BACM - Woodsmoke

Key Source Sector. Woodsmoke control is essential to the Fairbanks attainment strategy, and we are pleased with the selected suite of measures in this action. The selection and implementation of these measures will be key towards meeting CAA requirements and reducing emissions in the nonattainment area. See Table 1. (Retain)

Prohibition of Solid Fuel Devices in New Home Construction (Measure 8). This measure exists in the Bay Area Air Quality Management District as noted in ADEC's BACM assessment. Under the existing Fairbanks woodstove changeout/conversion program, one option has been to remove woodstoves completely from an existing residence and provide backup generators as the secondary heating system. Based on the existing measure in the Bay Area and current practices in the Fairbanks nonattainment area it appears to be technologically feasible to design new homes in the nonattainment area that have dual heating systems that are not reliant on wood heating. We recommend this measure be further considered so that growth and development within the nonattainment area does not increase emissions. Additional information to further substantiate the claim that the measure is technologically or economically infeasible must be provided. (Improve)

Emergency Episode Plan. The Fairbanks Curtailment program as described in the Emergency Episode plan will be critical to achieving and maintaining emissions reductions in the nonattainment area during periods of poor air quality. The plan would benefit from work to clarify the program and its implementation. This can be done by providing additional details in regulation that define each curtailment stage, list reproducible steps to call a burn ban, identify what devices are applicable, and outline the requirements and processes associated with granting each type of Stage 1 waiver and NOASH (No Other Adequate Source of Heat). We appreciate the effort that has gone into developing the Stage 1 Waiver and NOASH tables. We recommend developing regulations to identify the process by which the implementing agency will review and grant the Stage 1 Waiver or NOASH, and the process which the applicants must follow to apply for a Stage 1 Waiver or NOASH. Any implementing regulations should include sufficient detail to ensure that waiver and NOASH criteria are unambiguous for each criterion in the first column in the respective Tables in the Emergency Episode Section 7.12. These areas for improved clarity include: documentation needed for established need, procedure for how device emission rating and age will be confirmed, documentation needed for installation certification, process for tracking renewals and upgrades, process for identifying chimney sweep/device maintenance/frequency requirements and documentation need for confirmation, documentation needed to confirm dry wood and at what frequency, inspections frequency and confirmation requirements, and records on compliance with opacity requirements during the curtailment. (Improve/Retain)

Implementation Dates/Delayed effective Dates. For measures and regulations with delayed implementation dates, please include discussion as to the rationale for why the dates are delayed and why the selected dates are the most expeditious possible. We were not able to find this information in the submittal. 40 CFR 51.1011(b)(5) (Improve)

Measure 42. We support adoption of this measure, which requires a set burn down period when ADEC declares an air emergency episode in the nonattainment area. We note that, as written, 18

AAC 50.075(e)(3) does not mandate the burn down. We recommend revising 18 AAC 50.075(e) to clearly mandate the burn down. Alternatively, please indicate what provisions of the 18 AAC Chapter 50 or the State Air Quality Control Plan, including Volume II: III.D.7.12 Fairbanks Emergency Episode Plan, mandate that owners and operators of solid fuel heating devices in the nonattainment area comply with the conditions in ADEC's notices of a Fairbanks North Star Borough Air Quality Alert or Episode. Please include a discussion of ADEC's process for ensuring that mandatory requirements will be included in each Air Quality Alert. We also recommend that ADEC revise the State Air Quality Control Plan, Volume II: III.D.7.12 Fairbanks Emergency Episode Plan to match the revisions to 18 AAC 50.075(e). (Improve)

Measure 54. The BACM analysis for CARB Vehicle standards does not appear to be in the Appendix. Please include it in the final submission. (Improve)

Petrostar BACM/BACT. ADEC made efforts to evaluate larger area sources as part of the BACM process, including the Petrostar refinery in North Pole. We recommend including this evaluation as part of the final submittal will be necessary for demonstrating that the BACM assessment was properly completed. (Improve)

BACT - General

2018 EPA Comment Letter. In 2018, EPA provided comments based on the preliminary drafts of this Serious area plan. While EPA appreciated the time and effort invested by ADEC staff in preparing the draft BACT analyses in 2018, the majority of the basic cost and technical feasibility information identified in our prior comments as necessary to form the basis for retrofit BACT analyses at the specific facilities has not been provided by the point sources or in the proposed plan. Although limited (while still insufficient) cost information has been provided for dry sorbent injection (DSI), no site-specific quotes have been provided for the other three, higher performing SO₂ control technologies. We summarize key points from EPA's 2018 comment letter here and have included for resubmission the full letter as a KEY COMMENT in Attachment 1 of this letter. Below we cite some key missing elements from the existing BACT analysis.

