ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

18 AAC 50 AIR QUALITY CONTROL

Response to Comments on November 14, 2014 Proposed Regulations:

Purpose and Applicability of Chapter,

State Air Quality Control Plan,

Open Burning,

Wood-Fired Heating Device Visible Emission Standards,

Solid Fuel-Fired Heating Device Fuels,

Commercial Wood Seller Disclosure Program

Wood-Fired Heating Device Standards,

&

Fine Particulate Matter (PM2.5) Air Episodes and Advisories

December 24, 2014

Contents

Introduction

This document provides the Alaska Department of Environmental Conservation's (DEC) response to public comments received regarding its November 14, 2014 draft regulatiosn pertaining to open burning, the state air quality control plan for the Fairbanks North Star Borough nonattainment area, wood-fired ehating device visible emissions tandards, solid fuel-fired heating device fuels, commercial wood seller disclosure program, and fine particulate matter ($PM_{2.5}$) air episodes and advisories.

The details describing the proposed regulation changes are presented in DEC's public notice dated November 14, 2014. DEC received comments in the form of emails, electronic comments submitted online, hand written comments received at DEC's open houses, oral testimony at DEC's public hearings, letters, and faxes.

For each section of the proposed regulations and for the SIP, this document summarizes the comments received, identifies the regulatory options considered, and provides DEC's response and decisions.

18 AAC 50.065(f) – Open Burning and Related Definitions

The proposed amendment to state regulation 18 AAC 50.065(f) prohibits open burning in a PM-2.5 nonattainment area between November 1st and March 31st but allows for exceptions under a local air quality open burn permit program.

> (f) **Wood Smoke Control and PM-2.5 Non-Attainment Areas**. Open burning is prohibited between November 1 and March 31 in **all** [A] wood smoke control **areas** [AREA] identified in 18 AAC 50.025(b) **and in all PM-2.5 non-attainment areas identified in 18 AAC 50.015(b)(3) except where authorized under a local air quality open burn permit program**.

The proposed amendments and additions to the definitions in 18 AAC 50.990 relevant to open burning are as follows:

> (65) "open burning" means the burning of a material that results in the products of combustion being emitted directly into the ambient air without passing through a stack, flare, vent, or other opening of an emission unit from which an air pollutant could be emitted**; camp fires as defined in 18 AAC 50.990(140), barbeques, candles, tobacco, and celebratory fireworks are not considered open burning.**

and

> (140) "camp fire" means any open fire less than 3 feet in diameter used for cooking, personal warmth, lighting, ceremonial or aesthetic purposes that is hand built and that is not associated with any debris disposal activities.

Summary of Comments: Some commenters supported restricting outdoor open burning between November and March and felt that providing the option for a local permitting program to grant exceptions on days with good air quality and favorable weather patterns for dispersion was a reasonable measure that would allow for debris disposal and other open burning to occur on days where it would not significantly impact air quality. Other commenters felt DEC should be more specific and further define what a local air quality burn permit program is and what responsibilities it would have, as well as the requirements a local program must meet to receive DEC approval. With respect to local program authority, a commenter expressed concern that this would be a roll back of the existing open burning requirement that would result in less stringent requirements. Commenters also suggested exceptions to the outdoor burn prohibition for specific ceremonial or recreational outdoor open burning.

Other commenters felt that the proposed amendment was not protective enough of public health. Some commenters wanted no exemptions to wintertime open burning. They said that the definition of open burning, as proposed, would allow for recreational camp fires and other open burning even on days with the worst air quality. Commenters asked if the annual UAF bonfire would be affected, suggesting it was unreasonable to prohibit the public's ability to burn if the event were allowed to continue without restriction. Commenters wanted to know how the

November 1 and March 31 dates were chosen. One commenter suggest changing the beginning date to October 1. Commenters also said that the dates seemed arbitrary and that restrictions on outdoor burning be extended to any time that concentrations exceeding the level of the health standard occur. They suggested that the regulation be extended to any time the was an air quality episode or conditions with unfavorable wind conditions, last longer, or be in effect all year so that open burning was only permitted during periods of good air quality and dispersion characteristics throughout the year. Another commenter suggested removing the text, "that is hand built" from the proposed definition for "camp fire." A commenter suggested adding outdoor wood and coal boilers to the definition of outdoor burning.

Fiscal Concerns: No fiscal concerns were noted on this section of the regulation.

Regulatory Options: Based on the comments received the department considered the following regulatory options.

1) Do not implement the proposed regulation (keep current regulation and related definition)
2) Implement regulation as proposed
3) Implement proposed regulation with amendments
    a. Clarify the local program option to better identify requirements
    b. Expand time period for the restriction
    c. Change definition of campfire to remove the text regarding "hand built"

Department Decision:

Based on the public input received, the department will be adopting the proposed regulation with amendments. First, the department is adding additional language to clarify that a local open burning program may only be used in $PM_{2.5}$ nonattainment areas if they demonstrate that it will not cause or contribute to violations of the $PM_{2.5}$ ambient air quality standards and the program has been adopted into the State Implementation Plan for the area.

The department has reviewed requests for expanded time periods for the open burn prohibition. DEC will adopt and finalize the regulation with the November to March seasonal prohibition. In response to public comments received on the prior regulatory proposal from 2013-2014, the department considered a longer season for open burning restrictions. In analyzing the data available, DEC found that in the months of October and April conditions have not shown a prevalence for significant air quality deterioration as a result of normal open burning. As a result, DEC did not lengthen the seasonal restriction on open burning to include those two months in its re-proposal of this regulation. Problem open burns during these "shoulder seasons" can typically be addressed through the use of other open burning and air pollution regulations. The department also considered comments from this and previous comment periods about the need for residents to be able to open burn safely during non-summer months (outside the

wildland fire season) to address build-up of biomass fuels that create a wildland fire hazard to properties.

DEC has determined that the data supports prohibiting open burning during the winter months of November-March, but that an extension of that time period into October, April, or other months is not currently needed to address the wintertime $PM_{2.5}$ problem. DEC recognizes that open burn events can create smoke issues in localized areas if individuals fail to follow existing ordinances or regulations. However, expanding the length of the open burning prohibition does not by itself prevent such non-compliance events or the impacts they create. In response to general concerns raised about the need to restrict open burning on poor air quality days, existing state regulation (18 AAC 50.065(e)) already prohibits open burning at any time of the year for days when air quality advisories are in effect in a given area.

The department will also adopt the definition of camp fire as proposed. It is not clear from the comments what the concern is with the inclusion of "hand built." The department, in the definition, wanted to further reduce the potential for confusion or misunderstanding regarding a small scale camp fire, which is typically hand built, from an open burn for debris disposal, where mechanical devices may be used to form a debris pile for burning.

The suggestion that outdoor hydronic heaters (wood or coal) be included in outdoor open burning is contrary to the basic definition of open burning, which is the burning of material that results in combustion products being emitted into the air without passing through a stack, flare, vent, or other opening. Hydronic heaters have stacks from which air pollution is emitted and, like other air pollution emission sources with stacks, are addressed through other sections of the state's regulation.

18 AAC 50.075 – Visible Emissions Standards

The proposed amendment to this regulation requires people using wood-fired and solid-fuel fired heating device to operate their devices to meet opacity requirements during air quality advisories or episodes as established in the SIP.

18 AAC 50.075. Wood-fired and solid fuel-fired heating device visible emission standards.

(a) A person may not operate a wood-fired **or solid fuel-fired** heating device in a manner that causes

(1) black smoke; or

(2) visible emissions that exceed 50 percent opacity for more than **six [15]** minutes in any one hour**, except during the first 20 minutes after initial firing of the unit,** in an area for which an air quality advisory is in effect under 18 AAC 50.245 **or 18 AAC 50.246. Visible emissions are measured following opacity reading procedures as required by Vol. 3., sec. IV-3, Appendix IV-3, of the state air quality control plan, adopted by reference in 18 AAC 50.030.**

18 AAC 50.075 is amended by adding a new subsection to read:

(d) A person may operate a wood-fired or solid fuel-fired heating device in an area for which the department has declared a PM-2.5 air quality episode under 18 AAC 50.246, only if:

(1) visible emissions or opacity from the wood-fired or solid fuel-fired heating device is below the opacity limits identified in the episode announcement for that area as defined in the State Air Quality Control Plan adopted by reference in 18 AAC 50.030 or

(2) the owner or operator of the wood-fired or solid fuel-fired heating device has received a waiver from the department or local air quality program from the opacity limits identified in the episode announcement; which waiver may be granted by the department or local air quality program, either on a temporary or permanent basis, where they have found that meeting the opacity limits would be unreasonably expensive, technically not feasible, or would otherwise create an unreasonable burden on the owner or operator of the device.

Summary of Comments: Commenters expressed concern over the proposed visible emissions standards, their seasonality, and measurement techniques. Commenters suggested a variety of solutions to perceived problems. Comments indicated confusion and requested clarification about whether and how masonry heaters, fireplaces, and pellet stoves are included in the opacity limits, as well as in the adopted emission standards.

Commenters said that some degree of opacity is normal and that some spikes in opacity were due to initial startup and refueling of devices and should be allowed for 15 minutes every four hours but said that opacity could also be the result of burning wet wood or incorrect fuels, damping down fires, or using inefficient devices, such as uncertified wood stoves. Others suggested that opacity limits more than 20% should not be allowed for more than 3 minutes. Commenters said that smoke opacity could not be easily modulated in response to air quality episodes and instead low opacities were the result of operating clean and efficient devices the right way and using the correct fuels. Other comments said that even devices that do meet opacity standards during episodes will continue to add to $PM_{2.5}$ levels and suggested mandatory burn bans with exceptions for essential burners and cases of financial hardship as an alternative to the opacity standards. In addition, commenters indicated that they believe the 20 minute start up provision in the regulation proposal was a roll back of existing regulations, which had a 15 minute provision. With respect to the opacity levels identified for the Fairbanks non-attainment area in the proposed plan, one comment suggested a 30% opacity level if concentrations were less than 15 $\mu g/m^3$and 20% if concentrations were above 15 $\mu g/m^3$.

Some comments expressed the importance of including all solid fuel burning heaters in the requirements, while others went further recommending that all heating devices, including oil and waste oil, be included as well. Commenters felt that the regulation's applicability to all solid fuel-fired heating devices weakens requirements in 18 AAC 50.055 "Industrial Processes and Fuel-Burning Equipment" section (a) that limits opacity to 20% for an industrial process or fuel-burning equipment. They indicated that the new regulation for solid-fuel heaters would be a significant loophole for coal heaters and weaken existing requirements. Commenters also desired coal-specific opacity requirements and suggested standards as low as zero percent.

Commenters said that the proposed waivers to the opacity requirements were not protective of public health, or not specific enough to define hardship. Commenters were concerned that the waivers were too broad and that the number of waivers granted by a state or local agency could be unlimited. This would render the control non-mandatory and ineffective. Commenters said that the current language was vague and suggested that DEC further define financial hardship and sole source heaters. Commenters said that factors affecting opacity were low cost and available to burners faced with hardships, such as participating in the borough change out program to obtain a cleaner burning heating device or obtaining wood early in order to let it season at no cost. Commenters said that either no waivers should be allowed, or that waivers should be temporary and carry requirements to change out the device. Some commenters suggested that waivers should only be granted if the use of the device would not create an unreasonable health and associated financial burden on the public. It was suggested that there be a public process to review and approve any waiver that is issued on a permanent basis.

Commenters felt that the opacity levels in the SIP's local emergency episode plan and the months specified in the regulation were not protective of public health and could prove confusing for operators. Commenters desired year-round opacity limits of values at or below 20% opacity, which they felt would not be burdensome to achieve. Commenters suggested that essential burners be limited to 20% opacity during the commenters' own proposed burn ban measures.

Commenters also suggested that fireplaces should be prohibited from use during alerts or episodes as they are primarily aesthetic and not good sources for heat.

Commenters were concerned with the ability of device operators to be able to gauge the opacity of their own heating devices either because they were unaware of how to measure the opacity of their smoke or because they would not be willing to venture outdoors during cold weather to check their opacity. Commenters suggested educational outreach efforts such as classes for homeowners to understand the relationship between opacity and pollution, the importance of minimizing opacity, how to minimize opacity, and how to gauge the opacity of their smoke.

Commenters expressed doubt over the use of EPA Method 9 for measuring visible emissions. Comments suggested that the implementation of opacity standards using Method 9 would be unwelcomed by the community for a variety of reasons. Some commenters felt that it was wrong and an invasion of privacy to take an opacity reading without the operator's knowledge or consent. Other commenters felt that Method 9 was inadequate due to a perception that it is a subjective method based on the reader's opinion that could not be corroborated. Some commenters wanted a mechanism for contesting the results of an opacity reading. Commenters asked what types of information would be recorded by observers such as factors that may affect the reading like lighting, visibility, and distance.

Commenters suggested that Method 9 was not adequate for determining opacity in certain conditions present in Fairbanks such as through ice fog, dense smoke, or in poor lighting conditions. Commenters also raised issues and suggestions with respect to how water vapor should be dealt with in the Method 9 observations. Commenters said that opacity during extreme cold was not an appropriate estimation of particulate emissions because even clean burning natural gas and oil fired heaters produce emissions with high opacity due to the condensation of water. In addition, commenters wanted studies performed locally that would determine the actual correlation between opacity of smoke that includes condensed water and the amount of particulate emissions in the smoke. This, comments said, would allow DEC to develop meaningful opacity standards based on actual emissions rather than the seemingly arbitrary values contained in the emergency episode plan.

Commenters suggested alternative methods of measuring opacity. Commenters suggested the use of digital cameras to perform visible emission readings and said that properties are already photographed and in the public domain because of satellite mapping and street level road photography. They mentioned private companies that provide the tools and computer analysis necessary to perform EPA Method ALT-082: Alternative Method for Determining Visible Emissions. These companies provide fast third party analysis of a series of photographs taken with a certified camera, by a person knowledgeable about Method 9, and at the same intervals required by Method 9. This, commenters said, would provide more informative and accurate results while minimizing costs associated with training and maintaining certification of multiple employees. Commenters worried about the amount of time DEC employees would be spending conducting opacity readings, the costs, and asked how to report potential violators of the opacity standards to DEC.

Commenters suggested that the opacity requirements proposed allow more emissions during an air quality episode than current regulations. These commenters stated that 18 AAC 50.075(b) currently prohibits use of wood-fired heating devices where the department has declared an air quality episode and by allowing wood-fired heating devices to operate, even with opacity limits, is actually more permissive than current regulations. Instead, they suggest mandatory burn bans for all air episodes with exemptions exclusively for essential burners and circumstances of demonstrated hardship. Commenters have also suggested alternate $PM_{2.5}$ concentration levels for air quality episodes.

Fiscal Concerns: Those comments specifically noting fiscal impacts are summarized here.

Commenters raised concerns about the costs involved with training and paying DEC staff to make opacity readings. Commenters also expressed concern that any potential requirement of stack mounted opacity reading devices would be financially unfeasible for property owners in the area.

Commenters suggested having a third-party company use certified digital photography to determine opacity would be less expensive than having departmental staff visually read opacity.

Regulatory Options: Based on the comments received, the department considered the following regulatory options:

1) Do not implement the proposed regulation
2) Implement the regulation as proposed
3) Implement the proposed regulation with amendments
    a. Limit opacity to no more than 20% for more than 3 minutes or allow opacity to spike for 15 minutes every 4 hours
    b. Establish burn bans during episodes for all but essential burners and financial hardship waivers
    c. Limit start up emissions to 15 minutes instead of 20 minutes
    d. Modify $PM_{2.5}$ concentrations triggering episodes and modifying opacity limits
    e. Establish specific opacity requirements for coal fire devices
    f. Apply opacity requirements to all heating devices
    g. Further define financial hardship and sole source heat for waivers
    h. Make waivers temporary and require appliance change out
    i. Establish a public review process for issuing permanent waivers
    j. Establish an opacity requirement, e.g., 20% for homes with waivers during burn bans
    k. Prohibit fireplace use during episodes
    l. Establish a mechanism for contesting an opacity reading
    m. Allow the use of a camera-based method for opacity reading

Department Decision:

Based on the feedback received on the proposal, the department will make changes when finalizing this regulation.

The department is not revising the final regulation to reduce the 50% opacity requirement in 18 AAC 50.075(a)(2) to a more stringent level, such as 20%. The department believes that while there may be merit in considering such a change to this statewide regulation, it would warrant additional public review. The department will consider advancing another regulatory proposal in the near future.

Concerns have been raised that the expansion of 18 AAC 50.075 to include all solid fuel-fired heaters will result in less stringent control of visible emissions for coal-fired heaters than in current regulation (18 AAC 50.055). While the department has typically viewed 18 AAC 50.055 as requirements for larger, industrial sources, it is not clear that the regulation excludes small, residential-sized coal-fired heaters and boilers. 18 AAC 50.055(a)(1) governs fuel-burning equipment in general (note: the definition of fuel burning equipment excludes wood-fired heating devices) and 18 AAC 50.055(a)(1)(9) addresses visible emission from coal burning boilers. As a result of the concerns raised in comments about decreasing the stringency of state regulations with respect to visible emissions from residential-sized coal-fired heaters, the department will seek further legal review of this issue. Given the December 31, 2014 deadline for submittal of the Fairbanks $PM_{2.5}$ plan to EPA, the department does not have sufficient time to fully complete this review for purposes of this initial regulatory action which is linked to that plan. Therefore, the department will not advance the expansion of this section of the regulations to coal-fired heaters at this time; 18 AAC 50.075 will remain applicable only to wood-fired heating devices. The department continues to think that adding requirements for small, residential-sized coal-fired heaters to 18 AAC 50.075 alongside wood-fired heating devices would allow visible emission requirements for these heaters to be more visible and understandable to owners and operators. DEC will further consider its options and potential regulatory revisions once state legal review of this issue is complete.

Comments also raised concerns about weakening the opacity requirements in 18 AAC 50.075(a)(2) as a result of the change in excursion times allowed. The department believes its proposed revision restricting opacity excursions above 50% to no more than six minutes per hour with a twenty minute start up exclusion, is at least as, or more, stringent than the existing requirement that restricts excursions above 50% opacity to no more than 15 minutes per hour. However, to alleviate the concern that the revisions would weaken this provision, the department is revising the final regulation to provide only fifteen minutes for higher opacity levels during the initial firing of the unit. This change should address concerns related to weakening this provision and ensure that the regulation is at least as stringent as the current requirement.

In response to comments suggesting that cameras be used to determine compliance with the requirements, the department will amend the final regulation to include both the standard EPA Method 9 and a camera-based EPA approved Method 9 alternative for measuring visible emissions to determine compliance with this section. DEC notes that the camera-based Method

9 requires specializes equipment, training, and certification. Simply taking pictures of stacks is not sufficient to measure opacity under this method.

