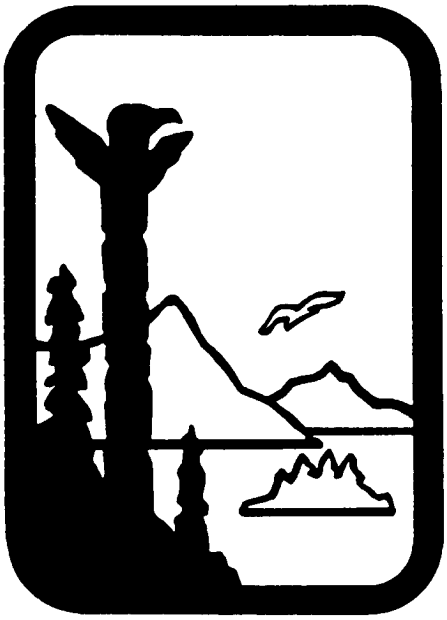
Alaska Department of Environmental Conservation



Amendments to:
State Air Quality Control Plan

Vol. III: Appendix III.D.5.13

{Appendix to Volume II. Analysis of Problems, Control Actions; Section III. Area-wide Pollutant Control Program; D. Particulate Matter; 5. Fairbanks North Star Borough PM2.5 Control Plan}

Adopted

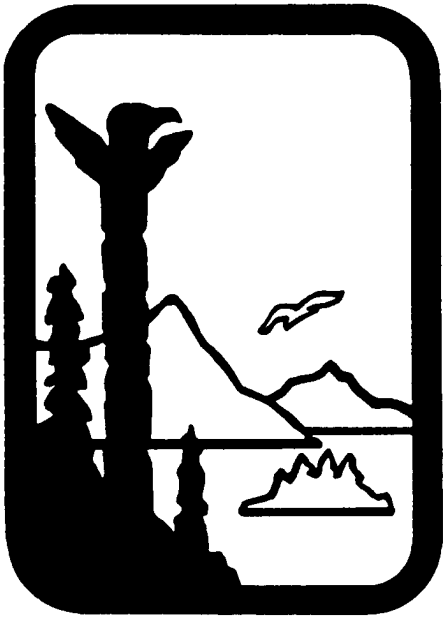
December 24, 2014

Bill Walker
Governor

Larry Hartig
Commissioner

(This page serves as a placeholder for two-sided copying)

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION



18 AAC 50 AIR QUALITY CONTROL

Response to Comments on September 19, 2013 Proposed Regulations:

Open Burning,

Wood-Fired Heating Device Visible Emission Standards,

Solid Fuel-Fired Heating Device Fuels,

Wood-Fired Heating Device Standards,

&

Fine Particulate Matter (PM 2.5) Air Episodes and Advisories

November 14, 2014

INDEX

Introduction

This document provides the Alaska Department of Environmental Conservation's (**DEC**) response to public comments received concerning its September 19, 2013 draft regulations pertaining to Wood-Fired Heating Device Emission Standards, Fuel Standards for Solid Fuel-Fired Heating Devices and fine particulate matter (**PM2.5**) Air Quality Index values for the Fairbanks North Star Borough (**FNSB**) non-attainment area as proposed in Title 18, Chapter 50 of the Alaska Administrative Code (**18 AAC 50**). The details describing the proposed regulation changes are presented in DEC's public notice dated September 19, 2013 and its three supplemental public notices dated: September 24, 2013; November 13, 2013 and December 13, 2013. DEC received comments in the form of emails; electronic comments submitted via DEC's webpage; hand written comments received at DEC's Open Houses; as well as oral and written testimony received at DEC's public hearings. For each section, this document summarizes the public comments received, summarizes and responds to some comments raised that were outside of the regulatory proposal, describes the regulatory options considered upon consideration of the comments, and provides the Department's response to comments and decisions with respect to the regulatory proposal.