1. **Site Specific Quotes.** EPA is unable to provide detailed comments on the BACT analysis in the absence of site-specific quotes for each SO₂ control technology previously identified in EPA comments. Site specific quotes are required in order to provide the cost and technical feasibility information that is needed to assess and select BACT, especially for retrofit applications. In the absence of this information, any control technologies successfully implemented nationwide will be considered technologically and economically feasible. See 40 CFR 51.1010(a)(3), 81 FR 58081-85.
2. **Facility and Control Equipment Life.** We recommend that the submittal document its 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 lifetimes in the current plan does not contain support information for those lifetimes. We recommend that this evidence include such information as the actual age of currently operating relevant control equipment, and design documents for associated process equipment

such as coal-fired boilers. We recommend including all enforceable shutdown agreements or analyses completed that document actual examples where equipment lifetimes were shortened by other conditions such as the arctic environment.

3. **Control Efficiency.** Calculations for each control technology must be based on a reasonable and demonstrated high end control efficiency rate achievable by the technology in question at other emission units, or as stated in writing by a control equipment vendor. If a lower pollutant removal efficiency is used as the basis for the analysis, detailed technical justification must be provided. 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.

(Improve)

Economic infeasibility. An economic infeasibility determination is a possible outcome of the BACT process. Developing an adequate economic infeasibility assessment to support an approvable BACT determination should include the following:

- We recommend at least two site specific vendor quotes for each control technology.
- We recommend economic infeasibility assessments developed using economic theories include appropriate analysis of potential impacts on relevant markets and products (e.g., price elasticity of demand for fuels).
- Financial information/discussion for the source that, when compared to the cost of the control, helps address the question concerning the economic feasibility 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.
- EPA-approved control cost effectiveness analysis and economic infeasibility assessment.

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 the economic infeasibility assessment. (Improve)

Regulations and Enforceability. To ensure the BACT determinations in the SIP submission are approvable, they need to be practically enforceable. We recommend the final SIP present the BACT requirements in a manner similar to how a source-specific permit would look – by source and unit, with emission limits, monitoring requirements, recordkeeping, reporting, etc. This information will be required for approvability and enforceability. (Improve)

Ultra-Low Sulfur Diesel (ULSD, 15 ppm). ULSD has been selected for some facilities and low sulfur Light Straight Run (LSR, 30 ppm) is already in use at other facilities. ULSD and/or LSR appear to be cost effective in practice and by analysis. To substantiate the decision not to select either of the lower sulfur fuels for other sources and source categories, the analysis must establish that ULSD and LSR are either not cost effective (based on site-specific cost quotes) or technically infeasible for a specific emission unit. (Improve)

Aurora – Chena Power Plant

BACT Determination. No source control was selected in the 2019 Serious area plan, however the plan acknowledged that ADEC found DSI to be cost effective in the 2018 preliminary plan. In previous comments, EPA recommended that the identified three higher efficiency technologies be evaluated in the BACT analysis, but site-specific cost information has not been provided. A source-specific quote (preferably two or more for each SO₂ control technology previously identified by EPA) would be needed to assess the appropriate BACT for this facility. A 0.2% sulfur content by weight in coal by 2021 was listed as BACT, however there is only one source of coal in Alaska and this requirement does not appear to reduce the sulfur content in the fuel. In the absence of an approvable economic infeasibility assessment, we would need additional information to understand and document how these constituted BACT level control. (Improve)

Economic infeasibility. 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 incremental costs of installation and operations of potential BACT controls. We recommend that the plan include an economic infeasibility assessment, developed by an economist or someone with equivalent training or expertise, as described in *BACT – General* section, above, 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. (Improve)

Doyon/Fort Wainwright

BACT Determination. It appears that DSI is cost effective, as determined in the 2018 preliminary plan, and that site-specific cost information for higher efficiency technologies has not been obtained. A source specific quote (preferably two or more for each SO₂ control technology previously identified by EPA) would be needed to assess the appropriate BACT for this facility. A 0.2% sulfur content by weight in coal by 2021 was listed as BACT, however there is only one source of coal in Alaska and this requirement does not appear to reduce the sulfur content in the fuel. We would need additional information to understand how this constituted a BACT level control. (Improve)