The department will be revising 18 AAC 50.075(d) from the original proposal. The change will clarify that the provisions apply when the department declares an air quality episode as identified under 18 AAC 50.246 or through more stringent episode threshold levels identified in a local air quality episode plan incorporated into the State Air Quality Control Plan (State Implementation Plan or SIP) in 18 AAC 50.030. The department understands that in the Fairbanks $PM_{2.5}$ nonattainment area, like the Juneau PM_{10} nonattainment area, a reduced episode threshold could be useful for implementing many of the programs that are designed to bring the area into attainment for the National Ambient Air Quality Standards. Selected thresholds for actions are generally best identified by the local government with respect to implementing the programs identified in the emergency episode plan in the local SIP. However, in this case, these opacity regulations are to be implemented by DEC. Pending legal approval, DEC will amend the final opacity regulations to reflect the use of adopted local air quality plans for use in triggering episodes and associated requirements. DEC will also amend the emergency episode section (5.11) of the Fairbanks $PM_{2.5}$ SIP to identify a lower threshold of 30 $\mu g/m^3$ for implementing the state's opacity requirements within the nonattainment area and revise and simplify the opacity requirements listed based on the comments discussed above. The approach to local air quality episode thresholds for the FNSB nonattainment area can be amended to add more detail or stringency in the future based on further local input on this issue.

With respect to the waiver provisions proposed by the department, the department plans to revise the waiver requirements to only allow for temporary waivers. Revisions will also be made to add criteria and factors for agency consideration in granting a waiver that take into account potential health impacts and the nonattainment status of the community. It is expected that waivers will not be considered until mitigating measures have been implemented by the owner/operator to comply with the requirements. While the department does not plan to public notice waiver actions, it does plan to provide records of waivers issued on its internet site. Waivers under this section of the regulation will only apply to the requirements of 18 AAC 50.075(d) and do not provide any protection to owners/operators that fail to comply with other regulatory provisions of 18 AAC 50.

The department also provides responses to a number of other issues raised by commenters as follows:

- Applicability of regulations to various solid fuel devices – The final visible emission regulations will apply to all wood-fired heating units as defined in 18 AAC 50.990. This includes fireplaces, wood stoves, pellet-fired heaters, masonry heaters, and hydronic heaters. Based on comments received and as described above, DEC is not including coal-fired or oil-fired heaters in this new section of the regulation at this time as a programmatic and legal review is being conducted regarding the applicability of 18 AAC 50.055.

- Costs for DEC to conduct Method 9 training and readings – There is no additional cost for DEC to train and certify staff to conduct EPA Method 9 visible emission measurements. Staff routinely use Method 9 in their work as inspectors for industrial permits and this program can rely on that training as well. The addition of the camera method provides an alternative approach that could be used by the department in the future, but would rely on procuring additional equipment and specialized training to do so. DEC will continue to explore the viability of instituting a camera-based Method 9 in its programs.

- How to report violations – The Division of Air Quality has an on-line complaint form that individuals can use to file complaints or report violations of state air quality regulations. The form can be accessed at:

  https://dec.alaska.gov/Applications/Air/airtoolsweb/Complaints

  Violations can also be reported by phone to the DEC Air Quality offices in Fairbanks (451-5173), Anchorage (269-7577), or Juneau (465-5100). Air Quality staff will then follow up with an investigation.

- Mechanism for contesting a Method 9 reading – DEC employees are certified in EPA Method 9 to measure opacity. While there may be minor variability, these opacity readings are not considered to be "opinion," rather, this method is used around the country to determine compliance with opacity requirements. DEC does not have the authority to issue tickets/fines. After initially identifying a burner that exceeds opacity limits, DEC would follow up with violators to help them understand the regulations and how they can comply. Should DEC need to proceed to a more formal enforcement action, such as a notice of violation, the owner/operator of the heating unit in question has the opportunity to discuss and provide information to the department with respect to the alleged violation.

- Local studies to develop correlation between smoke opacity and $PM_{2.5}$ emissions – DEC appreciates the desire to have additional local data and correlation. At this time, funding is not available to complete this type of study, but DEC will consider this for a future research effort and watch for funding opportunities.

- Suggestion to establish burn ban – In its last regulatory proposal, the department proposed regulatory revisions that would have included wood heating curtailment on days when the air quality levels had reached "Unhealthy" levels as defined by the Air Quality Index. Based on the numerous comments received and lack of consensus in the community regarding curtailment and various options for curtailment, the department did not advance to finalize those regulatory revisions. Instead, the department drafted the opacity requirements in this proposal to address concerns from many that the focus of compliance and restriction should be placed on poorly burning devices. This proposal

would assist in addressing that desire to clean up or restrict use of heating devices that are burning poorly, while allowing cleaner burning units to continue operation. Given the regulatory proposals currently out for comment, it is not possible for the department to include a “burn ban” in the regulations at this time. This type of action would be subject further public review and comment. The department believes that developing such a program would be best accomplished through the local government. Local government has different tools available to implement programs and can likely be most responsive to local conditions and concerns. DEC recognizes that for a number of years the local Borough has not had the authority to consider or implement such a program. However, it is now possible for local government to consider whether such a program is reasonable, warranted, and could be put in place and added to the emergency episode plan in the local SIP. DEC would encourage additional local consideration and dialogue on this issue.

18 AAC 50.076(a) and (b) – Solid Fuel-Fired Heating Device Fuels

The proposed amendment to this regulation creates a list that identifies approved fuels for wood fired and coal fired devices and creates a list of prohibited fuels for all solid fuel fired heating devices located within a PM2.5 nonattainment area. The proposed amendment also creates a requirement to use dry wood or a mixture of wet wood with compressed wood logs to meet opacity requirements between October 1st and March 31st beginning October 2015.

18 AAC 50.076. Solid fuel-fired heating device fuel requirements.

(a) A person operating a solid fuel-fired heating device in areas identified in 18 AAC 50.015(b)(3) may only use the following fuels:

(1) For wood-fired heating devices:

(A) wood;

(B) wood pellets, manufactured compressed wood logs, bricks, or pucks made from clean wood;

(C) manufacturer recommended starter fuels including home heating oil, propane, natural gas or wood-based material for dual-fuel fired hydronic heaters; and

(D) biomass fuels approved by the manufacturer.

(2) For coal burning devices:

(A) coal; and

(B) coal pellets.

(3) For all solid fuel-fired heating devices:

(A) a fuel that is approved by the manufacturer that is not prohibited by the department in (3)(B);

(B) persons are prohibited from burning or incinerating the following items: wood that has paint, stains, or other types of coating, wood that has been treated with preservatives including copper chromium arsenate, creosote, or pentachlorophenol, asphalt, rubber or tar products including materials contaminated with petroleum, petroleum derivatives, oily wastes or oil cleanup materials; chlorinated or halogenated organic compounds including plastics, polyurethane products, pesticides, herbicides, fungicides; compounds containing cyanide or asbestos; animal carcasses; putrescible garbage.

(b) Effective October 1, 2015, between October 1 and March 31 each year, a person operating a wood-fired heating device in areas identified in 18 AAC 50.015(b)(3) may only use the following fuels:

(1) dry wood;

(2) wood pellets, manufactured compressed wood logs, bricks, or pucks made from clean wood;

(3) a mix of wet wood with manufactured compressed wood logs providing the visible emissions meet the requirements of 18 AAC 50.075;

(4) manufacturer recommended starter fuels including home heating oil, propane, natural gas or wood-based material for dual fuel-fired hydronic heaters;

(5) biomass fuels approved by the manufacturer; and

(6) a fuel that is approved by the manufacturer, other than wet wood or a fuel that is not prohibited by the department under (a)(3).

Summary of Comments: Commenters said that seasoning wood properly takes effort and time and buying seasoned wood is more expensive but burning dry wood results in more efficient fires and less pollution. Commenters reported cutting, splitting, and storing wood for at least one year before burning in order to burn responsibly, efficiently and produce less pollution. Some commenters felt that only dry wood should be sold in the nonattainment area or that birch firewood logs be cut to stove length and split so that they have the chance to season without significant effort by a device owner because truckloads of birch logs are the least expensive firewood but people sometimes fail to season the wood before the burning season begins.

Commenters addressed allowing the use of wet wood with pellet logs. Some commenters indicated that only dry wood should be allowed and that allowing the mix of wet wood with pellet logs would lead the public to an assumption that burning wet wood is an acceptable practice. Comments also noted that burning wet wood can damage some heating devices and creates creosote which can lead to chimney fires. Commenters said that the results of a recent study showing emissions reductions were confusing or misleading. They said that replacing half of the wet wood with compressed wood logs would reduce emissions by half just by not burning the other half of the wet wood. They asked if EPA has certified the results or if the study had been conducted in an EPA accredited lab. Commenters desired access to the results of the study so that the public could ensure the compressed wood logs they would buy would actually reduce emissions as advertised while others expressed concern that the regulation would benefit one local compressed wood log manufacturing business by requiring the use of their product.

Some commenters felt that the use of wet wood in any manner should be prohibited year round and that the list of allowable fuels should just specify dry wood. Some commenters felt that coal and coal pellets should not be on the list of allowable fuels and that no coal burning devices should be allowed in the nonattainment area due to toxins found in the emissions, especially metals, and their localized and visible effects on surrounding properties. Other commenters said that no oil products should be allowable as starter fuels. Commenters also suggested that having a list of both allowable and prohibited fuels would help the public comply.

Commenters felt that the requirement for dry wood or a mix of wet wood and compressed wood logs to meet opacity requirements should not be limited to winter months. Commenters submitted photographs of high opacity smoke coming from an outdoor wood boiler during summer months and piles of un-split and unseasoned firewood presumably used as fuel for the heater.

Commenters would like to see continued education on how to prepare dry wood and when to measure moisture content (frozen wood cannot be tested). Education could help ensure residents understand that wood does not dry during winter months and how to measure moisture content. Education could also address the characteristics of compressed logs that are appropriate to use in wood stoves and mix with wet wood to reduce emissions. Some comments suggested that the regulatory process include a standardized practice for taking wood moisture content readings so that the public understands how enforcement officers will measure wood as part of any complaint driven inspections.

Several commenters suggested outright banning the use of coal and coal stoves. One commenter reported installing a coal boiler and that it burns so cleanly his neighbors are unaware of when it is in use. Another commenter suggested banning the use of #2 fuel oil.

Fiscal Concerns: Those comments specifically noting fiscal impacts are summarized here.

Commenters noted seasoned wood is more expensive, but burns more efficiently. It was noted that some people purchase wood as long logs because it is less expensive, but this requires the user to cut into stove lengths and split for proper drying.

Commenters expressed concern that the use of compressed wood logs with wet wood would benefit one manufacturer because their product would be required.

Regulatory Options: Based on the comments received on 18 AAC 50.076(a)-(b), the department considered the following regulatory options:

1) Do not implement the proposed regulation
2) Implement the regulation as proposed
3) Implement the proposed regulation with amendments
    a. Restrict the use of wet wood seasonally or year-round within the nonattainment area (ie. specify dry wood in the list of allowable fuels or remove wet wood provision)
    b. Require that compressed logs be used with wet wood year-round
    c. Allow only the sale of dry wood within the nonattainment area
    d. Remove coal and coal pellets in the list of allowable fuels
    e. Remove oil products as fire starters

Department Decision:

Based on the feedback received on the proposed fuel requirements for solid-fuel heating devices within the $PM_{2.5}$ nonattainment area, the department is proposing to make changes when finalizing this regulation. Given the local concerns raised about wet wood being permitted to be burned even with the addition of manufactured compressed wood logs, the department has decided to remove the provision that would allow for wet wood to be burned in the winter time if it is mixed with manufactured logs and the burn meets visibility requirements. The department included this provision in the proposal as a practical flexibility to provide individuals an option to burn wet wood with compressed logs in a clean manner should they run out of dry wood during a winter season and be unable to procure additional seasoned wood. However, the department also understands concerns and questions that were raised about the emission testing of the locally manufactured compressed wood logs which was just recently completed. The department agrees that it is appropriate to allow some time for further review of the emission testing results and consideration of how manufactured logs may be best used in the community to address air quality concerns. Removal of this regulatory option will further reinforce the need for residents to store and season adequate quantities of wood to ensure it is dry prior to use in winter months. Manufactured, compressed wood logs will be an allowable fuel and can be mixed with dry wood year round.

The department has decided not to amend the final requirements to restrict the use of wet wood or require the use of energy logs with wet wood during the months of April through September as this timeframe does not generally see air quality episodes like those associated with winter inversions, but rather air pollution events related to wildland fires. This means that during the months of April through September, wet wood could be burned and that compressed wood logs could be mixed with either dry or wet wood to reduce smoke emissions. Should human-caused $PM_{2.5}$ air episodes occur during the summer months, the relevant opacity and open burn requirements would be in effect and the department could revisit these regulations to address that concern.

Requiring that wood sellers only sell dry wood or only provide stove length/split wood to consumers as suggested by commenters could help to promote dry wood use within the nonattainment area, but making this change would go beyond the scope of this regulatory proposal. The final regulations and SIP will require that local citizens and businesses burn dry wood in the winter months, the addition of a requirement that only dry wood or split wood be sold could be considered as enhancement with a goal to increase compliance with dry wood use requirements. DEC is willing to consider these suggestions for a future regulation proposal. However, in the interim, the department encourages the FNSB to consider this option at the local level to gather input from residents and wood sellers on the pros and cons of such requirements.

Commenters continued to raise concerns about the use of coal heaters within the nonattainment area. The proposal to remove coal as an acceptable fuel would place those residents that have coal-fired heaters immediately out of compliance. To come into compliance, those individuals relying on coal-fired heat would need to replace their heating unit. Making this change goes beyond this regulatory proposal and would require additional public comment. The SIP emission

inventory includes emissions from coal-fired heaters and analyses suggest that they are currently a relatively small portion of space heating emissions in the nonattainment area. However, to address coal heating concerns, DEC is finalizing these fuel regulations and has visible emission regulations that impact coal heating as well as wood heating operations. The department encourages the FNSB to consider additional options at the local level that may address concerns raised about coal heaters and their impacts in localized areas. DEC is willing to consider proposing additional options to address coal heaters in a future regulation proposal in conjunction with additional local input on amendments to the SIP.

With respect to the suggestion to remove oil as an approved fire starter in the regulation, the department did not make this revision and will proceed with the proposal as written. The regulations only allows for the use of home heating oil, propane, natural gas, or wood-based material for dual-fuel fired hydronic heaters if those fuels being are recommended by the manufacturer as starter fuels for specific heaters. This does not mean that heating oil can be used indiscriminately in solid fuel-fired heating, but only as a starter fuel when recommended by the manufacturer.

In response to other comments on this section of the proposal, the Department provides the following:

- Both approved and prohibited fuels should be listed in the regulations – the proposed regulations do provide what can be burned in 18 AAC 50.076 (a) as well as a list of prohibited items in 18 AAC 50.076 (a)(3)(B).

- Promoting continued education on how to prepare dry wood and when to measure moisture content – DEC agrees that continuing education is important. DEC and the FNSB have public outreach materials and campaigns to raise awareness and provide information to local residents on how to season wood and test its moisture content.

- Regulatory method for taking wood moisture content readings – DEC is not proposing a standardized method for measuring wood moisture content in this regulation. Checking wood moisture content is relatively straightforward to do with simple devices available at local retailers. DEC believes that focused education can help residents to understand how to check wood moisture levels with a commercially available moisture meter, which is the same way that an inspector would check moisture content. Residents can also use other methods to estimate wood dryness, such as looking for cracked and checkered ends on split wood, using wood that is light weight for its size (is also a sign of dry wood), and noting a hollow sound when pieces are knocked together (another sign of dry wood). DEC approved moisture meters will be identified for the voluntary (and mandatory) wood seller moisture disclosure program and this information will also be made readily available to the public on the DEC web site.

18 AAC 50.076 – Commercial Wood Seller Registration Program

The proposed amendment to this regulation requires commercial wood sellers in a $PM_{2.5}$ "serious" nonattainment area to register under the Commercial Wood Seller Disclosure Program. Under the program, commercial wood sellers are required to measure, document, and provide the moisture content of the wood they sell to customers using a DEC approved moisture meter and DEC supplied forms.

18 AAC 50.076. Solid fuel-fired heating device fuel requirements

(c) Commercial Wood Seller Registration Program:

(1) a commercial wood seller, an individual or business who sells wood for use in space heating, is required to register in the commercial wood seller registration program and is subject to all requirements of this section, except 18 AAC 50.076(c)(7), if they sell or provide wood to entities located in a fine particulate matter non-attainment area classified by the Environmental Protection Agency as "serious" pursuant to 42 U.S.C. 7513 and identified in 18 AAC 50.015(b)(3) where the department has issued a finding that wood smoke is a significant component of the fine particulates leading to an area being designated as "non-attainment";

(A) requirements on wood sellers shall become effective on the sixty-first day after the department publishes a notice identifying the need for and establishment of the program for the serious fine particulate matter area;

(B) that departmental notice shall be published, no less than 60 days before the implementation of a wood seller registration program, in a newspaper of general circulation, posted in the local air pollution control program office, and on the state online public notice system;

(C) wood pellets, manufactured compressed wood logs, bricks, or pucks made from clean wood are exempt from the requirements of the commercial wood seller registration program;

(D) retailers whose principle business is not selling wood for space heating and that sell only wood pellets, manufactured, compressed wood logs, bricks, or pucks made from clean wood or seasoned split wood bundles sized 0.75 cubic feet or less are not considered "commercial wood sellers".

(2) a commercial wood seller subject to this section shall:

(A) prior to selling or providing wood, initially register with the department by submitting a registration application and required documentation to the department in a format provided by the agency;

(B) have available for use a department-approved wood moisture content meter;

(C) have a valid Alaska business license as required under AS 43.70 and 12 AAC 12;

(D) renew registration by submitting a renewal application and required documentation to the department, in a format provided by the agency, 30 days before the expiration date of the existing registration.

(3) upon receipt of a complete registration application and associated documentation, the department may:

(A) issue a unique registration identification number to the wood seller;

(B) identify the time period covered by the registration, not to exceed

three years;

(C) issue a batch of uniquely numbered three-part moisture disclosure forms for use in this program; and

(D) add the registered wood seller to the publically available registration list.

(4) a registered commercial wood seller shall:

(A) upon sale or point of delivery of wood to the consumer,

(i) test the moisture content of the wood in accordance with 18 AAC 50.076 (c)(6);

(ii) fully complete and sign the uniquely numbered moisture content disclosure form;

(iii) obtain the buyer's signature or mark on the form that the buyer is 'unavailable'; and

(iv) provide the buyer with a copy of the signed form.