Open Burning- 18 AAC 50.065(f)

The proposed amendment to this regulation restricts wintertime outdoor open burning in PM 2.5 non-attainment area between November 1 and March 31. At this time only the Fairbanks North Star Borough (FNSB) is designated as a PM2.5 nonattainment area. The proposed amendment to 18 AAC 50.065(f) is as follows:

> (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)**.

Summary of Comments: Comments on this section of the proposed regulation revisions expressed varying levels of support and concern for winter time open burning restrictions as a means of reducing emissions to help the FNSB Borough Nonattainment Area become compliant with the 2006 24-Hour PM 2.5 National Ambient Air Quality Standard (NAAQS). Some commenters felt that restricting open burning during the proposed period would positively impact air quality without affecting the ability of individuals to heat homes or businesses. Other commenters felt that open burning provided important benefits to individuals and questioned the extent and significance of open burning impacts to ambient air quality. Comments questioned the necessity of a blanket restriction, instead favoring an approach that restricts open burning on days with impaired air quality. Commenters noted that regulations already exist that use this approach by prohibiting open burning on days with declared air quality advisories. Comments addressed the impacts of open burning to air quality and human health, the need for open burning, the impacts of wintertime restrictions, the proposed beginning and end dates for seasonal restriction, and alternatives to the proposed restrictions.

- **Impacts of Open Burning in Winter**

Commenters noted impacts associated with open burning on ambient air quality and human health. These impacts included the release of visible plumes of harmful emissions from open burning practices, contributions of these emissions to poor air quality during inversions, and effects of human exposure to emissions. Comments cited increased medical costs due to aggravation of existing respiratory conditions, emergency room visits, and increased medication usage. Commenters noted that inversions can be prevalent during the proposed time period and that these impacts can be exacerbated by inversions which limit the dispersion of emissions. Commenters described open burning restriction in PM 2.5 nonattainment areas during the season of the highest ambient pollution concentrations as an appropriate, common sense measure.

- **Reasons for Open Burning During Winter**

Commenters expressed varying views of the importance and necessity of the opportunities for open burning during wintertime. Comments noted that open burning fulfilled a variety of needs and that wintertime burning opportunities were needed because of restrictions in other parts of the year by other agencies in response to wildfire

dangers. Other comments noted that regulating open burning will improve air quality in the interior of Alaska while having no impact on people's ability to heat their homes or businesses. The regulation will reduce particulates produced for no other purpose than to burn materials.

Debris Burning

Commenters reported that open burning is a valuable method for disposing of debris. Commenters noted the use of burn barrels to dispose of refuse. Commenters also noted pile burning to dispose of debris such as slash created during wildfire suppression, landscaping, land clearing, fuel cutting, and firescaping. Commenters suggested frequently burning debris in smaller fires of pile sizes of 10' by 10' or smaller with 50' spacing in a manner that produces a hot and short lived fire with little visible emissions can produce fewer emissions than a larger, and longer lasting, fire that smolders.

Commenters noted that controlled burning of slash piles was preferable over leaving them in place to decompose due to the increased risk of decaying piles catching fire during a wildfire. Commenters noted that open burning during winter months with snow cover and cool temperatures is less likely to start a wildfire than during warmer months with conditions that are more conducive to wildfires and that agencies often restrict open burning because of this risk. Commenters argue that the proposed regulation would limit the opportunities to safely dispose of slash piles through open burning during winter and shift open burning to parts of the year with increased wildfire risks. Commenters noted that periods outside of the proposed restriction allow safe burning such as cool fall months including September and October or spring months beginning in April.

Other commenters felt that there were viable alternatives for outdoor burning and noted that the existence and accessibility of refuse stations provides year round disposal options and that disposing of refuse and slash wastes in a landfill is less polluting than disposing of the wastes into the airshed through combustion. Commenters also suggested creating biomass waste collection bins to accommodate slash refuse. Other commenters felt that refuse stations are not always a convenient or practicable alternative to open burning due to labor and transportation requirements that may be unattractive or unavailable to individuals. Commenters questioned the need for outdoor burning during periods of diminished air quality in the winter and mentioned occasions when they had witnessed outdoor open burning during periods of diminished air quality.