Shutdown Agreement. A shutdown agreement could potentially satisfy the BACT requirement or enable ADEC to demonstrate that BACT controls are not feasible based on the remaining useful life of the unit(s). However, in order for a shutdown agreement to impact BACT obligations, the agreement must be embodied in an enforceable order under state law, must include a date certain for source shutdown, and must be received in a timely manner such that it can be considered as part of the overall SIP submission. We recommend that the state also explore the option of incorporating a commitment to adopt specific measures for this source in the SIP submission that meets the requirements of CAA Section 110(k)(4). (Improve)

GVEA – Zehnder

BACT Determination. Under the 2018 preliminary plan, ULSD was selected as BACT. This 2019 plan proposes that the facility revise its emissions limit below the major stationary source limit of 70 tons per year. The CAA and the PM_{2.5} SIP Requirements Rule requires that all feasible control measures and technologies that meet the BACM (including BACT) criteria need to be

implemented. All source categories need to be evaluated including: point sources (including non-major sources), area sources, on-road sources, and non-road sources. In this situation we recommend that the original ADEC BACT determination published in 2018 be selected for this facility. (Improve)

GVEA – North Pole

BACT Determination. ULSD (15ppm) was originally selected as BACT in the 2018 preliminary plan, and it has been found to be economically feasible for Doyon / Ft. Wainwright and University of Alaska Fairbanks (UAF) in the 2019 plan. Additionally, Light Straight Run fuel, a low sulfur fuel (30ppm), is currently in use at this facility. The 2019 BACT determination identified switching select units from #2 to #1 on curtailment days and setting a future decision point for selecting lower sulfur fuel. It will be difficult to support an economic infeasibility determination in light of the current information. Additional site-specific cost information or providing an enforceable agreement for a future switch to lower sulfur fuel is necessary to support the assertion that this meets BACT requirements. (Improve)

University of Alaska – Fairbanks

Economic Infeasibility. In order for EPA to review ADEC’s finding that additional SO₂ controls are economically infeasible, the state or UAF will need to provide an economist developed infeasibility submittal as described in the section *BACT – General*, above. (Improve)

BACT Determination. In the 2018 preliminary plan DSI was selected as BACT. In addition to economic infeasibility, technological infeasibility was also cited in this 2019 plan, which asserts that the facility could not efficiently be retrofitted with a new control technology. However, the conclusion assumes the source must achieve a high-end control efficiency from DSI and that achieving such a control efficiency is not technologically feasible due to the need to inject excess sorbent into the ducting, with the resulting negative impacts. We recommend that the BACT analysis instead evaluate the cost effectiveness of DSI based on the level of control efficiency practicable given the current infrastructure in addition to evaluating the cost effectiveness of retrofitting the ductwork to achieve higher control efficiency via DSI and other SO₂ control technologies. (Improve)

Reasonable Further Progress (RFP) and Quantitative Milestones (QM)

Control Measure Implementation Schedule. For each RFP quantitative milestone year, a detailed schedule must be provided describing the implementation, including the percentage of compliance or quantity of completion where applicable (i.e., curtailment compliance, woodstoves changeouts/conversions), of each control measure during each year of the applicable attainment plan as outlined in 40 CFR 51.1012 and 51.1013. This will provide the basis for evaluating RFP as identified in the plan and as reported in the required QM reports. We recommend that RFP be measured in modeled emission reductions and associated with implemented control measures for reporting the QMs. A chart/graph may help illustrate annual progress. (Improve)

Support Calculations. Please submit the supporting analysis and documentation for how these emissions reductions were calculated for each milestone years. If readily available in the existing package, please provide a reference to that documentation. (Improve)

Ammonia. The RFP / QM emissions reductions will also be required for NH₃ given that it does not have a precursor demonstration. The document should note that VOCs and NO_x are not included as ADEC anticipates submitting approvable precursor demonstrations. Each quantitative milestone year will also be required to include an RFP inventory of on-road mobile source emissions for direct PM and the relevant precursors. (Improve)