(B) after sale or delivery of wood to the consumer:

(i) submit to the department the ADEC copy of the fully completed forms no later than the fifteenth day of the month for sales conducted during the preceding month; and

(ii) retain the seller copy of the completed forms for two years after date of sale or delivery.

(C) provide the seller copy of completed forms for inspection at the request of the department;

(D) account for all of the moisture content disclosure forms received from the department. At the time of the monthly submittal under (B)(i), any moisture content disclosure forms not given to a customer due to damage or errors must be submitted, and for any forms lost, the unique number must be reported;

(E) upon loss of registration or non-renewal of registration return to the department any unused moisture content disclosure forms;

(F) failure to comply with the requirements of (4)(A) - (E) may result in any or all of the following actions:

(i) remedial training on program requirements;

(ii) notice of violation;

(iii) removal from publically available registration list until deemed in compliance;

(iv) revocation of registration; or

(v) enforcement under AS 46.03.020, AS 46.03.760, AS 46.03.761, or AS 46.03.790.

(5) the department shall approve commercially-available moisture test meters for use by commercial wood sellers and provide a list of approved devices on the ADEC Division of Air Quality Internet web site and upon request.

(6) the commercial wood seller shall test the moisture content of the wood in the delivered or purchased load, except as provided by 18 AAC 50.076(c)(6)(B) and (C), using a moisture meter approved by the department under (5) as follows:

(A) for split wood, wood rounds, or logs that are cut at the time of, or prior to, sale,

(i) moisture content shall be measured in a minimum of three pieces of wood for each cord of wood purchased;

(ii) the commercial wood seller shall randomly select the wood to be tested from differing locations throughout the entire load; and

(iii) each selected piece of wood shall undergo a fresh cut, be tested in the center of the fresh cut end and the measured moisture content documented on the department-provided form;

(B) for frozen wood, wood cut and sold or delivered at freezing temperatures below 32 degrees Fahrenheit, the commercial wood seller shall note on the moisture content disclosure form that the wood is frozen and assumed to be greater than 20 percent moisture content; and

(C) for wood split prior to freezing, provided the split wood is covered and stacked for ventilation,

(i) the moisture content shall be measured randomly after splitting while stacking and storing;

(ii) the moisture content and the date of the measurements will be recorded and saved; and

(iii) upon actual sale, if the temperature is at or below 32 degrees Fahrenheit the previously recorded moisture content and date will be documented on the department-provided form.

(7) a registered commercial wood seller may be certified as a "Certified Dry Wood Seller" provided:

(A) the department has reviewed the registered commercial wood seller's business practices and determined that the business is capable of consistently providing dry wood or manufactured compressed wood logs;

(B) the registered commercial wood seller commits to consistently providing buyers dry wood or manufactured compressed wood logs; and

(C) the registered commercial wood seller signs an acknowledgement form that failure to provide dry wood or accurately provide moisture content information for wood sold is subject to 18 AAC 50.076(c)(4)(f) and revocation of certification as a "Certified Dry Wood Seller

Summary of Comments: Commenters addressed the proposed future implementation of DEC's wood moisture disclosure program for commercial wood sellers in the nonattainment area. Some commenters felt that the measure was reasonable and would provide customers with knowledge of the moisture content of their purchased wood. Other commenters felt that the program would be a burden on commercial and noncommercial wood sellers. These commenters felt that the administrative time and costs associated with measuring, filling out paperwork, and submitting paperwork would increase wood seller expenses and that those costs would be passed on to customers. Commenters said that some wood sellers advertise their wood as green or unseasoned and that the requirement would not provide useful information to customers of those wood sellers because they already are aware that the wood has a high moisture content. These commenters suggested that the program not be required for businesses selling wood advertised as wet, green, or unseasoned. Commenters said that the responsibility to ensure wood is dry before burning lies with the burner and that they should verify the wood moisture content and season any wet wood on their own. Some commenters suggested that the forms be simplified to the point where a wood seller would mark the wood as dry or wet and ensure the form had instructions for how to season wet wood. Some suggested simplifying the requirement to have wood sellers just disclose to customers whether the wood met the dry or wet wood defined by

regulation. Comments also suggested that a structure should be established to track the purchase of green wood as submitted by the vendor to utilize the information and that more consideration should be given to how to get firewood vendors to register. Concern expressed was that the program may encourage a black market in firewood and poached wood as many commercial businesses will register but local sellers may continue to only sell a little here and there or through internet sites without registering.

Some commenters felt that the moisture disclosure program would allow consumers to verify their wood was dry upon purchase and would allow for spot checks to ensure dry wood was being sold. Other commenters pointed out that the State's Department of Law Consumer Protection Agency gives consumers the ability to seek compensation for falsely advertised dry wood and felt that the moisture disclosure program would be duplicative.

Some commenters expressed concern over the definition of commercial wood sellers. They said that cutting or selling several cords of firewood per year and exchanging it between friends or selling it locally was a cultural aspect of life in Fairbanks and Bush Alaska. Commenters worried that requiring individuals who cut and sell several cords of firewood annually or who sell leftover firewood to participate in the moisture disclosure program would be burdensome to those individuals due to the costs and time required to participate. Those commenters suggested that commercial wood sellers be defined so that persons selling less than 10 cords per year would not be required to participate in the program.

Commenters also questioned the need to wait to implement provisions as a contingency measure and indicated a desire to implement when the regulations are finalized and not wait until a "serious" area classification.

Commenters recommended removing the language, "…where the department has issued a finding that wood smoke is a significant component of the fine particulates leading to an area being designated as 'non-attainment'" from 18 AAC 50.076(c)(1). This commenter noted that the language in 18 AAC 50.015(b)(3) does not include language indicating the wood smoke is a significant component of the particulates leading to the nonattainment designation.

Fiscal Concerns: Those comments specifically noting fiscal impacts are summarized here.

Some commenters felt that the administrative time and costs associated with measuring, filling out paperwork, and submitting paperwork would increase wood seller expenses and that those costs would be passed on to customers.

Some commenters perceived the proposed regulation as requiring wood sellers to season their wood before sale, which would be burdensome due to the labor and space requirements of seasoning large volumes of wood and would negatively affect customers who would need to absorb those costs when they otherwise would have seasoned the wood on their own. Some commenters felt that wood sellers should be required to season all wood before sale in the nonattainment area and that the increased costs should be passed on the consumers.

Commenters worried that requiring individuals who cut and sell several cords of firewood annually or who sell leftover firewood to participate in the moisture disclosure program would be burdensome to those individuals due to the costs and time required to participate.

Regulatory Options: Based on the comments received, the department considered the following regulatory options:

1) Do not implement the proposed regulation
2) Implement the regulation as proposed
3) Implement the proposed regulation with amendments
    a. Exempt wood sellers advertising wet wood from the wood seller program
    b. Simplify forms so that wood is only identified as "wet" or "dry"
    c. Require all sellers to season wood before selling so they are only selling dry wood
    d. Define a commercial wood seller based on the quantity of wood sold, e.g., 10 cords or more per year
    e. Establish the wood seller program immediately, instead of as a contingency measure
    f. Include instructions for seasoning wood on the disclosure forms
    g. Revise the language to eliminate the department finding that "wood smoke is a significant component of the fine particles leading to the area being designated as 'non-attainment.'"

Department Decision: Based on the public comments received, the department will be finalizing the proposed regulations with some changes.

A number of suggestions were raised to simplify or eliminate requirements for wood sellers that market wet or green wood. Completely eliminating the requirements for "wet" wood sellers will not assist in ensuring that residents are informed about the product they are receiving so that they can adequately season the product before use. Enhancing compliance rates for the required use of dry wood during winter months is the goal of this regulatory measure. As a result, the department agrees that some simplification can be added to the regulations with respect to green wood sales, but has also determined that these wood sellers should register and follow program requirements. The department agrees that for wood sellers advertising and selling wet wood, it is acceptable to forgo moisture content testing and simply mark that the wood being sold is wet on the approved form. In considering the removal of specific moisture content testing for green wood sales, the department believes it remains important that any wood that is marketed and sold as "dry" be tested and the moisture content information disclosed to the buyer. The regulations will continue to require moisture content testing for any wood being sold as "dry" wood. Therefore, the department has made revisions in finalizing these regulations and will develop a moisture content disclosure form for the implementation phase of the program that includes a simple check box for denoting either "wet" or "frozen" wood. In addition, the department agrees with comments that the moisture content disclosure form contain information related to

seasoning wood. During implementation, the department will work to help provide additional information through the form and other means to assist wood users in this regard.

A commenter suggested revising the language that triggers the program to eliminate the department finding that "wood smoke is a significant component of the fine particles leading to the area being designated as 'non-attainment.'" The reason the department included this language in the proposal was that it is conceivable that in the future there could be another $PM_{2.5}$ nonattainment area in the state where wood smoke is not a significant contributor to the area's $PM_{2.5}$ problem. The inclusion of this language is simply meant to add flexibility that would prevent implementation of a control requirement that may not be universally relevant or necessary to mitigate $PM_{2.5}$ in all nonattainment areas. Making such a finding should be quick and simple for the department given the rigorous analysis that is typically conducted in identifying source contributions for nonattainment areas. As a result, the department intends to retain this language in the adopted regulation.

Suggestions were made to include a level of firewood sales, such as ten cords, below which a wood seller would not be considered a commercial seller. The proposed regulatory requirement includes having an Alaska business license, which are required for businesses defined by AS 43.70.110(1) as a for-profit or non-profit entity engaging or offering to engage in a trade, a service, a profession, or an activity with the goal of receiving a financial benefit in exchange to the provision of services, or goods, or other property. Given the regulatory goal of improving resident's compliance rate for burning dry wood, the department feels it is critical to ensure that all commercial businesses that sell wood in the nonattainment area are equally required to comply with these requirements. Entities that do not require a business license would not be considered commercial wood sellers under this regulation. As a result, the department is not amending the regulation to incorporate a minimum level of wood sold for inclusion in the program.

Suggestions were also received to institute a requirement that only dry wood be allowed for sale in the nonattainment area. Requiring that wood sellers only sell dry wood or only provide stove length/split wood to consumers as suggested by commenters could help to promote dry wood use within the nonattainment area, but making this change would go beyond the scope of this regulatory proposal. The final regulations and SIP will require that local citizens and businesses burn dry wood in the winter months, the addition of a requirement that only dry wood or split wood be sold could be considered as an enhancement with a goal of increasing compliance with dry wood use requirements. DEC is willing to consider these suggestions for a future regulation proposal. However, in the interim, the department encourages the FNSB to consider this option at the local level to gather input from residents and wood sellers on the pros and cons of such requirements.

With respect to comments suggesting the implementation of these requirements immediately, the department notes that this program was initiated in November as a voluntary measure. This is a completely new program and it will require work on the part of the department and wood sellers to fine tune the operational aspects. Having a limited time to work through program implementation issues will allow the department to consider whether additional modifications to

technical aspects of the regulations are needed prior to all wood sellers in the nonattainment area having to comply with it as a state requirement. The department believes that taking some time to work through practical implementation issues with wood sellers and consumers will ultimately result in a stronger program when the regulations are triggered in 2016. As discussed previously, the final regulations and SIP will require that local citizens and businesses burn dry wood in the winter months, the addition of this program is essentially meant to enhance and assist with increasing compliance with dry wood use requirements.

Comments also suggested that a structure should be established to track the purchase of green wood as submitted by the vendor to utilize the information. The department intends to track and use the moisture content disclosure forms to better understand the wood market in the nonattainment area and as additional data to inform public outreach efforts, emission estimates, and control program benefits for the local air quality plan.

18 AAC 50.077 – Heating Device Standards – House sale

The proposed amendment to this regulation requires wood-fired devices not meeting specific standards be replace at the time of the sale of a property.

18 AAC 50.077 Wood-fired heating device standards.

(b) **Prohibitions**. Except as provided in (5) [AND]**,** (6) **and (7)** of this subsection, no person subject to (a) of this section may supply, distribute, lease, sell, convey, or install in an area identified in 18 AAC 50.015(b)(3)

18 AAC 50.077(b) is amended by adding a new subsection to read:

(7) the prohibitions in subsection (b) do not apply to the following wood-fired devices located in a fine particulate matter non-attainment areas classified by the Environmental Protection Agency as "Serious" pursuant to 42 U.S.C. 7513 and identified in 18 AAC 50.015(b)(3):

(i) a wood stove certified by the Environmental Protection Agency or the department to be compliant with federal and state performance standards applicable to fine particulate emissions from that device and in effect prior to {effective date of regulation} or the date of installation of the device at its present location, whichever is later; or

(ii) a hydronic heater approved or certified by the Environmental Protection Agency or the department to be compliant with federal and state performance standards applicable to fine particulate emissions from that device and in effect prior to {effective date of regulation} or the date of installation of the device at its present location, whichever is later; or

(iii)a wood-fired heating device for which the owner has received a written temporary or permanent waiver from the prohibitions in subsection (b) from the department or a local air quality program. A waiver may be granted if the department or the local air quality program finds that compliance with subsection (b) would be unreasonably expensive or burdensome to the owner or would put their property at an unreasonable risk

Summary of Comments: Commenters addressed the proposed regulation that would require certain high emitting devices to be removed or replaced before a home could be sold in a serious nonattainment area and the exemption provision within the regulation.

Some commenters felt that the regulation was not protective enough of public health. Commenters questioned the need to wait to implement provisions as a contingency measure and

indicated a desire to implement when the regulations are finalized and not wait until a "serious" area classification. Commenters also said that houses may not be sold for many years and that this measure, in the absence of mandatory device change out requirements, would make device change out voluntary and unlikely. They said this regulation would grandfather existing high emitting devices for long periods of time. Some commenters suggested that the regulations require replacement of all uncertified fireplaces, wood stoves, hydronic wood/coal heaters within the nonattainment area within a specified time, such as 12 or 18 months. In making this suggestion, commenters also noted that a date for certain replacement was reasonable if adequate funding is available through the Borough change-out program.

Commenters noted that the regulation exempts EPA certified wood stoves and hydronic heaters that also meet federal and state emissions standards but does not mention pellet stoves. Commenters said that pellet stoves are the cleanest burning class of wood-fired heating devices but would seemingly not be exempt from the requirement to remove or replace the device upon the sale of a home. Commenters requested that pellet stoves be exempt from this requirement.

Commenters were concerned with the ability of device owners to obtain temporary or permanent exemptions from section 18 AAC 50.077(b), saying these waivers were not protective enough of public health. Commenters desired an open and public process with a review period before waivers are granted. Some commenters felt that temporary or permanent waiver provisions for high emitting devices should not be included in the regulation at all. In addition, commenters felt the waiver provisions were complicated and unclear. There were concerns that no documentation would be required to justify waiver requests and that the number of waivers granted by a state or local agency could be unlimited.

Commenters also felt that the requirement of the removal of high emitting devices on the sale of a home would be a burden and would constitute taking by the State because the device could no longer be resold in the nonattainment area and would have no value. Commenters felt that this violated constitutional protections. Other comments said that device owners could participate in the Borough's change out program to recoup all or some of the cost of purchasing or removing certain high emitting devices but commenters said that this program was unattractive because the reimbursement amount was considered taxable by the IRS.

Confusion about the regulations was noted by commenters and they would like to see them re-proposed. They also felt that the regulations could be simplified to one standard for stoves and outdoor hydronic heaters, regardless of the size of the unit. Comments noted a numbering discrepancy between the adopted regulations and the proposed regulation.

With respect to the wood-fired heating device emission standards overall, commenters recommended requiring a stronger statement, including an address and notarized statement, that a non-complying stove will be used outside the non-attainment area. Other comments were received suggesting that the state prohibit the sale of "non-EPA certified" devices statewide, to further public health statewide and to prevent members of the public from purchasing these heaters outside the nonattainment area and then installing them within the area. Comments also

expressed a desire for a similar standard for coal stoves, and recommended a zero opacity limit on them.

Some commenters recommended requiring that all solid fuel heating devices be registered and regularly inspected. Some also recommended limiting the number of devices based on neighborhood density, i.e., areas with more homes could have fewer wood and coal burning devices. Another suggestion was to require a "burn class" for anyone participating in the Borough's wood stove change out program. The class would cover proper handling of firewood, wood stove firing, etc. The participants would have to complete the class before they could receive their reimbursement funds. Commenters also asked to have new homes built with non-polluting heat sources so no new essential burners are created in the non-attainment area.

Fiscal Concerns: Those comments specifically noting fiscal impacts are summarized here.

Commenters felt that removing high emitting devices at the time of the sale of the home would be a financial burden because the device could not be resold within the non-attainment area. Other commenters felt that the Borough's change out program would help those replacing stoves recoup some or all of the costs. Some commenters said this option was unattractive because the amount received is taxable by the IRS. Commenters also suggested making it easier for low income residents to purchase more efficient stoves.

Commenters noted that devices complying with standards are widely available and cost about the same as higher emitting devices.

Regulatory Options: Based on the comments received, the department considered the following regulatory options:

1) Do not implement the proposed regulation
2) Implement the regulation as proposed
3) Implement the proposed regulation with amendments
    a. Making the measure applicable now instead of as a contingency measure
    b. Requiring change outs of all non-EPA certified devices sooner than the sale of the home, e.g., 12 or18 months
    c. Exempting pellet stoves from the requirement
    d. Clarifying and adding detail to requirements for waivers
    e. Requiring a stronger statement from customer purchasing a stove in the non-attainment area for use outside the area to evidence that the stove will be installed outside the non-attainment area
    f. Prohibiting the sale of non-EPA certified stoves statewide
    g. Establishing requirements for coal-fired heating devices

Department Decision:

Based on the comments received, the department plans to revise the waiver requirements to only allow for temporary waivers. Revisions will also be made to add criteria and factors for agency consideration in granting a waiver that take into account potential health impacts and the nonattainment status of the community. While the department does not plan to public notice waiver actions, it does plan to provide records of waivers issued on its internet site. Waivers under this section of the regulation will only apply to the requirements of 18 AAC 50.077 and do not provide any protection to owners/operators that fail to comply with other regulatory provisions of 18 AAC 50.

With respect to comments suggesting the implementation of these requirements immediately, the department notes that the emission standard requirements for new wood heaters are still in final legal review prior to becoming effective. The department believes it is wise to initiate the program for new wood heaters prior to requiring mandatory conversions of existing wood heaters on sale of homes in the nonattainment area. The department feels it is reasonable to allow residents this next year to continue to change out wood heaters and to plan for future home sales before instituting required removals or replacements of old devices. The FNSB change out program has been providing opportunities for property owners to upgrade their devices and would be helpful in assisting residents in meeting this requirement that is anticipated to start in 2016.