SO₂ increases. The total nonattainment area SO₂ emission levels increase by 88%, and some categories including jet fuel and non-road mobile sources show much higher increases in SO₂. Please explain the change in SO₂ estimates in Table 7.10-4. (Improve)

QM Report Due Dates. A functional addition will be to identify the dates by which ADEC is required to submit the QM reports. This will assist with tracking and help to avoid the triggering of contingency measures for failure to submit a report. (Improve)

Motor Vehicle Emissions Budgets (MVEB) and Conformity

As per 40 CFR 93.118(e)(4), please include all support documents including MOVES runs documenting the submitted MVEBs. To allow review of the attainment demonstration and RFP MVEBs, please provide the following files:

- RunSpec files for each MOVES run used in developing the MVEBs;
- County Input Databases developed for each MOVES run used to develop the MVEBs;
- Output databases generated by MOVES after each run used to develop the MVEBs; and
- Any input files or database files modified to represent the engine block heating program.

(Improve)

Contingency Measure.

The contingency measure in the proposed plan appears to support the continued improvement of heating devices within the nonattainment area by requiring them to meet lower emissions requirements and by requiring removal of older devices while providing sufficient time for the community to prepare and comply with the changes. Consistent with the CAA and EPA's implementing regulations, 18 AAC 50.077(m) must be revised to ensure that the contingency measure is triggered upon the occurrence of any of the determinations listed in 40 CFR 51.1014(a), including "to submit a quantitative milestone report required under §51.1013(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. Please identify or supply the information documenting the quantification of emissions reductions associated with this measure with particular emphasis on how the triggering of 18 AAC 50.077(m)(1)(B) will effectuate meaningful annual reductions in PM_{2.5} emissions consistent with RFP. (Improve/Retain)

Table 1. Selected Measures that must be implemented to meet BACM requirements. (As described in the KEY COMMENTS, BACM General, and Wood smoke sections, the measures in Table 1 have been selected as BACM and are necessary for approval of the BACM element of the Serious area attainment plan.) (Retain)

Identified Measures			Proposed BACM Regulations
#	Stakeholder Measure	Description	Proposed to Adopt as BACM
2		Prohibit advertising used devices that do not meet emission criteria for new device sales	18 AAC 50.077(k)(5)
3	S28 S31	Require building or other permit	18 AAC 50.077(k)(4)
4	S33	Require confirmation of proper installation by requiring professional installation or on-site inspection	18 AAC 50.077(k)(2)&(3)
5		Register/require industry certification of heating professionals	18 AAC 50.077(k)(2)&(3)
7		Require devices meet stricter emission criteria in high pollution zones.	18 AAC 50.077(c), (d), (e), (f), (g), (h), (i), (j)
13		Submit sale and installation information to Air Program	18 AAC 50.077(d),(d)(3) & (k)(1)
15		Disclosure of devices on property sale	18 AAC 50.077(b),(k)(2) & (m)
16	S17b S18	Require notice and proof of destruction or surrender of removed, uncertified devices (date certain removal of uncertified devices)	18 AAC 50.077(b),(k)(2) & Emergency Episode Plan
17		Require Removal of Uncertified Solid Fuel Burning Devices Upon Sale of Property	18 AAC 50.077(b)
19, 21	S1a, S1c	19 – Require registration of devices to qualify for exemption from curtailments 21- Optional device registration for curtailment exemptions	18 AAC 50.077(k)(1) & Emergency Episode Plan
20		Require renewals with inspection requirements	18 AAC 50.077(k)(1) & Emergency Episode Plan