Suggestions were made about including pellet stoves in the exceptions from the requirement to change out on sale of home. When finalized, the adopted emission standards will apply to wood stoves, hydronic heaters, and larger (greater than 350,000 BTU/hr) wood heaters. Not all pellet units meet the definition of wood stove or hydronic heater. Some existing pellet stoves are certified by EPA and meet the state emission standards, while others do not. A smaller, residentially-sized pellet unit that does not meet the definition of a wood stove or hydronic heater is not affected by the emission standards and would not need an exception to regulations. As a result, the department is not moving forward with a simple exception for all pellet heating devices in this regulation package. The units that meet the state emission requirements in the regulation would retain their grandfathering and not be required for replacement. If an existing pellet woodstove or hydronic heater is not EPA certified/approved and does not meet the state emission standard, it may need to be removed or replaced upon sale of the home. It is anticipated that EPA will finalize revised new source performance standards for wood heaters in 2015. The department intends to review that final regulation and will determine whether to propose regulatory revisions to state emission standards. Additional clarification with respect to pellet stoves could also be considered at that time.

The suggestions raised in comments about requiring a stronger statement from a customer purchasing a stove in the nonattainment area for use outside the area to evidence that the stove will be installed outside the nonattainment area is a good one. While the adopted emission standards are undergoing legal review prior to final filing and an effective date, DEC is consulting with wood heater retailers on implementation aspects for the wood heater emission standards and welcomes input on this issue. One of the items being worked on to assist wood

heater retailers is a model affidavit that purchasers would sign if they wish to purchase a wood heater for installation outside the nonattainment area that does not meet the state emission standards for the nonattainment area. DEC will also be working with retailers statewide to ensure they are aware of the emission standard requirements for new wood heaters sold for use within the FNSB nonattainment area.

Additional suggestions made by commenters with respect to prohibiting the sale of non-EPA certified stoves statewide or establishing requirements for coal-fired heating devices are not being acted on by the department in this regulation proposal. These types of regulation revisions go beyond the current regulatory proposal and would require additional public review and comment. The department takes note of these suggestions and will give them consideration for future regulatory action.

Some commenters recommended requiring that all solid fuel heating devices be registered and regularly inspected. This suggestion goes beyond the scope of this regulatory program and would require additional work to develop followed by public comment.

Limiting the number of devices based on neighborhood density, i.e., areas with more homes could have fewer wood and coal burning devices, was another suggestion that goes beyond this regulatory proposal. Commenters also asked to have new homes built with non-polluting heat sources so no new essential burners are created in the non-attainment area. These types of requirements are likely best addressed through local zoning or building codes rather than state environmental regulation. DEC encourages the FNSB and local cities to consider the pros and cons of these ideas for potential local action.

Another suggestion was to require a “burn class” for anyone participating in the Borough’s wood stove change out program. The class would cover proper handling of firewood, wood stove firing, etc. The participant would have to complete the class before they could receive their reimbursement funds. The department appreciates this suggestion for enhancing the wood stove change out program and will pass it along to the FNSB for their consideration.

18 AAC 50.246 – PM2.5 Episodes and Advisories

The proposed amendment sets thresholds for the department or local air quality agency to declare an air quality episode and prescribe and publicize actions to be taken.

> **Air quality episodes and advisories for PM-2.5.** (a) The department or a local air quality control program may declare an air quality episode and prescribe and publicize the actions to be taken if the concentration of PM-2.5 in the ambient air has reached, or is likely in the immediate future to reach, any of the concentrations established in Table 6a in this subsection. The actions prescribed for any area that has a local air quality plan included in the State Air Quality Control Plan adopted under 18 AAC 50.030 shall be consistent with the emergency episode provisions included in that plan.
>
> Table 6a – Concentrations Triggering an Air Quality Episode for PM-2.5

Episode Type	Air Pollutant	Concentration in micrograms per cubic meter µg/m^3
Air alert	PM-2.5	35 (24-hour average)
Air warning	PM-2.5	251 (24-hour average)
Air emergency	PM-2.5	351 (24-hour average)

Summary of Comments: Commenters addressed several aspects of the proposal for $PM_{2.5}$ episode levels, including the triggering concentrations for various levels, links to other regulations, and terms within the section.

Commenters suggested that the air warning and air emergency levels proposed for $PM_{2.5}$ were too high and proposed alternative levels for consideration. These commenters felt the levels proposed showed negligence on the part of the state with respect to the public health impacts associated with exposure to high $PM_{2.5}$ concentrations. They suggested a 24-hour level of 15 µg/m^3 to initiate an air alert, with an additional "watch" level starting when concentrations exceed 35 µg/m^3, a "warning" level when concentrations exceed 55 µg/m^3, and an "emergency level when concentrations exceed 150 µg/m^3. These levels correspond, respectively, to the AQI levels deemed, "moderate", "unhealthy for sensitive groups", "unhealthy", and "very unhealthy." Another commenter felt that there were too many terms, numbers, and levels in the various regulations. They suggested that the air quality episodes should be simplified to reflect one level, an air quality emergency, which could replace all levels. They indicated that an air emergency should exist at levels over 35 µg/m^3, but also referenced the Juneau ordinances that set the level at a 24-hour concentration of 30 µg/m^3.

Comments were received that questioned why the new 18 AAC 50.246 was developed as it is similar to 18 AAC 50.245. They noted that the new section eliminates the link to the existing

regulation's curtailment action (18 AAC 50.075b) that is triggered by episodes called under 18 AAC 50.245. The concern was raised that the language only allows the department to announce episodes.

Commenters indicated a desire to define the portion of the regulation that indicates that episodes may be called and actions taken when concentrations have reached or are "likely in the immediate future to reach" a threshold in the table. They felt that "immediate future" limits the agency's ability to promptly respond to meteorological conditions that can be anticipated farther in the future than "immediate."

Some commenters proposed that episode actions include burn bans for all solid fuel-fired devices, for non-certified devices, for outdoor boilers, or in localized "no smoke" zones to be defined around schools, medical facilities, etc. One commenter suggested requiring all business to close on bad air days to discourage people from coming into town.

For at least one commenter, it was unclear if an episode would apply in just the nonattainment area or apply to the whole Borough.

Fiscal Concerns: There were no comments noting fiscal concerns on this topic.

Regulatory Options: Based on the comments received, the department considered the following regulatory options.

1) Do not implement the proposed regulation
2) Implement the regulation as proposed
3) Implement the proposed regulation with amendments
    a. Lower initial air alert episode threshold to a concentration between 15 and 35 $\mu g/m^3$ to prevent NAAQS violations
    b. Lower the air warning and emergency thresholds to 55 and 150 $\mu g/m^3$ respectively
    c. Add another level ("watch") between an alert and a warning.
    d. Simplify to one "emergency" level at a concentration in the range of 30 to 35 $\mu g/m^3$
    e. Add language to better define "immediate future"

Department Decision:

Based on the feedback received on the proposed air quality episode levels, the department will make changes when finalizing this regulation. The department agrees with commenters that reducing the air warning and emergency thresholds to lower concentrations will allow for quicker action to address the significant public health concerns associated with exposures to high concentrations of fine particulate matter during an air quality episode. The department has

decided to lower the air warning level to a 24 hour $PM_{2.5}$ concentration of 55.5 µg/m^3, which is the "Unhealthy" level of the Air Quality Index. The department is lowering the air emergency level to a 24 hour $PM_{2.5}$ concentration of 150.5 µg/m^3, which is the "Very Unhealthy" level of the Air Quality Index. The department believes that having a three level approach to air quality episodes is a useful framework to allow DEC or a local air quality program to implement progressive actions reflecting the severity of unique air pollution events.

Because this is a statewide regulation, the department has decided to keep the air episode threshold for the initial level, i.e., alert, at the concentration where it first exceeds the 24-hour $PM_{2.5}$ National Ambient Air Quality Standard, 35.5 µg/m^3, which corresponds to the "Unhealthy for Sensitive Groups" level of the Air Quality Index. However, the department understands that in the Fairbanks $PM_{2.5}$ nonattainment area, like the Juneau PM_{10} nonattainment area, a reduced episode threshold could be useful for implementing many of the programs that are designed to bring the area into attainment for the National Ambient Air Quality Standards. Like Juneau, a different level for an air episode can be established through the local air quality plan (State Implementation Plan). The selected thresholds for actions would be best identified by the local government with respect to implementing the programs identified in the emergency episode plan in the SIP.

Based on the comments received and the state's proposed opacity requirements during air episodes, the department will take some first steps to reducing the episode threshold for the nonattainment area. Pending legal concurrence, this may be accomplished by revising the final regulations to clarify that lower episode thresholds can be enacted through local SIPs. If this cannot be accomplished in finalizing this regulation, DEC would include a proposal in the future presumably when amendments are proposed for the FNSB $PM_{2.5}$ SIP.

Pending legal approval, DEC will amend the final opacity regulations and the emergency episode section (5.11) of the Fairbanks $PM_{2.5}$ SIP to identify a lower threshold of 30 µg/m^3 for implementing the state's opacity requirements within the nonattainment area. The approach to local air quality episode thresholds can be amended to add more detail or stringency in the future based on further local input on this issue.

The department is not changing the regulation language, "in the immediate future." Typically, air quality forecast are made for the current and one to two upcoming days. The forecast considers current and predicted weather patterns, current pollution concentrations, and includes a database of historical air quality and weather conditions. Because the forecast is based on weather predictions and emissions depend on human behavior, it is difficult to accurately forecast air quality more than a few days out. That said, sometimes weather patterns are quite stable and anticipated to stay that way, and forecasts can accurately be made for slightly longer periods of time. Both DEC and Borough staff review weather and air quality information on a daily or more frequent basis to prepare forecasts for the area. For these reasons, the department is not able to define "immediate future" with a specific number of days.

50.990 – Definitions

The prosed regulations include modifying the definition of open burning and adding definitions for dry wood, camp fire, wet wood, and manufacturer compressed wood logs.

18 AAC 50.990 Definitions

(65) "open burning" means the burning of a material that results in the products of combustion being emitted directly into the ambient air without passing through a stack, flare, vent, or other opening of an emission unit from which an air pollutant could be emitted**; camp fires as defined in 18 AAC 50.990(140), barbeques, candles, tobacco, and celebratory fireworks are not considered open burning.**

18 AAC 50.990 is amended by adding new paragraphs to read:

(139) “dry wood” means wood with a moisture content of 20 percent or less.

(140) "camp fire" means any open fire less than 3 feet in diameter used for cooking, personal warmth, lighting, ceremonial or aesthetic purposes that is hand built and that is not associated with any debris disposal activities.

(141) "wet wood" means wood with moisture content of more than 20 percent.

(142) “manufactured compressed wood logs” means logs that have been made from 100 percent compressed sawdust and/or other organic material with no wax additive.

Summary of Comments: Comments were received on the revision to the “open burning” definition and the definition of “camp fire.” Given the specific ties and implications of these definitions within the context of the regulation proposal, these comments and the department’s consideration and decisions related to these definitions are included in the section on the 18 AAC 50.065(f) open burning regulation proposal.

For the definitions of dry and wet wood, comments indicated that defining dry and wet wood using 20% moisture content was an easy to understand concept that will help sellers, buyers, and users of wood burn cleanly.

A comment was also received on the definition of “manufactured compressed wood logs.” The commenter particularly expressed concern about the “wax additive” portion of the definition and wondered if it was clear enough. They suggested removing “wax” as there are many types of logs that add additives to bind or enhance the log. They also felt that “wood chips” should be added after “compressed sawdust.”

Fiscal Concerns: No specific concerns on fiscal impacts were raised on this section of the regulation proposal.

Regulatory Options: Based on the comments received, the department considered the following regulatory options:

1) Do not implement the proposed regulation
2) Implement the regulation as proposed
3) Implement the proposed regulation with amendments
    a. Change the definition of compressed wood logs to remove “wax” and/or add “wood chips” along with compressed sawdust as an acceptable material for creating manufactured logs.

Department Decision:

The department is proceeding to adopt the wet and dry wood definitions as proposed. With respect to the definition for manufactured compressed wood logs, the department agrees that changes to this definition would provide additional clarity and is adopting a revised definition as follows:

(142) “manufactured compressed wood logs” means logs that have been made from 100 percent compressed sawdust, wood chips, and/or other organic material with no additive.

As described above, decisions made with respect to the regulatory definition of “open burning” and “camp fire” are discussed in the open burning section of this response to comments.

Outdoor Hydronic Heaters

Comments were received on the use, emissions, and effects of outdoor hydronic heaters, both coal and wood, and suggested control measures to reduce emissions from hydronic heaters. Given the public attention devoted to outdoor hydronic heaters in response to the proposed regulations and the State Implementation Plan, this section compiles the general comments received specific to these heating devices.

Summary of Comments:

Use of Outdoor Hydronic Heaters

Some commenters reported reduced heating bills as a result of installing hydronic heaters and that the high cost of heating fuel incentivized installing hydronic heaters. Other commenters said that the use of hydronic heaters, in some cases, seemed financially unwarranted. They said that purchase and installation costs could exceed many thousands of dollars and that some devices could be seen heating presumably high income homes. These factors led some commenters to believe that some hydronic heater owners could afford to and should heat with oil. Commenters felt that the savings the individuals enjoyed were outweighed by the health and other costs associated with high pollution levels incurred by individuals and the public.

Commenters also reported attempting to minimize emissions when operating their devices by keeping their devices in good working order with frequent maintenance and only burning correct fuels such as coal in coal boilers and seasoned wood in wood boilers. Commenters said that some hydronic heaters run for only 4-6 hours per day while woodstoves run for many more hours each day and presumably create fewer emissions compared to wood stoves. Other commenters indicated that hydronic heaters account for only four percent of wood burning devices but produce more than half of the $PM_{2.5}$ from wood combustion in the nonattainment area.

Impacts

Commenters reported impacts of outdoor hydronic heater operation. Some commenters relayed sometimes prolonged or continuing personal experiences and health effects due to a neighbor's hydronic heater, other commenters said that they could observe the smoke from nearby hills and reported seeing smoke from specific hydronic heaters covering large areas of Fairbanks. Commenters said that the impacts to a localized area from hydronic heaters were noticeable and severe, especially in the case of newly installed ones where there had been none previously.

Control Measures

Commenters said that control measures on outdoor hydronic heaters would negatively impact a relatively small number of individuals but would provide many positive benefits for the

community as a whole. Commenters suggested a variety of control measures to reduce or eliminate emissions from solid fuel fired outdoor hydronic heaters. Components of these included prohibiting device sales and installations and requiring replacement, removal, or burning restrictions on either all such devices or subsets of devices such as coal boilers, non-EPA Phase 2 Qualified devices, or boilers located in areas with sensitive populations such as around schools, hospitals, senior centers, and day cares. Commenters suggested that measures involving removal of devices be enforced immediately or by a specified deadline either by device owners or the government. Some suggested banning non-certified units statewide.

Commenters suggested that control measures requiring removal of hydronic heaters would likely need to incentivize compliance using a combination of attractive financial incentives for device owners and financial or legal consequences for not complying with such a requirement. Financial incentives included cash payouts for removal or cash combined with subsidized replacement with cleaner burning devices and subsequent fuel cost subsidies. Commenters mentioned the options available to device owners through the current Borough change out program but said that the program was ineffective at reducing the total number of outdoor hydronic heaters in the nonattainment area.

To demonstrate the potential effects of banning outdoor hydronic heaters, commenters noted the positive impact the removal of two hydronic heaters near Woodriver Elementary School had on local air quality. They also cited apportionment and other studies in the nonattainment area that indicates that over half of the $PM_{2.5}$ from wood burning is produced by a relatively small number of hydronic heaters.

Commenters said that control measures involving burn bans on hydronic heaters would be unfeasible because stopping outdoor hydronic heaters for extended periods of time during cold weather, like during a burn ban, could cause damage to the appliance and water lines due to water freezing in the water-jacket or lines which would make restarting the unit impossible without difficult or expensive repairs. Commenters wanted to know if device operators would be reimbursed for such costs.

Fiscal Concerns: Those comments specifically noting fiscal impacts are summarized here or within the specific regulation sections for 18 AAC 50.075, 18 AAC 50.076, and 18 AAC 50.077.

Comments regarding hydronic heaters included some discussion of fiscal impacts. Some comments discussed the benefit of reduced heating costs associated with their use of hydronic heaters, which they use because of the high costs of heating oil. Other comments noted that the impacts of hydronic heaters can be excessive and this leads to increased health costs and costs for air filtration systems to prevent smoke from impacting air inside homes and other structures. Comments also noted the high purchase and installation costs for hydronic heaters. Some comments suggested removal of hydronic heaters and linked that requirement for removal to providing attractive financial incentives that could help offset the burden of changing these devices out.

Regulatory Options: Current regulatory proposals for 18 AAC 50.075, 18 AAC 50.076, and 18 AAC 50.077 impact the use or installation of hydronic heaters. Regulatory options for these three regulatory proposals were considered by the department in response to public comments. Details are identified and included in those specific sections of this document.

Department Decision:

As noted above, the current regulatory proposals impact the use or installation of hydronic heaters and specific issues noted for those proposals are include in the sections of the response to comment related to visible emissions/opacity, fuels, and emission standards for wood heaters. A number of comments were received that generally discussed the impacts of hydronic heaters and include suggestions for further regulatory actions that go beyond the scope of this regulatory proposal.

The measures recommended in the comments, banning further sales of hydronic heaters in the non-attainment area or a larger area, banning the use of these devices or a subset of the devices during an air quality episode, and requiring change out of hydronic heaters either to a less polluting model or to a different type of device are beyond the scope of the proposed regulations under consideration. The department understands the public's desire to remove the most highly polluting devices from the nonattainment area and will further consider its options and potential regulatory revisions. The department also encourages local government to consider the issues raised including how the Borough's change out program might further incentivize and assist homeowners in replacing high emitting devices.

Other regulations in this package will regulate both outdoor hydronic heating devices and their emissions. Emissions will be limited through opacity requirements tied to air quality episodes established in 18 AAC 50.075 and 18 AAC 50.246, respectively. Based on comments received, these two regulations will be amended to ensure there is no backsliding in opacity requirements and air quality episode thresholds are set at levels to protect air quality. Components of the episode plan are also identified in the SIP document and revisions were made in response to comments. Regulations in 18 AAC 50.76 identify the allowable fuels for the devices and limit the fuels during the winter months, October 1 through March 31, to dry wood or other dry wood products for wood-fired heating devices. Finally, when the non-attainment area is designated as "serious," expected mid-2016, the additional requirement in 18 AAC 50.077 will become effective that requires high emitting devices be removed or replaced upon sale of the property. DEC is willing to consider additional amendments or measures in the future based on local discussion that is anticipated to occur in the next several months.