22	S1a	Require registration of all devices	18 AAC 50.077(k)(1), 50.077(c), (d), (e), (f), (g)
24	S22	Require Permanent Installed Alternative Heating Method in Rental Units	18 AAC 50.077(k)(4)
25	S24	Require detailed application or inspection to verify need for No Other Adequate Source of Heat (NOASH)	Emergency Episode Plan
26		Require inspection of device and installation	18 AAC 50.077(k)(2) & (3)
27	S26, S27	Require annual renewal of waiver	Emergency Episode Plan
28		Set income threshold [for Curtailment Exemption]	Emergency Episode Plan & 18 AAC 50.077(b)
29	S25	Allow only NOASH households to burn during curtailment periods	Emergency Episode Plan
30		Distribution of Curtailment Information at Time of Sale of Wood-Burning Device	18 AAC 50.077(k)(1)
31	S13	Require sale of only dry wood during late summer to end of winter	18 AAC 50.076(j) & 18 AAC 50.078(e)
32		Require dry wood to be clearly labeled to prohibit marketing of non-dry wood as dry wood	18 AAC 50.076(j) & 18 AAC 50.078(e)
40	S25	Single stage curtailment	Emergency Episode Plan
42		Burn down period	18 AAC 50.075(e)(3)
48	S20	Date certain removal of "coal only heater"	18 AAC 50.079(f) 18 AAC 50.077(k)(2)
49	S20	Prohibit use of coal burning heaters	18 AAC 50.079(f)
51	S12	Ultra-low Sulfur Heating Oil	18 AAC 50.078(b)
65		Emissions crossing property lines	18 AAC 50.075(f)(2)
66		Lower curtailment threshold	Emergency Episode Plan
67		Coffee Roasters – Commercial	18 AAC 50.078(d)
68		Charbroilers – Commercial	18 AAC 50.078(d)
69		Incinerators - Commercial	18 AAC 50.078(d)
70		Used Oil Burners	18 AAC 50.078(d)

71		Date certain removal for EPA certified devices over 2.0 g/hr or over 25 years old.	18 AAC 50.077(m)
R4		All wood stoves must be certified	18 AAC 50.077(b)
R5		Ban new installations - Hydronic Heaters	18 AAC 50.077(c), (d), (e) & (k)(2)
R6		Remove hydronic heaters at time of home sale	18 AAC 50.077(b)
R10		Replace uncertified units at time of sale	18 AAC 50.077(b)
R11	S29	Replace uncertified units at time of significant remodeling	18 AAC 50.077(b)
R12		Replace uncertified stoves in rental units	18 AAC 50.077(b)
R16		Disincentives to sell used stoves	18 AAC 50.077(b), (e), (f) & (k)(2)
	S23	Require catalytic device change out per manufacturer's specifications, with mandatory chimney sweep and device check on annual or biennial basis	Emergency Episode Plan
	S30	Prohibit sales of SFBA's that don't meet state standards Require all aftermarket controls on SFBA's to be professionally installed, with exemption for existing devices	18 AAC 50.077(c), (d), (e), (f), (g), (h), (i), (j)
	S32	Require all aftermarket controls on SFBA's to be professionally installed, with exemption for existing devices	18 AAC 50.077(k)(2)&(3)
	S34	Adopt legislation giving DEC citation authority	FNSB Resolution

GENERAL COMMENTS

Air Quality Improvement

We are encouraged that there is a reduction in PM_{2.5} concentrations measured at the monitor in North Pole. Since its establishment in 2012 through 2018, the three-year design value at the Hurst Road site has dropped from 139 µg/m³ (2012-14DV) by over half to 65 µg/m³ (2016-2018DV). While there are many variables that influence design values, the scale and timing of the observed reduction in PM_{2.5} concentrations strongly indicate that the wood stove curtailment program (burn bans) and other control measures were effective. The 74 µg/m³ reduction in 24-hour PM_{2.5} DV at the Hurst Road site suggests that effective local regulation and targeted community efforts can lead to improvements in air quality that support the attainment of the standard.

When reviewing the meteorological assessment, we noticed that the PM_{2.5} concentrations recorded at the NCORE monitor vacillate, as opposed to the uniformly downward trajectory at the Hurst Road site. For instance, the analysis concluded that after adjusting for meteorology, the 98th percentile at the NCORE monitor wavered from 50 µg/m³ in 2010, 34 µg/m³ in 2011, 53 µg/m³ in 2012, and 37 µg/m³ in 2013. This result would benefit from further investigation because the efficacy of control strategies would not be expected to vary in this manner from year to year. If other reasons play a role in this interannual variability, then it is important to account for them in a conclusion about what has caused the recent string of years below the 35 µg/m³ standard. The EPA remains committed to providing technical assistance to conduct this additional analysis. (Improve/Retain)

Nonattainment New Source Review (NNSR)

The NNSR program is a required element for the Serious area SIP. ADEC recently adopted rule changes to address the nonattainment new source review element of the Serious SIP, and EPA has proposed approval of this element in June 2019. (Retain)

Air Quality Episodes

We appreciate the effort that ADEC has already taken to confirm that the 2008 episodes are appropriate for use in the Serious area plan. We recommend including additional explanation about the selection of the 2008 episodes including the efforts underwent to assess and confirm their appropriateness for this Serious area plan. It would also be helpful to inform the community through the plan narrative about the proactive efforts underway by the state to update the episodes for future planning. (Improve/Retain)

Precursor Demonstration

Ammonia. The Modeling chapter correctly identifies that there is no ammonia precursor demonstration. However, the RFP chapter incorrectly states that ammonia has a precursor demonstration.

NO_x Precursor Demonstration. We recommend that this section only include the primary table from which conclusions are based and move the remaining support tables to the appendix.

Note that the May 2019 final EPA Precursor Demonstration Guidance includes a revised air quality impact threshold for the PM_{2.5} 24-hour standard, below which a precursor's impact to ambient PM_{2.5} levels can be considered insignificant. The revised air quality impact threshold is 1.5µg/m³. (Improve/Retain)

BACM - General

BACM Identification and Analysis. Our review of the *Best Available Control Measures Analysis for Fairbanks PM_{2.5} Nonattainment Area* in Appendix III.D.7.07 indicates that ADEC appropriately identified multiple control measures for each source category based primarily on a survey of nonattainment areas in other jurisdictions. Note that the Clean Air Act and best practices do not preclude an area from evaluating measures not included in other nonattainment area plans, if such measures are available. See 40 CFR 51.1010(a)(2). Relatedly, the statutory definition of BACM does not allow the absence of a measure in other SIPs as the sole rationale for excluding new measures as technologically infeasible. 40 CFR 51.1010(a)(3). We are encouraged that ADEC has evaluated new measures focused on weatherization and boiler efficiency given their connection to the home heating source category. (Improve)

Stakeholders Group. We commend both ADEC and FNSB for convening the Stakeholders process in 2018 to better engage the community for solutions to the Serious nonattainment issue. We also commend the stakeholders themselves for participation in the process to work to understand the issue and perspectives of all in the community. Looking forward, we encourage the state and the Borough to continue to revisit the measures that the stakeholders have generated, even if they do not make it into this attainment plan. (Improve/Retain)

Non-selected Measures. On multiple occasions we noted the following issues with the rationale for not selecting a control measure: the concept of technological infeasibility was used incorrectly, a *de minimis* emissions concept not allowable by regulations was used, claims of equivalent stringency did not have sufficient supporting information, and the BACM analysis was not completed. In some of the situations, economical infeasibility analyses, technological infeasibility based on local arctic conditions or other rationale may be more appropriate for documenting a decision on a measure selection. See 40 CFR 51.1010(a)(3). (Improve)

Motor Vehicle Controls. The BACM assessments of motor vehicle related controls incorrectly identifies that emissions benefits are not quantifiable as a rationale for dismissal of controls. Technological and/or economic infeasibility are the primary means by which to dismiss a control from selection per the 2016 PM_{2.5} rule. 40 CFR 51.1010(a)(3). Additionally, similar with the moderate area plan, motor vehicle idling control emissions reductions may be captured in the emission inventory, but not as an attainment demonstration control measure until the methodology is approved by OTAQ. (Improve)

BACM – Woodsmoke

Measure 7. We recommend ADEC further evaluate the feasibility of imposing a 1.0 grams/hour standard or provide further evaluation of whether the proposed control measures are equivalent to the Missoula County measure (Rule 9.203). Our review indicates that Missoula County imposed a 1.0 grams/hour standard for wood-fired heating devices in a stagnation area that

encompasses major portions of the City of Missoula, as described in the BACM analysis (Appendix III.D.7.07, page 33-34). (Improve/Retain)

BACM – Fuels

Natural Gas

It will be important for the area to continue to pursue natural gas along with other liquid fuels used for home heating. These fuels have lower direct PM emissions and will be important to the long-term emissions control strategy. Diversification in fuel choices with lower associated emissions may be important to allow for growth within the nonattainment area while not negatively affecting air quality. (Retain)

Attachment 1 – 2018 BACT Comments

EPA is repeating general comments based on review of the draft BACT analyses prepared by ADEC as well as addressing certain issues discussed in earlier BACT comments provided by EPA. Detailed comments regarding each individual analysis are not being provided at this time. While EPA appreciates the time and effort invested by ADEC staff in preparing the draft BACT analyses, the basic cost and technical feasibility information needed to form the basis for retrofit BACT analyses at the specific facilities has not been prepared. In other words, analyses which are adequate to guide decision making regarding control technology decisions for these rather complex retrofit projects cannot be prepared without site-specific evaluation of capital control equipment purchase and installation costs, and site-specific evaluation of retrofit considerations. EPA will conduct a thorough review of any future BACT or MSM analyses which are prepared based on adequate site-specific information and will provide detailed comments relative to each emission unit and pollutant at that time.