General Comments on the Regulations and State Implementation Plan

Summary of Comments: Comments received in response to the proposed regulations and proposed State Implementation Plan (SIP) suggested changes to the regulations to improve $PM_{2.5}$ air quality and to the air quality plan for the Fairbanks North Star Borough (FNSB) $PM_{2.5}$. The public, business, local governments, the EPA, and special interest groups all expressed their views. Comments were submitted via oral testimony and in writing. Specific comments have been included within the regulation revision sections of this document. Overarching comments on the regulations and comments on the SIP are categorized here and generally organized by SIP chapters.

In addition to the comments described below, a number of commenters noted inconsistencies, typographical errors, and references in the SIP that they suggested the department correct or clarify. Simple clarifications and corrections are not individually noted, more substantive changes are noted in the sections below. Following the general comments are the specific administrative comments EPA provided with the departments responses noted. Finally, at the end of this section, some specific comments received regarding the RACM and RACT analyses are listed and detailed responses are provided.

Local Air Quality Program Provisions

Summary of Comments: Commenters expressed concern about confusion if multiple authorities are making statements about air quality in the non-attainment area. These commenters requested clear requirements for when a local program is authorized.

Department Response:

The reason for adding the local air pollution control program references to the regulations is to provide clarity that local programs can choose to adopt or take on various requirements in place of the state. With respect to announcing air episodes and advisories, adding the local air pollution control program references assists the department by clarifying that the department can act to enforce state regulations based on episode or advisory announcements made by local programs. This is important because it will allow the department and local air programs the ability to reduce redundancy that currently exists in calling air episodes and advisories. The department and individual local air programs enter into Memorandums of Understanding that further clarify roles and responsibilities with the goal of reducing or eliminating any duplication of effort and allowing efficient use of resources. While the regulations may appear to be creating complexity, the reality is that the MOUs between the agencies will clarify the respective roles of the department and local agencies with respect to air quality management.

Impact of Changing Conditions on Air Quality Planning

Summary of Comments: Commenters expressed concern over several aspects of the proposed SIP and regulations. Commenters noted that several factors of the SIP and several assumptions

that the SIP relied on are now in the process of changing. Commenters noted that the price of oil was dropping and forecasted to stay down which reduces the financial burden of relying on oil for heat instead of burning wood.

Commenters said that the price estimates for delivered natural gas were increasing and the project to bring natural gas to Fairbanks residences was subject to continuing delays and uncertainties. Commenters said that it would be unlikely that customers would switch to natural gas due to the high furnace purchase and installation costs of approximately $10,000 and the rising gas price estimates. Commenters said that the plan's reliance on individuals and businesses switching to natural gas for attainment was unrealistic and would take too long. They also stated that the assumption that 77% of wood burning homes would switch to natural gas was unrealistic. Commenters suggested that plan revisions be made now or in the serious plan to update natural gas projections based on more recent information.

Commenters also noted the results of the recent ballot initiative that have given the Borough the ability to regulate home heating devices once again, although some commenters also expressed concerns with the recent ballot initiative results saying rhetorically that a statewide marijuana initiative passed as well. Commenters said that the SIP was developed while the Borough was unable to regulate home heating and that it should be modified to address the change and that it should be amended often to reflect borough control measures as they are adopted.

Commenters noted that the release of the SIP and proposed regulations occurred after the results of the gubernatorial race, which resulted in the changing of state administrations, were known. The open houses occurred just after the new governor was inaugurated and commenters asked if the proposal had been approved by new governor.

Department Response:

Air quality planning is a complex process that involves understanding local air pollution conditions and projecting changes over time. In the case of the air pollution issues in Fairbanks, there are clearly a number of issues that are evolving as time progresses. In order to complete this plan, significant time was needed to complete the supporting technical work and demonstrations. The FNSB and DEC used the best available information at the time that work was completed. The recent drop in oil prices could not have been predicted several months ago. The natural gas projections were based on the latest publically available economic report from the Interior Energy Project and the LNG project staff were consulted just prior to release of the plan to ensure that the plan was consistent with the available data. With respect to the recent October election results, most of the technical and control measure analyses were completed prior to that vote, which has the potential to change the air quality planning dialogue as time moves on. In order to meet the federal deadline for submission of this plan, it was necessary to move ahead with the plan that had been developed prior to all of these events. To stop and completely re-work the plan to incorporate new assumptions would prevent moving forward to finalize important air quality provisions that can help to bring the area into attainment. That being said, things change and the air quality planning process provides a mechanism for addressing those changes. Air quality plans are living documents that are amended and updated

over time to reflect new initiatives, changes to various control programs, other changing conditions in the community and new federal planning requirements. As the air quality planning effort for the FNSB $PM_{2.5}$ nonattainment area continues, the department is committed to working with the FNSB and the local community as a whole to incorporate additional local measures and update planning assumptions to reflect a variety of changes that have occurred since the development of this initial plan.

Concerns with Federal Authority and the NAAQS

Some commenters felt that the NAAQS, with which the design value is compared when determining attainment or nonattainment, was flawed or even illegal. One commenter understood the Fairbanks standard to be 25 $\mu g/m^3$, and thought it unfair that this area has a stricter standard than the rest of the country. Commenters cited books and senate committee reports that detail the influence of John Beale a former EPA employee, who was convicted and is now imprisoned for theft from the federal government, on the development of the NAAQS and the EPA supposedly resulting in non-peer reviewed scientific papers, fraudulent data, and corruption heavily influencing the development of the $PM_{2.5}$ NAAQS. Commenters suggested that the NAAQS were unconstitutional and constituted federal overreach. They said that the EPA should be disbanded and replaced and that individual states could use the 10^{th} Constitutional Amendment to nullify EPA's requirements and that Article 5 of the U.S. Constitution allows for states to amend the constitution to rebalance state and federal powers.

Department Response:

The department understands that there are many perspectives with respect to federal environmental laws. This plan has been developed as required to meet federal Clean Air Act requirements with respect to bringing the FNSB $PM_{2.5}$ nonattainment area into compliance with the 24-hour $PM_{2.5}$ NAAQS. The 24-hour standard is 35 $\mu g/m^3$, which applies to the entire country, including Fairbanks. The NAAQS was the subject of litigation and has been upheld by the Courts.

Fiscal Concerns

Commenters felt that the fiscal consequences of poor air quality were inadequately addressed. They noted that the area is losing economic activity because of people moving away and suggested that the Department of Defense might use poor air quality as a reason to reduce the military presence in the area.

Department Response: As part of this planning process, the department has provided simple cost benefit analyses and identified costs associated with implementation of state regulations. The department understands that poor air quality leads to health effects that have associated costs. These costs are difficult to estimate, but the department recognizes that they exist and are important considerations alongside the more direct economic costs associated with the

implementation of control measures. DEC also acknowledges that air quality problems result in additional requirements for federal agencies, like the Department of Defense, and that this can be a consideration for these agencies as they consider their actions and projects within nonattainment areas.

Section Specific Comments and Changes

- **Section 5.1 – Executive Summary**

Summary of Comments: Some technical/administrative comments were received on the Executive Summary.

Department Response: The Subpart 4 submittal deadline was clarified as December 31, 2014. Volatile organic compounds (VOCs) were added to the list of pollutants addressed in the SIP. In the impracticability discussion, design values were clarified.

- **Section 5.2 – Background and Rule Overview**

Summary of Comments: Commenters expressed varying opinions regarding the timing for adoption of the plan. Some commenters indicated the need to meet EPA's plan deadline and expressed the desire for the state to adopt the plan as quickly as possible. Commenters also expressed concern with the timing and length of the public and agency review process and requested the plan be held back from submittal to EPA to allow more time for adequate review. Commenters expressed concerns about inaccuracies in the SIP and the lack of time DEC has had to make corrections. Other commenters felt that the plan was inadequate and expressed a desire for the plan to be held until it could be strengthened with additional mandatory measures that would promote emission reductions much more quickly. A number of commenters noted the need to amend the plan quickly to add stronger measures, measures adopted by the Borough, or to initiate work on the "Serious" plan.

A comment was received that requested that DEC update this section to ensure that precursor lists correctly note and include the full set of $PM_{2.5}$ precursor pollutants. Other technical/administrative comments were also received on this section.

Department Response: The background section of the SIP includes discussion of the federal requirements and the deadline for submittal of a moderate area SIP to EPA. The department understands the various perspectives regarding the timing for the adoption of this plan but has determined that it is important to meet the federal deadline of December 31, 2014. As a result, the department has worked to complete this initial plan as quickly as possible. However, DEC considers the air quality plan to be a living document and looks forward to working with the local community and the FNSB to amend the plan in the near future with any additional locally identified measures. DEC will also be working with the FNSB to begin work on the "Serious" plan which will require a full update of technical work that can incorporate new data and issues that have developed since the initial plan analyses.

With respect to the precursor pollutant comment, DEC has made that correction as requested. DEC also made clarifying edits. Elemental carbon's interaction with light was changed to absorption. A statement of EPA's recent designations for the annual $PM_{2.5}$ standard was added. A description of the recent open houses and hearings was added.

- **Section 5.3 – Nonattainment Boundary and Design Day Episode Selection**

Summary of Comments: Comments requested that Moose Creek, which lies just outside of North Pole, be added to the nonattainment area boundary as it is experiencing smoke problems as well.

Department Response: Moose Creek is currently outside the nonattainment boundary. EPA is the agency responsible for finalizing the boundary for the $PM_{2.5}$ nonattainment area. At the time of designation, the concerns related to Moose Creek were not known. DEC cannot unilaterally change the boundary and add Moose Creek within this SIP. While this plan has been focused on addressing air pollution within the nonattainment area, DEC hopes that the measures being implemented to reduce air pollution can have some effect in Moose Creek. DEC is willing to work with, and encourages, the FNSB to consider the air pollution concerns coming from residents in the Moose Creek area and seek solutions for their local pollution issues.

With respect to Section 5.3, in the final SIP DEC clarified the method for calculating a design value and added a definition of design day.

- **Section 5.4 – Ambient Air Quality Trends**

Summary of Comments: A number of technical/administrative comments were received on the Ambient Air Quality Trends section of the plan.

Department Response: The department made a number of technical updates and corrections to this section. Updates were made to ensure consistency in reporting design values for calendar year 2013 by excluding exceptional event days impacted by wildland fire. The design values for other years were reported with the wildland fire exceptional event days excluded. The exceptional event wildland fire days for 2013 have been flagged and submitted to EPA, but EPA has not yet taken action to concur. The change allows for consistent comparison, but notes were included with the design values wherever EPA concurrence on exceptional event flags is pending.

- **Section 5.5 – $PM_{2.5}$ Network and Monitoring Program**

Summary of Comments: Commenters felt that modeling air quality and attainment based on the FRM monitor in downtown Fairbanks did not adequately represent air quality throughout the nonattainment area. They submitted data showing instances when other monitors in the

nonattainment area such as the FEM monitor in North Pole or the mobile RAMS monitor displayed higher concentrations than the FEM monitor in downtown Fairbanks. They noted that the monitor was located 100 feet in the air in downtown Fairbanks, away from residential areas and above the air people predominantly breathe. They said that there were no outdoor hydronic heaters located within one half mile of the monitor which prevented it from collecting data representative of hotspot locations around outdoor hydronic heaters. Commenters also submitted sniffer maps showing non-homogeneous air quality throughout the nonattainment area with hotspots in areas without FRM or FEM monitors. Commenters expressed concern that the Fairbanks North Star Borough would also not meet the annual standard.

Some commenters also expressed concern that the placement of monitors in North Pole and mobile monitors were influenced by diesel particulates from road, rail, and industrial sources and said that the readings were biased high because of these particulate sources. Other commenters said that the North Pole fire station monitor was representative of a large area of North Pole and was not located in a hotspot as identified by the Department in the plan. A number of commenters expressed a concern that North Pole data was not included in the Plan and must be included in any "Serious" plan. One commenter suggested that a monitor be place at the library because that is central location for schools and the elderly.

Comments were also received about the correlation factors applied to data from the continuous $PM_{2.5}$ air monitors in the area. Concerns were raised about the practice of reporting correlated data rather than un-correlated data or both.

Department Response:

Air monitoring data from throughout the nonattainment area is used by DEC and the FNSB for a variety of purposes including characterization of the spatial extent of the air pollution problem and calling air quality advisories. The State Office Building $PM_{2.5}$ air monitoring site is the original violating monitor that established the nonattainment area and, as a result, there is a long term air monitoring data trend that can be used to compare to the National Ambient Air Quality Standard at that location. However, the air quality plan has to reduce air pollution throughout the entire nonattainment area and must demonstrate through monitoring and modeling how the entire area will come into compliance with the $PM_{2.5}$ National Ambient Air Quality Standard. The plan includes an analysis of future predicted concentrations at the long term State Office Building monitoring site, but also includes an analysis of predicted air quality concentrations in all the unmonitored areas within the nonattainment area. The demonstration and the unmonitored area analysis is discussed in the modeling and attainment sections of the plan (5.8 and 5.9). Further, in future plans there will be data from additional air monitoring sites that can be used to calculate design values for North Pole and further inform the technical modeling and monitoring analyses for future air quality plan updates.

DEC made a number of updates to section 5.5. The new North Pole Water stationary site at 2696 Mockler Ave was added to Table 5.5-2 and Figure 5.5-4. While another monitor has recently been installed by the FNSB to the North of North Pole Fire station, this monitor is in the RAMS trailer and is only a short term site; as a result, it was not updated to the tables in the SIP. To

address concerns and recent discussion with individuals in the community and EPA on the North Pole Fire station site, the SIP was revised to show this monitoring site as an "undetermined" spatial scale (microscale or neighborhood). The FNSB continues to monitor at various locations in North Pole to better understand the spatial scale of the North Pole Fire station site and whether it can be used to represent North Pole neighborhoods overall. DEC also received "sniffer" maps from commenters and notes that the "sniffer" data is used to inform the FNSB about hot spots, but it is only 2 second data and does not represent hourly concentrations and such is not used as part of the regulatory network monitoring.

- **Section 5.6 – Emission Inventory Data**

Summary of Comments: Comments were received that requested additional information and explanation of Reasonable Further Progress (RFP) emission inventory for 2017 and RFP plan requirements. It was noted that to meet RFP requirements, NO_x must be addressed in the RFP plan and inventory. Commenters also noted that the 2017 quantitative milestones were presented as an average of the 2015 and 2019 emission controls and felt that the milestones would be stronger if the numbers associated with the average target were more explicitly identified.

Comments on the emission inventory noted that CAA Section 172(c)(3) requires the use of actual emissions, not allowable, emissions in the baseline inventory for 2008. The commenters requested additional clarification and correction of some inconsistencies with respect to this requirement.

Comments included questions and concerns regarding the use of the OMNI test results rather than the AP-42 emission factors. Concerns were that the OMNI tests were conducted under laboratory testing conditions, while AP-42 wood heater emission factors are conducted under field conditions. The commenter felt that outdoor models should be tested in realistic ambient temperatures, reflective of conditions in the Fairbanks area. They further questioned why the makes and models of the tested devices were not identified and made available with the test results to allow for full review, scientific inquiry, and assessment of study validity.

Comments were received regarding the coal emission factors used in the emission inventory. The commenters noted that Usibelli coal is not bituminous and indicated that they believed incorrect factors were used for coal heaters as a result.

Comments were received with respect to the home heating section of the emission inventory and the energy model that was developed for that effort. Concern was expressed about an error in the CCHRC study report that may have resulted in incorrect assumptions being made with respect to the Btu/day from outdoor wood boilers and wood stoves.

Comments were also received regarding the methodology for determining the inventory of coal heaters in the nonattainment area. The commenters had concerns about the phone survey method for identifying the numbers of these devices. Questions were also raised about why the 2012 Home Heating Survey was not included in the emission inventory.

Comments indicated that the appendix for the emission inventory was missing a number of data files that support the inventory estimates and requested that those be provided for additional public review before the SIP is finalized.

Department Response: The department updated the Emission Inventory section and its associated appendices to address the comments discussed above. All RFP comments were addressed and updated in Section 5.6. Interchangeable references to allowable and PTE point source emissions were revised and text was added to explain that allowable and PTE emissions are equivalent when expressed on an average daily basis as used in the inventory. Changes were also made to add explanation that actual point source emissions were used for the 2008 baseline modeling and PTE emissions were used for future year attainment modeling in accordance with CAA 172(c)(3) even though both sets are shown throughout the chapter for completeness. To address comments on Section 5.6 and 5.13, additional text was added as well as a 2017 EI table for $PM_{2.5}$ and NO_x to put the Motor Vehicle Emission Budgets (MVEBs) in context and explain differences in vehicle emissions in the RFP inventory versus the MVEBs.

The changes included updating typos on a misidentified device in the section 5.6 technical appendix. It was confirmed that this did not change the model results. The department reviewed the coal emission factor data and found that they are correct for the local coal, but that the category description had been mislabeled; this was corrected. Similarly, the CCHRC study report was also reviewed with respect to the concern raised and in that case the data was also correct, but a mislabeling had occurred; this was corrected. These labeling errors did not result in any incorrect assumptions being carried forward into the analyses.

In developing estimates of home heating devices, phone survey data was used along with other available data, such as the OMNI testing data. The department and FNSB have used phone survey data such as this in previous plans and the surveys are developed to obtain statistically valid samples. The collection of locally relevant data is important to improving emission estimates and the phone surveys are one set of data that are used to help allow the agencies to understand the number and distribution of these sources throughout the community. The OMNI testing data was also developed to allow for testing of wood heating device emissions using local Fairbanks area wood. The objective of this emission testing was to ensure that the emission factors used were more relevant to local practices because of the differences in emissions that result from burning different types of wood. AP-42 emission factors do not reflect Fairbanks area wood fuels. The agencies have discussed the local data available and the method of estimation for home heating sources with EPA as the SIP has been developed; similar methods have been used and approved in other air quality plans developed for Fairbanks and other communities in Alaska.

DEC also notes that the development of the emission inventory took place over an extended period of time and local data continued to be collected for a variety of purposes (like the 2012 phone survey) over that same time. It was not always possible with the resources and time available to back up and integrate all the new local data collected into an emission inventory that was largely complete. Future inventories will be updated with additional available survey data.

With respect to missing information in the appendices, the department notes that the emission inventory appendices contain supporting studies and detailed documentation related to the emission inventory estimates that are described in SIP section 5.6. The department has corrected errors, made clarifications, and added to the supporting documentation in response to comments. These additions do not change the final emission inventory or negate the technical modeling analyses that show it is not possible for the community to demonstrate attainment by 2015. The department also notes that EPA will review all the information provided in the final plan and may request further clarification or documentation from the state. The EPA process to take action on the plan will provide additional opportunities for public review and input related to the emission inventory and its supporting data and documentation.