1. Site-Specific Quotes Needed – The cost analyses, particularly for SO₂ control technologies, must be based on emission unit-specific quotes for capital equipment purchase and installation costs at each facility. These are retrofit projects which must be considered individually in order to obtain reliable study/budget level (+/- 30%) cost estimates which are appropriate to use as the basis for decision making in determining BACT and potentially MSM. EPA believes that control decisions of this magnitude justify the relatively small expense of obtaining site-specific quotes.
2. SO₂ Control Technologies – The analyses must include evaluation of circulating dry scrubber (CDS) SO₂ control technology. This demonstrated technology can achieve SO₂ removal rates comparable to wet flue gas desulfurization (FGD) at lower capital and annual costs and is more amenable to smaller units and retrofits. Modular units are available.
3. Control Equipment Lifetime – The analyses must use reasonable values for control equipment lifetime, according to the EPA control cost manual (EPA CCM). EPA believes that the following equipment lifetimes reflect reasonable assumptions for purposes of the cost analysis for each technology as stated in the EPA control cost manual and other EPA technical support documents. Use of shorter lifetimes for purposes of the cost analysis must include evidence to support the proposed shortened lifetime. One example where EPA agrees a shortened lifetime is appropriate would be where the subject emission unit has a federally enforceable shutdown date. Certain analyses submitted in the past have claimed shortened equipment lifetimes based on the harshness of the climate in Fairbanks. In order to use an equipment life that is shortened based on the harsh climate, evidence must be provided to support the claim. This evidence could include information regarding the actual age of currently operating control equipment, or design documents for associated process equipment such as boilers. Lacking adequate justification, all cost analyses must use the following values for control equipment lifetime:
 - a. SCR, Wet FGD, DSI, CDS, SDA – 30 years
 - b. SNCR – 20 years
4. Availability of Control Technologies – Technologically feasible control technologies may only be eliminated based on lack of availability if the analysis includes documented information from multiple control equipment vendors (who provide the technology in

question) which confirms the technology cannot be available within the appropriate implementation timeline for the emission unit in question.

5. Assumptions and Supporting Documents – All documents cited in the analyses which form the basis for costs used and assumptions made in the analyses must be provided. Assumptions made in the analyses must be reasonable and appropriate for the control technologies included in the cost analysis.
6. Interest Rate – All cost analyses must use the current bank prime interest rate according to the revised EPA CCM. See <https://www.federalreserve.gov/releases/h15/> (go to bank prime rate in the table).
7. Space Constraints – In order to establish a control technology as not technologically feasible due to space constraints or other retrofit considerations, detailed site-specific information must be submitted in order to establish the basis for such a determination, including detailed drawings, site plans and other information to substantiate the claim.
8. Retrofit Factors – All factors that the facility believes complicate the retrofit installation of each technology should be described in detail, and detailed substantiating information must be submitted to allow reasonable determination of an appropriate retrofit factor or whether installation of a specific control technology is technologically infeasible. EPA Region 10 believes that installation factors which would complicate the retrofit installation of the control technology should be evaluated by a qualified control equipment vendor and be reflected in a site-specific capital equipment purchase and installation quote. Lacking site-specific retrofit cost information, all factors that the facility believes complicate the retrofit installation of each technology should be described in detail, and detailed substantiating information must be submitted to allow reasonable determination of an appropriate retrofit factor. One example of the many retrofit considerations that must be evaluated is the footprint required for each control technology. A vendor providing a wet scrubber will be able to estimate the physical space required for the technology and evaluate the existing process equipment configuration and available space at each subject facility. The determination of whether a specific control technology is feasible and what the costs may be different at each facility based on this and other factors. Site-specific evaluation of these factors must be conducted in order to provide a reasonable basis for decision making.
9. Control Efficiency/Proposed Emission Limits – Cost effectiveness 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. If a lower pollutant removal efficiency is used as the basis for the analysis, detailed technical justification must be provided.