- **Section 5.7 – Control Strategies**

Summary of Comments: Commenters felt that the community cannot wait 4-5 years for the air quality to improve, but need measures that are effective immediately to reduce the health consequences while the community waits for natural gas to become widely available. Commenters expressed concerns that voluntary measures are only reasonable if the area demonstrates attainment. They also stated that state and local control measures that shield pollution sources from independent enforcement actions are not "enforceable" as required for plan approval under CAA Section 110(a)(2)(A).

Commenters noted that for the SIP to find it is "impracticable" to attain the air quality standard by the end of 2015, it must demonstrate that all reasonable control measures were implemented and that the area still could not meet attainment by the moderate area date. Some commenters felt that the SIP demonstration of "impracticability" was inadequate because it did not consider all potential control measures and that the reasons some were excluded were improper. They stated that DEC must use all reasonably available control measures and that DEC failed to consider many. Specifically, partial implementation of some measures should have been considered, local opposition to a measures is not a sufficient reason for exclusion as technologically infeasible, and there should have been a more complete assessment of costs particularly those associated with health impacts and the need for air filtration systems.

Commenters also were concerned that the SIP had not been updated to reflect the change in local program authorities that occurred with the defeat of a voter initiative on October 7, 2014. For several years, voter initiatives had established local ordinances restricting the Borough's authority to regulate home heating and fuels. The recent failure of a voter initiative to continue that restriction failed and this should have been reflected in determining what measures were reasonable to implement in the plan. Commenters either felt that the state should have considered measures that were not authorized for Borough implementation in this plan or that the state should immediately update the plan to quickly adopt and incorporate any additional Borough measures that are put in place. Additionally, commenters raised concerns that the voters could, in the future, remove the ability of the Borough to regulate home heating and fuels.

Commenters provided examples of programs from other areas (Juneau, Fairbanks, Washington state, Oregon, Utah, Libby MT, Sacramento CA) that they felt should have been explicitly considered in the RACM assessment. Suggestions for additional controls included: regulate point sources as stringently as law allows; implement BACT now; establish year round rather than seasonal controls; announce and enforce new wood heater emission standards; expand opacity, emission standards, and curtailment to all solid fuel devices and waste oil; restrict idling from vehicles; enlist business and commercial compliance for smoke; authorize overtime for sniffer vehicle on high $PM_{2.5}$ days and inspectors on evenings and weekends; do not allow any permanent waivers and allow temporary waivers only for short times to rectify the situation; and declare a public health emergency to jump start implementation of stringent controls. Commenters also suggested that more public education would be helpful, citing the use of readouts near roadways so people could understand what the pollution levels currently are.

Some comments recommended requiring curtailment of wood stove use instead of this measure being voluntary through the FNSB voluntary cessation program. They would also like to see curtailment take place before the NAAQS standard is exceeded, so that exceedances can be avoided. Commenters suggested that curtailment should be included in the plan with very limited exemptions for sole source or hardship, citing programs in Utah and Libby, MT. Others suggested that the department prepare a "Serious" SIP that includes a mandatory burn ban for all but essential burning when the AQI reaches "Unhealthy" and place restriction on essential burner emissions to not exceed 20% opacity.

Commenters noted that they would like to see the stove change out program and educational efforts continue. With respect to the Fairbanks North Star Borough change out program, comments suggested that the program prioritize funds to homes with solid fuels as a sole source of heat. They also suggested that the change out program be coupled with stringent regulations. Suggestions related to the change out program included adding an approved moisture meter to be given to the qualified applicant upon completion and requiring a mandatory burn class (e.g., 1 hour) on the appropriate handling of wood, firing operations, and other relevant best burning practices. They also suggested starting a program to subsidize fuel oil use in lieu of wood and more home weatherization. Additional educational information on the health effects of $PM_{2.5}$ was requested.

Comments were received suggesting that no credit be taken for the Alaska Resource Agency retrofit program. The assertions were that this program was ultimately not successful in generating any on-going benefits and disputed the estimates of emission reductions achieved.

Commenters suggested that localized zones be established around locations where sensitive populations breathe such as schools, day care facilities, hospitals, and senior housing. Commenters relayed personal experiences or observations about the negative health effects of $PM_{2.5}$ on sensitive populations in their homes, workplaces, neighborhoods, and schools. Commenters proposed several control measures for these zones including burn bans at low $PM_{2.5}$ levels, removal and prohibition of outdoor hydronic heaters and other devices considered to be highly polluting. Commenters suggested that the wood stove change out program focus on these

areas or that monitors be located in these areas to better protect the health of sensitive populations.

Commenters raised concerns over the lack of additional controls for major point sources, specifically the Chena and Fort Wainwright Power Plants, and noted that these facilities may emit up to 20% of the particulate pollution. They also cited dispersion modeling that shows these two facilities potentially violating the 1-hour SO_2 NAAQS. Commenters expressed that SIP controls should include point sources and that coal and waste oil burners should also be controlled. Commenters also raised concerned about the analysis of stationary sources being based on average technical and cost information and suggested that additional confidence would be gained through source specific technology evaluations. Comments also identified areas where additional technical information on the analysis of $PM_{2.5}$ precursors would be useful in further documenting the department's process for determining reasonably available control technologies for point sources.

Commenters expressed concerns about enforceability of measures included in the SIP, that enforcement measures must be sufficient to deter violations, such as the authority to issue tickets or an administrative fining mechanism, which DEC does not have. Commenters listed multiple current public and private voluntary programs aimed at reducing pollution in the nonattainment area such as the Fairbanks North Star Borough's change-out program, voluntary burn ban days, and educational outreach; outreach programs by organizations such as the American Lung Association, Cold Climate Housing Research Center, and Clean Air Fairbanks; and outreach made by individuals to neighbors. Commenters noted that these voluntary programs and educational efforts have been in effect for many years but have not brought the area into attainment and that the air has worsened even with these measures in place.

Commenters felt that the enforcement methods available to DEC make compliance with any regulations essentially voluntary because of the lack of ticketing authority and the infrequency and expense of civil litigation for DEC and private parties. Commenters used the case of the wood boilers impacting Wood River Elementary School to argue that DEC enforcement tools were ineffective, take too long, and do not adequately protect human health. Commenters recommended that the State seek approval from the legislature for statutory authority to use administrative penalties to enforce control programs in the nonattainment area. These commenters felt that the success of control strategies is being hampered by this lack of statutory authority. Commenters suggested that fines imposed be added to property tax obligations.

Department Response: The department appreciates the many comments and suggestions provided on the control measures for the air quality plan. Commenters suggested a number of additional measures that they believed should be considered for implementation within the FNSB $PM_{2.5}$ non-attainment area. The department appreciates all of these suggestions and will continue to work with the FNSB and the local community to further explore and consider options for controlling and mitigating $PM_{2.5}$ pollution to achieve compliance with the ambient air quality standard before 2019.

The Reasonably Available Control Measures (RACM) analysis conducted for this plan reviewed many control options from other areas of the country. In some cases, the Fairbanks situation differs significantly from those of other jurisdictions. For example, the extreme cold temperatures, heating needs, fuel costs, and types of fuel available in the Fairbanks area are strikingly different than in many of the other $PM_{2.5}$ areas. Measures implemented in other states, may not be reasonable to implement in the Fairbanks area. Some of the commenter's suggestions are variations on control measures that were considered but not determined to be feasible at the time this plan was developed. Other suggestions could be considered as part of the public outreach and education programs in the community or may be part of implementation considerations for programs. Additional detailed responses to comments on the RACM analysis are included later in this section. In the end, for progress to be made in reducing air pollution, the community must be willing to accept control strategies and act on them. Control measures that face opposition by roughly half the community cannot be implemented with a reasonable amount of effort and with a reasonable expectation of success. The vote in the latest election to reject the ballot initiative restricting the FNSB's authority to address home heating device emissions and fuels, appears to indicate that there is greater recognition of the need to address air pollution issues locally but the vote was still a close outcome and it is clear that concerns remain for many individuals on both sides of this important issue. Additional detailed comments and responses on RACT and RACM are included near the end of this document.

With respect to the inclusion of the Alaska Resource Agency program in the analysis of emission benefits presented for this plan, the department did not change the plan to remove the small amount of emission benefit identified for this program. This program did occur during the time frame covered by this plan and may have resulted in some short term benefits. The department concedes that the long term benefits of the program are not well known and the department is willing to consider removing the benefits from this program based on new data in future plans. However, removing the credit in this plan will not change the determination that it is impracticable for the area to attain by the 2015 moderate area attainment deadline.

The control of point sources was the subject of a Reasonably Available Control Technology assessment conducted as part of the planning process. The point sources in the nonattainment area are well controlled for direct $PM_{2.5}$ emissions placing focus for potential control on precursor emissions, which account for a much smaller percentage of the overall $PM_{2.5}$ in the area. The coal-fired point sources in the area currently use extremely low sulfur coal for fuel. The costs of add on controls, both exhaust scrubbers and shifting to lower sulfur content fuels, were assessed and determined to be unreasonable given their small impact on ambient $PM_{2.5}$ concentrations. Additional detailed responses to comments on point source control are included later in this section.

With respect to concerns overall about the enforceability of measures and enforcement methods, DEC has clearly laid out in the air quality plan its current authorities and general approaches to compliance activities and enforcement of state regulations. The department appreciates the concerns expressed about the enforcement tools available to DEC, but it is only through passage of statutory changes by the legislature that administrative penalties can be added to DEC's suite

of available compliance and enforcement tools for addressing compliance with air quality regulations. As DEC does not currently have that authority, the agency notes that it does use the compliance and enforcement tools for which it is allowed under state statute. Further, DEC also considers the potential compliance rates for various programs based on available data and its understanding of the effectiveness of its compliance and enforcement programs. The compliance rates assumed for regulatory measures when projecting emission benefits in the SIP are carefully considered to ensure that unrealistic rates of compliance are not factored into any attainment demonstration.

- **Section 5.8 – Modeling**

Summary of Comments: A number of technical/administrative and clarifying comments were received on the modeling section of the plan.

Department Response: Updates to the modeling section 5.8 included clarification on the 2008 baseline modeling year and the use of actual point source emissions to accurately estimate the control benefits. To approximate what the concentrations were in other areas away from the State Office Building, other monitoring data in Fairbanks and North Pole was used to determine control benefits by using an observed ratio of the concentrations, because actual monitoring data in that modeling base year of 2008 was not available. Table 5.8.7 gives sites that were able to have an average winter concentration (data that was collected for at least one entire winter) that was able to be used for the baseline design years of 2006 to 2010.

- **Section 5.9 – Attainment Projects, Demonstration, and RFP**

Summary of Comments: Comments were received about the RACM analysis requesting additional discussion of why more measures could not have been put in place by 2015. This is also discussed in comments listed previously under section 5.7.

Department Response: A statement was added describing the defeat of the recent ballot initiative defeat in Fairbanks that would have extended the prohibition of the borough's ability to enforce air quality regulations, as well as a reference to the unanimous resolution adopted by the Borough Assembly in support of the SIP. The FNSB resolution in its entirety is provided in Appendix 5.9. Additional detailed discussion and response related to RACM comments is included at the end of this section of the response to comments.

- **Section 5.10 – Contingency Plan**

Summary of Comments: Commenters suggested that the SIP contingency measures (wood moisture program and required change out or removal of old stoves upon sale of a property) should be implemented immediately. They did not see a reason these measures should be held as contingency when it is almost certain that FNSB nonattainment area will be designated "serious"

in 2016. Other comments noted that EPA's 1992 General Preamble indicates that contingency measures "should be a portion of the actual emissions reductions by the SIP control strategy to bring about attainment… approximately equal to the emissions reductions necessary to demonstrate RFP for one year."

Commenters also suggested that the contingency plan is inadequate and does not meet the area's needs or legal requirements that measures be enforceable and take effect without further action by the state or EPA. Commenters claimed that regulatory measures identified were not enforceable in practice.

A suggestion was made to adopt a contingency measures similar to the measure used in Libby, Montana which would prohibit all solid fuel heaters other than EPA certified pellet-burning stoves if adequate progress is not made.

Department Response: The department is adopting regulatory contingency measures including the wood seller moisture content disclosure program and changes that would require uncertified devices to be changed out upon sale of a property. Changes were made section 5.11 to reflect changes made to the regulatory proposals and address minor typographical issues. The department is responsible for enforcing state regulations and the enforcement approach is discussed in this response to comments and the SIP.

Responses related to comments and concerns on the regulatory contingency measures and the timing for their implementation is included in the sections of this response to comment devoted to these regulatory proposals. In addition to these regulatory measures, the department and FNSB have a number of programs underway that can provide significant emission reductions in the years beyond 2015, including continued change outs of solid-fuel heaters and the expansion of natural gas infrastructure and associated conversion of space heating to natural gas. These measures have real long term emission reduction potential and deserve consideration and inclusion in out-year projections and discussions of future emission benefits. Because this section of the plan discusses additional actions that will be taken beyond the 2015 attainment date, they were included in the contingency measure section of the plan.

- **Section 5.11 – Emergency Episode Plan**

Summary of Comments: Comments were received on the regulatory thresholds and opacity requirements that have relevance to section 5.11.

Department Response: Responses related to comments and concerns on the opacity requirements and the $PM_{2.5}$ episode thresholds is discussed in the section of this document relevant to those regulations. Within the SIP, the department made revisions to reflect changes to the final adopted regulations. In addition, the department, in response to comments received, has established a lower episode threshold at 30 $\mu g/m^3$ with a requirement for wood heaters to meet a 20% opacity limit when concentrations exceed that threshold. Other changes made to section 5.11 include adding more detail describing the Borough Episode Program. Notices of Violation were added to the discussion of available administration enforcement tools.

- **Section 5.12 – Assurance of Adequacy**

Summary of Comments: No comments were received on this section.

Department Response: Only minor typographical changes were made to this section.

- **Section 5.13 – Conformity and Motor Vehicle Emission Budget**

Summary of Comments: Comments were received that noted the motor vehicle emission budget should be considered together with all other emission sources. A suggestion was provided to include a table showing all of the emission sources in the 2017 RFP emission inventory to provide this context.

Comments also required clarification of how the meteorology inputs to MOVES are consistent with the "Time Aggregation Level" for SIPs from EPA's *Technical Guidance on the Use of MOVES2010 for Emission Inventory Preparation in State Implementation Plans and Transportation Conformity*.

Department Response: Additional text was added as well as a 2017 EI table for $PM_{2.5}$ and NO_x to put the Motor Vehicle Emission Budgets (MVEBs) in context and explain differences in vehicle emissions in the reasonable forward progress (RFP) inventory versus the MVEBs. Clarification was also provide on the meteorology inputs to MOVES. These changes are reflected in the Emission Inventory section as well.

- **Section 5.14 – Acronyms and Abbreviations**

Summary of Comments: No comments were received. This section was added to assist future readers of the plan.

Department Response: A table of acronyms and abbreviations was added to the document to assist the reader.

Additional Detailed Responses Related to Specific SIP Comments

Responses to EPA Administrative Comments

Executive Summary

p. 5.1-4: Include the due date of the moderate area attainment plan of 12/31/2014.

- Corrected

p. 5.1-4: VOCs should be included in list of precursors to be controlled.

- Corrected

p. 5.1-7: 44.7 $\mu g/m^3$ is the baseline design value, not the design value.

- Corrected

p. 5.1-7: The standard is 35 $\mu g/m^3$, not 35.0.

- Corrected

Background and Overview of $PM_{2.5}$ Rule

p. 5.2-2: VOCs are not components of $PM_{2.5}$. The document could say semi-volatile VOCs are components of $PM_{2.5}$. VOCs are $PM_{2.5}$ precursors.

- Corrected

p. 5.2-2: It would be more clear to say that the great majority of particle absorption is from elemental carbon, not particle scattering.

- Corrected to read "particle absorption"

p. 5.2-3: "because they" not "because it".

- Corrected

p. 5.2-4: Clarify which years the SIP is referring to in the 43 $\mu g/m^3$ and 35 $\mu g/m^3$ design value number for Fairbanks and Mendenhall Valley.

- Added SIP years 2006-2008

p. 5.2-6: The statement about EPA not responding to the annual designations is out of date and should be updated for the final SIP. On December 18, 2014, the EPA issued final area designations for the 2012 annual national air quality standard for fine particulate matter ($PM_{2.5}$). In the action, the EPA designated the entire state of Alaska as "unclassifiable/attainment," consistent with the recommendation from the state of Alaska.

- Added "On December 18, 20014, the EPA…." Until the end of the statement above

p. 5.2-6: The list of precursors does not list VOCs.

- Corrected

p. 5.2-6: Subpart 1 still applies in cases when not superceded by Subpart 4. The right way to refer to the court ruling is that Subpart 4 must be implemented in addition to Subpart 1.

- Added "technical requirements in addition to subpart 1"

p. 5.2-6: The Subpart 4 deadline for attainment of the $PM_{2.5}$ air quality standard is 12/31/2015.

- Corrected

p. 5.2-12: It is more appropriate to say that ADEC and EPA worked collaboratively on the SIP to address CAA requirements.

- Corrected

Non-Attainment Boundary and Design Day Episode Selection

p. 5.3-1: "micrometers per cubic meter," not "meter"

- Corrected

p. 5.3-3: In the sentence about the "design value", a design value is for any three year period, as noted in the last sentence of the paragraph, not just for the three year period ending in the base year. Regardless, the baseline design value is based on 2006-2010.

- Corrected

p. 5.3-4: This page says the baseline design value is 42 $\mu g/m^3$, while the previous pages say 41 $\mu g/m^3$ and 40.7 $\mu g/m^3$.

- Clarified the values were from design day averages from each episode and a baseline DV.

Ambient Air Quality and Trends

p. 5.4-1: The short period of daylight, low sun angle, and dry climate are not the only factors in creating the inversion. A key factor is that the persistent freezing temperatures result in predictable snow cover. The strong radiational properties of the snow cover dramatically help inversion formation. The EPA recommends including the influence of snow cover to be scientifically complete.

- Added snow cover helps form inversions.

p. 5.4-1: A temperature inversion is not the result of a stable airmass. They are related conditions but not causing the other. A stable airmass is the result of radiational cooling under calm and usually clear weather conditions, and the radiational cooling is enhanced by snow cover. A

temperature inversion is an extreme form of a stably stratified atmosphere, one in which the temperature increases with height. Please clarify this relationship in the text.

- Added "A stable airmass." The entire sentence and deleted a temperature inversion is a result of a stable airmass.

p. 5.4-1: The sentence describing how inversions plus their associated meteorological conditions create conducive atmospheric conditions is convoluted. It is better to address how calm and clear weather lead to a stably stratified atmosphere. The result is calm air in three dimensions and thus emissions close to the ground do not disperse readily. A temperature inversion is just a strong kind of stable atmosphere.

- Added calm, clear and in the next sentence poor dispersion

p. 5.4-1: It is not appropriate to call it nocturnal radiation inversion when there is daylight. It is simply just a scenario where the daytime heating is not enough to overcome the stably stratified boundary layer.

- Corrected

p. 5.4-1: It is not the inversion that causes pollutants to be so concentrated. It is the low horizontal mixing due to the calm synoptic pattern and the low vertical mixing due to the stable atmosphere. The low temperature contributes to high emission levels.

- Added low horizontal mixing, deleted inversion.

p. 5.4-1: Be consistent in referring to the $PM_{2.5}$ NAAQS. If "average" is in one, then it should be in both, though we advocate for taking it out of both.

- Deleted average in both 24-hr and annual

p. 5.4-2: The text refers to five active permanent sites but the list is not current. North Pole Elementary needs to be clarified as a historical site.

- Updated and North Pole Elementary was clarified as shut down.

p. 5.4-9: Figure 5.4.4. Officially, design values are rounded to the nearest whole integer. 98^{th} percentiles are rounded to the tenth. If you have reason to include the design value to the tenths, such as in calculating one year's worth of attainment, that makes sense. But otherwise please keep the rounding convention in mind and choose appropriately depending on your context.

- Updated Figure with all EE excluded DVs

p. 5.4-10: EPA strongly suggested 2008 as a base year. Any year in the 2006-2010 period could have been used with appropriate justification according to EPA modeling guidance, but there were several important factors pointing to 2008 as the appropriate choice. The EPA recommends that the final SIP state "EPA strongly suggested" instead.

- Added "EPA strongly suggested…"

p. 5.4-10: “measurements and observations”? To make them obviously distinct, it would be better to say “instrument measurements and human observations”.

- Corrected

p. 5.4-12: Revise to say “each NAAQS-comparable monitor” instead of “each monitor.”

- Corrected

p. 5.4-13-14: The discussion of Exceptional Events does not mention which sites EPA concurred on for which days. It is important to clarify which sites the EPA concurred on because as it reads, the implication is that the EPA concurred on 7/13/2010 at North Pole Elementary School, which is not the case. While ADEC has provided these data to the EPA, the EPA has not yet finally concurred on the data. Please be consistent in the table -- either only use EPA concurred values or use values that the state has already qualified as EE and note that EPA concurrence is pending.

- Corrected

$PM_{2.5}$ Network and Monitoring Program

p. 5.5-1. Table 5.5.1 says that NPFS does not have an AQS ID, but the state’s network plan lists it as 02-090-0035.

- Corrected

p. 5.5-1. The SIP should list all Regulatory Monitors that are valid at the time that the SIP is being proposed and finalized – this includes The North Pole Water site and the North Pole site that was just installed north of North Pole Fire Station.

- Added North Pole Water, did not add the new RAMS trailer that was just installed, it is not a stationary monitor.

p. 5.5-2. The SOB is said to be influenced by home heating, vehicle exhaust, and wood smoke, but wood smoke is part of home heating.

- Added “home heating (wood, fuel oil and coal)…”

p. 5.5-2 The NCORE site is listed as SLAMS on this page but was listed as SPM in the previous chapter.

- Changed to SLAM site in previous chapter

p. 5.5-3 Text says the BAM 1020 data is uploaded once a week, but we know they are uploaded every hour to the state’s and borough’s web sites. Please clarify.

- Added “the BAM 1020 is uploaded hourly to the State and Borough websites and uploaded once a week to a computer. “

Emission Inventory

- General responses (including those addressing "Letter" comments:
- Revised interchangeable references to allowable and PTE point source emissions to PTE starting on p. 5.6-6. Added sentences highlighted in bold to explain that allowable and PTE emissions are equivalent when expressed on an averaged daily basis as used in the inventory.
- Also added text on p. 5.6-27 below Table 5.6-7 that explains that actual point source emissions were used for 2008 baseline modeling and PTE emissions were used for future year attainment modeling in accordance with CAA 172 (c) (3) even though both sets are shown throughout the Inventory chapter for completeness.

This chapter should include an EI table for the year 2017, and it needs to include NOx to support the MVEB. Currently, the 2017 RFP MVEB is a number out of context.

- Section 5.6.6 has additional sub-paragraphs of text and a 2017 EI table for PM2.5 and NOx to put the MVEBs in context and explain differences in vehicle emissions in the RFP inventory vs. the MVEBs.

p. 5.6-7: In Section 5.6.1.3. Sources Not Inventoried, final SIP should include more documentation from ADEC on the sources excluded due to the unavailability of data.

- Not sure what additional documentation is available to be provided. I added a sentence explaining what other missing data there were, but I don't know what else to do.

p. 5.6-31: There appears to be a disconnect in the data. The statement indicates that wood burning is the largest source of ammonia, but ammonia is missing from the point source inventory.

- Added a clarifying sentence for NH3 explaining that wood burning is the largest source only when considering sectors for which NH3 data were available.

p. 5.6-46: Use of 2.4% moisture-driven wood use reduction: Is ADEC confident enough in the driving force behind the shift towards owner cut wood enough to have confidence that the trend will extend into 2015 and 2019? Some additional text would be helpful to give better certainty here.

- Added a phrase clarifying the sources of multiple 2013 surveys and added the following sentence at the end of the paragraph: "The State plans to continue performing periodic surveys going forward to confirm the permanence of this shift."

p. 5.6-56: Cumulative $PM_{2.5}$ emission reductions should probably be cumulative primary $PM_{2.5}$ emission reductions.

- Corrected.

p. 5.6-58: The dry wood program assumes the Cut Own category would use dry wood more than now, based on the $50 per cord question. If they are cutting their own, and the trend of drier wood for the Cut Own category is already accounted for, how can the result of a $50 per cord question be used to further increase dry wood for the Cut Own category?

- Sentence was added:" The movement of both the Buy group and the Cut Own group to use greater use of dry wood comes about from additional State education efforts that span both groups. It was assumed that the same relative shift toward greater dry wood use would occur in both groups."

p. 5.6-59: The draft plan assumes data based on the Cardno report, specifically an assumption that natural gas would be delivered at $15-$17 mcf. However, the head of the Interior Gas Utility told the Borough assembly that the new estimated price is $20.50 per mcf. This new estimate needs to be taken into account in future 2019 emission estimates.

- Agreed, under the Serious Area SIP. But no edits were made in response to this comment.

p. 5.6-60: The MVEB needs to be considered together with all other emissions sources ((93.118(e)(4)(iv)), and that applies to all of the pollutants in the MVEB, $PM_{2.5}$ and the precursors.

- The subsection now includes an additional table showing emissions for all sources and text referencing this section of the conformity regs.

p. 5.6-60. The title of Table 5.6.24 says the point source emissions are actual emissions but the first row says they are PTE. The final SIP should clarify which of these is correct.

- Corrected. The first row now reads PTE.

p. 5.6-62. The parenthetical starting "(no later" needs a right parentheses…. Also, the first "the" in the second paragraph sentence, should be replaced with the word "with"). The word "assessment" is misspelled in the first sentence in the third paragraph.

- Corrected.

p. 5.6-67: Align the first sentence in the fifth paragraph (MVEB Calendar Year and Pollutants) with the first sentence in the third paragraph on page 5.6-62. One approach could be to revise this sentence to: "As discussed above, the RFP milestone year for RFP is 2017. Also, add "RFP inventories and" to the sentence that follows it:

- Corrected as suggested.

p. 5.6-67: Could consider revising to be more clear. One approach could be to add a sentence along the following lines: Thus, RFP inventories and MVEBs were established for calendar year 2017. Separate budgets of on-road motor vehicle emissions occurring within the non-attainment area were set for both directly-emitted $PM_{2.5}$ and NOx, the latter based on EPA's interpretation

of applicable precursor requirements under 40 CFR §93.102(b)(1), which applies to criteria pollutants, and §93.102(b)(2)(iv), which applies to precursors of $PM_{2.5}$."

- Corrected as suggested.

p. 5.6-68: The description of "Activity Inputs" is an incomplete sentence.

- Corrected

p. 5.6-68: In the Fleet Characteristics Inputs description, consider adding a reference to the EPA guidance about how to adjust fleet inputs.

- Added a sentence at the end of this paragraph explaining that the inputs were supplied to MOVES using the County Data Manager in accordance with the EPA guidance (and referenced it).

p. 5.6-68: The final SIP should clarify the meteorology inputs to MOVES. The public review draft describes that "the average ambient temperature across all hours of the 35 modeling episode days was -11.8°F" and that both "the average meteorology profile" and "the individual day meteorology" were used to establish the MVEB. It should also confirm that the -11.8°F single temperature value was not used to represent all hours of the day over the modeling period (See section 3.3.1. Time Aggregation Level, in Using MOVES to Prepare Emission Inventories in State Implementation Plans and Transportation Conformity: Technical Guidance for MOVES2010, 2010a and 2010b, available at http://www.epa.gov/otaq/models/moves/documents/420b12028.pdf). Also, please discuss whether the "Hour" option was used for the "Time Aggregation Level" as is required for SIPs and regional emissions analyses.

- Clarified with a revised sentence in the "Meteorology Inputs" paragraph explaining that the temperature profile was not a constant -11.8F, but reflected a diurnal range based on the 35 days of episodic data. Also added a sentence to confirm the use of "Hour" Time Aggregation Level in accordance with the guidance document and cited it as a reference.

Control Strategies

p. 5.7-7: typos in second paragraph

- Corrected

p. 5.7-22: Table 5.7-7 should include RACT control measures.

- Added a row titled "RACT" and checked the quantified emissions box

p. 5.7-22: Table 5.7-7 needs to clarify which year inventory the RACM measures are accounted for - 2015 or 2019.

- Added 2013 to top row of controls and added 2019 to Natural Gas.

Modeling

p. 5.8-2: Lack of weather systems in the winter at the latitude of Fairbanks contributes to reduced horizontal mixing. This is another factor in the build-up of pollution in Fairbanks.

- Added text stating " a lack of weather systems at this latitude limits the amount of horizontal mixing."

p. 5.8-14: CMAQ references need to include Byun and Schere's CMAQ journal article.

- Added reference #14 "Byun, D., Schere, K.L., (2006), Review of the governing equations, computational algorithms, and other components of the models-3 Community Multiscale Air Quality (CMAQ) modeling system. Applied Mechanics Reviews 59, 51-77."

p. 5.8-15: Section 5.8.7.1 needs some proofreading.

- Revised text to change meteorology to meteorological and remove an errant reference.

p. 5.8-33: The attainment model used the average of Q1 and Q4 speciation. The text does not make this clear.

- Modified text on 5.8-33 for clarity. The revised text reads, "The method uses winter quarterly (Q1 and Q4) average FRM-derived species concentrations from the STN (speciation trend network) monitor. "

p. 5.8-33 "the design value concentration" should be "the baseline design value concentration".

- Added "baseline" to text on 5.8-34 (note the page number has shifted during editing).

p. 5.8-33: The 2015 scenario is said to include benefits from the state standards for woodstoves in new homes, but this law will not provide any benefits by December 31st, 2014.

- This was stated in error as the control scenario modeled for 2015 did not include this measure. The text has been removed.

p. 5.8-34: The baseline 2008 inventory should use actual emissions for the point sources.

- The 2008 baseline was modeled with actual emissions for point sources. Additional text was added for clarity that the 2015 scenarios contain either actual or PTE emissions while the 2008 baseline always contains actual point source emissions.

p. 5.8-35: Table 5.8.10 suggests that 2008 point source emissions were Actual, because otherwise the OTH factor would not be 1.8.

- This is correct and additional text added for the previous comment should make this less ambiguous.

p. 5.8-36: In Table 5.8.12, benefits from the state standard in new homes is not quantified even though page 33 says that it is included in the control scenario.

- the text stating that the state new home standard was in place by 2015 has been removed as it was in error. The program was not modeled for 2015 and the table should remain as is.

p. 5.8-36: Final SIP should clarify what the range in 40.1-43.5 represents. Where does 43.5 come from?

- The following sentence was added for clarity, "The low end of the range fixes sulfate RRFs to 1.0 in future years, and the high end calculates sulfate RRFs based on primary sulfate and sulfur dioxide as shown in Appendix III.D.5.8."

p. 5.8-36: The sentence starting "CMB, C-14, and PMF" is confusing.

- This sentence has been revised as follows, "The CMAQ and SMOKE modeling estimates that wood burning's share of the inventory is on the higher end of the winter averages established by CMB, C-14 and PMF analyses , but the results are not outside of their range of estimates. "

p. 5.8-39: "It is unclear how much these concentrations persist as a result of noise in the high resolution (1.33 x 1.33 km) modeling or reflect actual hot spots in the region." The use of the term model 'noise' is confusing. A more accurate phrase would be model 'uncertainty'.

- The term noise has been replaced with "assumptions or uncertainties".

Attainment Demonstration

p. 5.9-3: Final SIP should include more discussion of why other measures could not have been put in place by 2015, either here or in the RACM section of the appendix.

- Following the completion of the RACM document, the vote on Proposition 2 was certified on October 27 with 52% supporting and /48% opposing. This proposition now gives the FNSB authority to enforce air quality regulations. The vote, however, hardly provides a mandate, as there is still considerable opposition to more stringent wood burning controls in the community. Despite the opposition, the Assembly has determined that more stringent controls should be considered but not at the expense of delaying the submission of the SIP as noted in the unanimous resolution adopted on 12/11/14 (Appendix III.D.5.9). A review of more stringent control measure costs and benefits will be conducted after the end of the year (and submission of the SIP) with the goal of accelerating the pace of attainment through amendments to the submitted SIP.

Emergency Episode Plan

p. 5.11-2: Final SIP should clarify what averaging time is used to determine whether ambient data has exceeded 35 $\mu g/m^3$.

- "24-hr rolling average of the 1-hr BAM instrument measurements"

p. 5.11-4: In Table 5.11.1, is this a rolling 24-hour average, or midnight-midnight local time?

- "24-hr rolling average of the 1-hr BAM instrument measurements"

p. 5.11-6: The first full paragraph says that the department may issue a Notice of Violation, but later on the same page and the following page there is no reference to the ability of the state to issue notices of violation.

- Corrected

Conformity and Motor Vehicle Emissions Budget

p. 5.13-1: We suggest adding the year of the NAAQS to the title of the quoted implementation rule, as follows: "Specific guidance on $PM_{2.5}$ conformity requirements is also contained in the Final Fine Particulate Implementation Rule for the 2006 $PM_{2.5}$ NAAQS." The next sentence will need to be modified to refer to "that" implementation rule, so that it is clear (there are a number of implementation rules discussed).

- Edited as suggested.

p. 5.13-2: We suggest adding the definition of control strategy implementation plan revision as located in §93.101: "Control strategy implementation plan revision is the implementation plan which contains specific strategies for controlling the emissions of and reducing ambient levels of pollutants in order to satisfy CAA requirements for demonstrations of reasonable further progress and attainment (including implementation plan revisions submitted to satisfy CAA sections 172(c), 182(b)(1), 182(c)(2)(A), 182(c)(2)(B), 187(a)(7), 187(g), 189(a)(1)(B), 189(b)(1)(A), and 189(d); sections 192(a) and 192(b), for nitrogen dioxide; and any other applicable CAA provision requiring a demonstration of reasonable further progress or attainment)."

- Added under §93.101 as suggested.

p. 5.13-3: The description of "Activity Inputs" is an incomplete sentence.

- Corrected, same as in Section 5.6

p. 5.13-4: Final SIP should clarify the meteorology inputs to MOVES. See comment above for page 5.6-68.

- Corrected, same as in Section 5.6

p. 5.13-4: In the “plug-in adjustments” paragraph, remove the phrase about additional interagency consultation for MOVES2014.

- Done.

p. 5.13-4: The MVEB must be considered together with all other emissions sources and the MVEB must be consistent with and clearly related to the EI and control measures in the implementation plan. A table summarizing the 2017 EI should be included here or include a reference to the new 2017 EI table in the EI section (as recommended in “Emissions Inventory, General comments”, above). The final SIP would be stronger if it includes some discussion of Alaska’s analysis indicating how on-road sources are not the driving source of non-attainment.

- Addressed by incorporating the new “MVEB Context Within 2017 Inventory” sub-section from Section 5.6.6 into Section 5.13 after the discussion of the MVEBs. This added sub-section includes a new table (5.13-2) that contains emission summaries for all sources and ensuing narrative pointing out that on-road vehicles are not the dominant source of emissions.

p. 5.13-5: The list of 40 CFR 93.118(e)(4) requirements does not include 93.118(e)(4)(iv). It should be added: (iv) The motor vehicle emissions budget(s), when considered together with all other emissions sources, is consistent with applicable requirements for reasonable further progress, attainment, or maintenance (whichever is relevant to the given implementation plan submission);

- Addressed by rewording bulleted item & in the 93.118(e)(4) list.

p. 5.13-6: Specify section 93.123 (instead of just part 93) in paragraph four, sentence three.

- Corrected

Detailed Responses to Comments on Available Control Measures Not Considered for RACM

The department received some specific comments regarding control measures that were determined not to be reasonably available control measures in the SIP. This topic is covered in chapter 7. These comments are addressed separately here given their detailed and somewhat technical nature.

Comment: "The Draft SIP is incomplete and unlawful because there are many available control measures for residential wood combustion that the Department has neglected to consider. Indeed, there is a substantial inventory of measures that have been recommended by EPA or implemented in other communities to reduce emissions caused by residential wood combustion, but do not appear on the list of control measures that ADEC considered for the SIP."

Response: Many of the unconsidered "control measures" suggested by the commenter are not control measures themselves, but examples of elements or strategies to be considered during implementation of control measures. For example, several of the suggested measures are actually elements of a public outreach and education program, at a level of detail not usually provided in SIP documents. These have been added, where appropriate, to the relevant control measures in the SIP.

Some of the suggested control measures are variations on control measures that were considered and rejected as technologically infeasible. The variations do not address the features that made their siblings infeasible; as a result, they are infeasible as well.

Some of the suggested control measures come from regulations and programs in jurisdictions that are very dissimilar from Fairbanks. They have different climates, and none of the affected homeowners face a comparable economic burden in heating their homes. Wood burning appliances in those jurisdictions are principally used for aesthetics, not for heat. Even when used for heat, very few homes in these jurisdictions rely solely, or even principally, on wood for heat. As explained in the analysis, the striking difference in climate and home heating patterns, and the economics of fuel supply means that adoption of a restriction on wood burning by a jurisdiction in a temperate climate is not an indication that the restriction would be reasonable in Fairbanks.

The following specific measures were suggested by the commenter. As required by EPA guidance, measures suggested during the public review process must be addressed in the RACM analysis. The results of that additional analysis are summarized below.

Suggested Measure: Providing voluntary dryness certification programs for dealers and/or making free or inexpensive wood moisture checks available to burners.

Response: This is a not a control measure itself, it is an example of a possible element of the "Dry Wood Programs: Education and Outreach" measure. As suggested by the commenter, a reference to this element has been added to the description of the control measure.

Suggested Measure: Discouraging the resale of used stoves through taxes, fees, or other disincentives.

Response: The suggested control measure has been added to the analysis. As is currently the case with almost all involuntary measures, this measure would face opposition from the local community and would not be practically enforceable. Enforcement of restrictions on the sale of new stoves is enforced by monitoring vendors. In contrast, enforcement of restrictions on the sale of used stoves would require detection and intervention in transactions between individuals. The resources needed to enforce such a measure are out of line with the resulting emission reductions.

This control measure is not technologically feasible.

It should also be noted that the SIP already includes a Solid Fuel Burning Appliance (SFBA) Changeout program as a RACM. FNSB offers reimbursement of 75% of the cost (up to $3,000) of a new certified combustion device. There is also a bounty program for dismantling an old device without replacement. Because this program is voluntary, it has none of the drawbacks (other than high cost per pound of reduction) of the suggested disincentive program.

Suggested Measure: Label requirements for sale of solid fuel or wood to advise purchaser of potential restrictions on burning and how to determine whether any current restrictions exist (e.g., by calling informational phone line or checking website).

Response: This is a not a control measure itself, it is an example of a possible element of the "Dry Wood Programs: Education and Outreach" measure. As suggested by the commenter, a reference to this element has been added to the description of the control measure.

Suggested Measure: Label requirements for sale of wood indicating whether wood meets moisture content requirements. If wood has too high of a moisture content, label should indicate that wood must be dried before burning.

Response: This is a not a control measure itself. It is an example of a possible element of the "Dry Wood Programs: Education and Outreach" measure. As suggested by the commenter, a reference to this element has been added to the description of the control measure.

Suggested Measure: Requiring retrofit or conversion of wood-burning stoves or fireplaces when a residence undergoes a major remodeling.

Response: The suggested control measure has been added to the analysis. As is currently the case with almost all involuntary measures, this measure would face opposition from the local community and would not be practically enforceable. Requiring retrofit at the time of a home sale was previously evaluated and determined to be not technologically feasible. Requiring retrofit when a residence is remodeled would, for similar reasons, not be technologically feasible.

This control measure is not technologically feasible.

Suggested Measure: Restricting number of wood-burning devices allowed in homes under construction (i.e., construction of new homes or remodeling of existing homes).

Response: The suggested control measure has been added to the analysis as a partial implementation of the measure to ban all new installations. As is currently the case with all involuntary measures, this measure would face of opposition from the local community and would not be practically enforceable. This proposal lies somewhere between banning installations in new homes and requiring that an alternative source of heat be included in new homes. Both of those measures were evaluated and determined to be not cost effective. This proposal would not contribute to emission reductions, but could reduce increases from new construction.

This control measure is not technologically feasible.

Suggested Measure: Application of different tiers of control measures based on density of homes in the area.

Response: This is not a control measure at all. It is a strategy to minimize opposition by focusing control requirements on areas where they are most needed or most effective. This strategy will be considered, where appropriate, during the rule development process.

Suggested Measure: Programs to improve operation and maintenance of wood-burning stoves or fireplaces.

Response: This suggested control measure is the same as the Outreach and Education control measure for each of the wood burning appliances, and has already been included in the proposed SIP as RACM.

Suggested Measure: Installation training and certification programs.

Response: As a preliminary matter, the reference[1] cited by the commenter is no longer valid. It has been superseded by subsequent guidance,[2] most recently updated in 2013. The new guidance does not recommend an installation training and certification program as a control measure. This is not because EPA thinks there is no value in using certified installers—to the contrary, EPA recommends that consumers use a certified installers in several outreach

[1] Guidance Document for Residential Wood Combustion Emission Control Measures (September 1989).
[2] Strategies for Reducing Residential Wood Smoke.

documents.[3] It is apparently because the existence of industry certification programs makes agency-sponsored programs unnecessary.

The program suggested by the commenter was described by EPA as follows:

> "An installation training and certification program improves RWC (Residential Wood Combustion) device installation and reduces emissions by improving the knowledge of the retailers, chimney sweeps , and others who are involved in the business of installing wood heaters or constructing fireplaces . This program can be either voluntary or mandatory. A voluntary program offers a course in RWC device installation and fireplace design. Individuals and businesses participating in the program are then able to advertise their certification status. Purchasers of RWC devices can choose certified installers on the assumption that installation by a certified installer results in more efficient, less polluting, and safer operation of the device. In a voluntary program, effectiveness is a function of the degree to which installers and purchasers can be convinced that certification provides benefits to the individual homeowner and to the community."[4]

A mandatory program requires that any individual installing an affected device be certified.

Following EPA's example, recommendation that consumers use certified installers has been added to the outreach program descriptions. Also following EPA's example, an agency sponsored training and certification program is not RACM. The mandatory program is not RACM, for the same reasons that other involuntary programs have been determined to be not RACM.

Suggested Measure: Emission offset program requiring builder or owner of a new home to eliminate an existing wood-burning stove or fireplace before being allowed to install a new one.

Response: The suggested control measure has been added to the analysis as a partial implementation of the measure to ban all new installations. The suggested program is described by EPA as follows:

> "Under an emission offset requirement, the builder or owner of a new dwelling would have to eliminate an existing RWC device before the air quality agency would permit the installation of a new RWC device . This may mean that the homeowner or builder would eliminate an existing device that the owner or builder already owns, but more frequently would require the purchase of an RWC device from another individual . This may mean negotiating with other homeowners for the purchase and disabling of their wood stoves, or for the dismantling of their fireplaces." [5]

[3] For example, "EPA recommends that your wood-burning appliance be professionally installed and maintained by a certified technician to insure its safety and proper performance. The safety of your home and family depends on fully understanding and carrying out the critical manufacturer and building code requirements" http://www.epa.gov/burnwise/maintenance.html accessed 12/21/2014

[4] Guidance Document for Residential Wood Combustion Emission Control Measures (September 1989), p. 3-11.

[5] Guidance Document for Residential Wood Combustion Emission Control Measures (September 1989), p. 4-13.

As is currently the case with all involuntary measures, this measure would face of opposition from the local community and would not be practically enforceable. For this reason, the proposed control measure is not technologically feasible at this time.

Partial implementation not considered

ADEC considered partial implementation of many possible control measures, as demonstrated by its division of some control measures into discrete components for assessment. For example, several partial implementations of the broad category "elimination of uncertified stoves" were evaluated: requiring all new stoves to be certified; requiring replacement of all old uncertified stoves by a specified date, or upon property transfer, or only those in rental property, or voluntary replacement through economic incentives. All of these measures are partial implementation proposals.

Partial implementation could redeem a rejected control measure if the partial implementation eliminates the basis for rejection. If the control measure was rejected because of technological infeasibility, partial implementation must identify the subset of situations where the measure would be feasible. If the control measure was rejected because of cost, partial implementation must identify the subset of situations where cost is not an obstacle.

Commenter suggested that several control measures that were rejected in whole might be feasible if applied in part. Commenter provided as an example of its suggested approach a discussion on the ban of green wood. However, the comment does not make clear what partial implementation was being suggested, nor how partial implementation would avoid the central reason for determining that the control measure is technologically infeasible: the widespread community opposition to local regulation of the use of wood as a home heating fuel.

Similarly, it is not clear what specific limitations commenter was contemplating when suggesting that several control measures could be made feasible if implemented in stages or by employing a more targeted approach. As a result, no further analysis is possible, and the RACM determinations were not revised as result of this comment.

Local opposition used as a reason for rejection

Comment: Thus, the reason implementation of certain control measures is infeasible is because ADEC is more concerned with submitting a plan, which will likely be rejected if based on outdated information and an arbitrary conclusion as to its application, than correcting the plan in the first instance.

Response: The commenter's conclusion is incorrect. The reason that certain control measures were determined to be infeasible is because the community has indicated strong opposition to precisely the type of measure being evaluated. The recent referendum, which failed by a small

margin,[6] taken together with the past referenda, indicates that this opposition is diminishing. There is reason to believe that public opinion is shifting towards acceptance of the value, in terms of improvements in human health, of regulations that restrict or eliminate the use of dirtier devices. However, the small margin of failure of the referendum indicates that there is still a large portion of the community opposed to regulation of any kind. The discussion of the economics of home heating provided in the RACM analysis document explains the passion of opposition to regulation.

It is in recognition of this opposition that ADEC has determined, and continues to determine, that the affected control measures are not feasible, and therefore not RACM. The measures determined to be RACM (specifically outreach and education, and incentives to encourage voluntary replacement of old devices which reduces the number of people with a stake in not controlling them) are expected to improve the community's receptiveness to regulation. Many programs across the country have recognized that the ground must be prepared before controls may be implemented. ADEC has determined that, if controls are attempted before the community as a whole is ready, they will not be effective.

Even though the commenter's overall conclusion is incorrect, it makes a valid point regarding the need to submit the SIP on time. There is a statutory deadline by which the plan must be submitted. The determinations underlying the elements of the plan necessarily reflect the best information available at the time that the plan is drafted.

The October referendum had not occurred at the time that the draft Plan was being finalized; the results of the referendum were not verified until the end of October. The Borough Assembly, which was prevented from regulating home heating activities until the failure of the referendum, has only had two meetings since the results became known. It is still in the process of evaluating the new information and its new authority.

The information upon which the SIP is based is not "outdated." It is in the process of being supplemented, but has not been supplanted. Furthermore, even if the basis for the plan were determined to be outdated (which it is not), a conclusion that relied on that basis would not be "arbitrary," because there is a rational basis for the conclusion.

The Borough Assembly has expressed its commitment[7] to gauge the level of community support (and opposition) to individual control measures, and revisit both the SIP and its own ordinances in order to achieve attainment as expeditiously as possible. Nevertheless, the Borough also recognizes the need to meet statutory deadlines for submittal of its SIP, and has therefore expressed its support for the timely submittal of the SIP. If there were no looming deadline, the plan might be improved by delaying its submittal until the Borough Assembly has taken its next

[6] 51.57% to 48.43%. *Election Summary Report, 2014 Regular Election,* October 30, 2014

[7] "[T]he Assembly calls on the Governor, the Congressional Delegation, the Interior Delegation, and the State Departments of Environmental Conservation, Health and Social Services, and Transportation to work together to find additional solutions and resources to help the citizens of the Borough significantly reduce the pollution generated by wood combustion and other sources of PM2.5 and to restore our air to a healthy condition. *Fairbanks North Star Borough Resolution No. 2014-45*

step. However, the deadline exists, the plan must be submitted using information available now, and improvements will need to be incorporated at a later date.

EPA guidance indicates that the capability of effective implementation and enforcement of the measure are relevant factors in the RACM analysis. A RACM measure is, by definition, one that can be implemented with a reasonable amount of effort and with a reasonable expectation of success. A control measure that faces the opposition of nearly half the affected community does not meet that definition.

Comment: Significantly, public opposition to wood smoke regulations is by no means unique to Fairbanks. EPA has recognized that "there are areas where wood heat is a mainstay of rural heating habits and is perceived as a 'constitutional right.'" However, the solution is not to reject a control measure for that reason, but to adjust how it is implemented. For example, "[t]he issue of the individual's right to burn has implications for how a [public awareness] program should approach its message for that area. Obviously, the [public awareness] program element would be more effective at overcoming entrenched resistance to regulation by adopting a stance that emphasizes the benefits of more efficient and cleaner burning [residential wood combustion] devices rather than threats of sanctions for failure to attain the standard." Likewise, control requirements are more likely to overcome public resistance if ADEC and local authorities adopt complementary non-regulatory programs that will ease the transition to cleaner-burning devices and reduce energy use.

By ruling out control measures based on assumed public opposition without attempting to create approaches that could work in the nonattainment are, ADEC has not satisfied its obligation to justify rejection of those measures.

Response: First, the public opposition is not "assumed." The success of the previous initiatives, and the close vote in the defeat of the most recent initiative, demonstrates that opposition to regulation of wood heating appliances is real. Second, ADEC has incorporated into the SIP precisely the sort of "complementary non-regulatory programs that will ease the transition to cleaner-burning devices and reduce energy use." The outreach and education programs, economic incentives, and voluntary curtailment programs all work to increase public awareness of the health implications of particulate pollution and the contribution that individual behavior makes to it. These are all necessary steps to increasing community acceptance of controls that will require that acceptance to be successful.

The control measures that have been rejected are not RACM for Fairbanks because Fairbanks is not yet ready to embrace them.

<u>Incomplete assessment of costs.</u>

Comment: EPA has noted that "[t]he true economic costs of wood burning may be much higher than most people realize. It is important to provide consumers with a means (1) to calculate the actual costs of wood burning (including the value of homeowner's time for cutting and hauling

wood, ash disposal, etc.) and (2) to compare this with alternative heating costs." ADEC has done neither.

Response: The quoted passage does not refer to methodology for economic analysis of control measures, but to educational materials that should be included in public awareness programs.

Assuming that Fairbanks has, on average, much lower winter temperatures than all of the other cities given as examples, it is likely that residents of Fairbanks require more fuel to heat their homes, whether provided by wood, fuel oil, or electricity, which could account for a large portion of the higher costs in Fairbanks relative to the rest of the country. ADEC's cost comparison should be revised to determine the actual costs of wood burning in Fairbanks, the costs of wood burning elsewhere in the United States, and to provide a comparison of costs that accounts for Fairbanks's winter climate, which is much colder than the other cities used as examples.

The heating cost information in the RACM analysis document was provided to explain that the economics of home heating explain why wood burning in Fairbanks is a more passionate issue than elsewhere in the United States. The additional analysis requested by the commenter would not provide additional insight into the issue, or affect the RACM analysis or determinations.

<u>The Proposed SIP fails to require RACT for Major Stationary Sources</u>

Comment: ADEC's own speciation analysis reveals that SO2 emissions constitute roughly one-fifth of the PM-2.5 problem on poor air quality days during the winter. Nonetheless, ADEC has proposed no control measures for any major stationary source, not even for Aurora Energy's Chena Plant or the Fort Wainwright Power Plant—even though the boilers at these plants "are currently not equipped with SO2 controls" and emit hundreds of tons of SO2 each year.

Response: That is correct. As explained in the RACT analysis document, those facilities currently use extremely low sulfur coal for fuel. The costs of controls—both exhaust scrubbing, and shifting to a fuel with lower sulfur content—were assessed, and were determined to be unreasonable considering their small impact on ambient PM concentrations.

Comment: In light of the dispersion modeling purporting to show SO2 impacts well above federal ambient air quality standards, it is plain that major stationary sources in Fairbanks contribute significantly to the local air pollution problem. The Chena and Fort Wainwright plants, in particular, not only emit huge quantities of SO2 in violation of the 1-hour SO2 NAAQs, but these precursor emissions undoubtedly contribute to the exceedances of the 24-hour PM-2.5 NAAQS as well. ADEC therefore should adopt appropriate control requirements for these and other stationary sources along with the measures currently proposed for homeowners.

Response: Questions about the validity of the dispersion modeling aside, this is a PM2.5 SIP. The procedure for determining RACT for SO_2 as a $PM_{2.5}$ precursor does not take SO_2 impacts

into account. As indicated above, the cost of achieving reductions in ambient $PM_{2.5}$ by reducing SO_2 emissions is too high to allow those controls to be deemed RACT.

Comments on the Public Review Process

DEC provided a public review opportunity for the public and interested stakeholders to evaluate and comment on the proposed regulations and air quality plan. The comment period was first noticed in the newspaper on November 17 and ended December 19, 2014. During this process two open houses were held in Fairbanks and North Pole on December 1st and 2nd. DEC aggregated and posted responses to written questions received from the public prior to December 9th. Public hearings to receive oral testimony were held on December 3rd and 17th in Anchorage, Fairbanks, and Juneau. In Fairbanks, two public hearing opportunities, midday and evening, were provide on each hearing day. The public was able to provide oral testimony at public hearings or submit written comments in person, through mail, by email, and through DEC's online comment form.

Summary of Comments: The department received a number of comments with respect to the public review process.

Some commenters felt that the public review process was adequate and provided ample opportunity for everyone to comment. Commenters appreciated the open house opportunities to learn more about the regulations and plan. Other commenters made specific suggestions on improvements for the on-line comment form and having additional, simple handouts that help to summarize main points and provide definitions.

Some commenters felt the public review process was inadequate. They raised concerns about the timing of the release of the material for public review and the short time available to review the large volume of material provided. They noted that the public review process should have occurred earlier or the Plan updated to reflect recent information and events affecting air quality issues in the community.

A concern was also raised that no peer review justification for this proposal was released for public review as required by state statutes, AS 46.14.010 or AS 46.14.015.

Department Response: DEC appreciated receiving comments on the public review process. These comments are helpful because they allow DEC to better plan for future public review processes. Comments on the public process help DEC facilitate more effective public involvement for issues that are important to our communities. Given the deadline for the federal plan, the department was not able to provide a significantly extended public comment period for this proposal. However, previous public comments allowed for extensive input that was used in developing the proposals that were included in this package of regulations along with the local air quality plan.

DEC met and in some areas exceeded the regulatory advertising requirements of the Administrative Procedures Act found in Alaska Statutes Title 44 Chapter 62 and the Alaska Department of Law 20th Edition Drafting Manual for Administrative Regulations. "AS 44.62.190 Notice of Proposed Action" requires agencies to give notice of a proposed action at least 30 days prior to the adoption, amendment, or repeal of a regulation. The agency must

publish a notice in a newspaper of general circulation or trade or industry publication, distribute the notice to interested persons, and may publish the notice in an additional form prescribed by the agency. If the agency decides to hold public hearings, the date, time, and location of the hearing must be published as part of the public notice. DEC also made provisions to take and timely respond to written questions received as required by state statute.

In addition to meeting these regulatory requirements, DEC held two open houses and advertised for these open houses to provide additional opportunities to learn about the issues. At each of these open houses, DEC prominently displayed “How to Comment” which listed out both open houses and hearings in addition to providing addresses, websites as well as comment forms. DEC also held public hearings to take oral testimony on two days, and in Fairbanks offered both midday and evening hearing opportunities.