Recreational

Comments expressed concern about the applicability of the law to outdoor fires used for warmth, ceremonial, or recreational purposes. There was varying support for restricting open burning from burn barrels, bonfires, campfires, and warming fires. Commenters suggested exceptions to the proposed restrictions for these types of open burning during periods of good air quality. Commenters also suggested

that exemptions be provided similar to those that had previously been included in the Borough's historical open burning program. Comments weighed the significance of traditional customs and events such as burn barrels at outdoor events, fireworks, and celebratory bonfires against their impacts to air quality. Some commenters argued that the magnitude of emissions from recreational fires was not great enough to justify restrictions. Other commenters held that some celebratory fires were significant sources of air pollution such as the annual UAF fall Starvation Gulch bonfire and other bonfire events and suggested those activities be regulated or that all nonessential open burning be restricted.

Commenters were also concerned about the types of fires that would be regulated and feared that the regulation would affect campfires, fireworks, cooking fires, barbeque grills, cigarette smoking, and other small fires. Commenters requested a clarification of the term "open burning" because of the perceived ambiguity in the term which could be used to broadly regulate activities that do not significantly contribute to air quality episodes.

- **Existing Regulations**

Commenters questioned the necessity of the proposed amendment and referenced existing regulations that govern open burning year round. Commenters felt that a blanket restriction would unnecessarily burden individuals that conduct open burning and instead suggested the restrictions only occur during days of poor air quality. Commenters referenced 18 AAC 50.065 (a) that specifies limitations on open burning meant to mitigate potential impacts and 18 AAC 50.065(e) that prohibits open burning on days in which an air quality advisory has been declared. Comments suggested these regulations would prevent open burning impacts on days that matter most. Commenters felt that, because of the existing regulations, the proposed amendment was unnecessary and burdensome.

- **Time Period**

Comments addressing the beginning and end dates of the wintertime season in the proposed amendment expressed varying support for either the proposed dates or for alternative dates suggested by commenters. Some commenters felt that open burning was unnecessary and should be restricted year round. Some comments addressing the proposed dates expressed concern that the period would leave little opportunity for open burning and would unnecessarily inconvenience individuals. Other commenters felt that the proposed dates would adequately protect air quality and human health while also leaving sufficient time to safely conduct open burning during times immediately preceding and following the proposed dates.

Comments also expressed a desire that the beginning and end dates be determined using an analysis of historical air quality advisories to ensure the restriction will have a significant impact on air quality without unnecessarily restricting open burning in periods with little historical air quality impairment. They noted that if exceedances of the 24-hour PM 2.5 NAAQS are common outside of the proposed range, the dates of the open burning prohibition should be extended to reflect the historic data. Comments cited open

burning impacts such as smoke, poor air quality, air quality alerts and advisories, and alleged open burning related exceedances of the PM 2.5 NAAQS during October as reason to change the start of the restriction to dates such as September 1st, October 1st, or October 15th. Other commenters felt that opportunities to burn during September and October were important due to a decreased risk of wildfires and limited chances to burn during the summer. Comments also proposed extending the time period to include April.

- **Enforcement of Proposed Amendment**

Commenters questioned the means by which the proposed regulation would be enforced. Commenters pointed out that the FNSB had removed regulations governing outdoor open burning during the winter in response to a local proposition restricting the Borough's ability to regulate home heating. Commenters also pointed out that DEC lacks the authority to issue citations to enforce the regulation. Commenters wanted to know what consequences would be associated with violating the regulation and what agency would enforce the regulation.

- **Alternatives**

Comments proposed different methods of mitigating impacts from open burning during the proposed time period. Several options were presented including restrictions based on ambient air quality similar to prohibition of woodstove operation, defining allowable open burning conditions, and a permitting system to regulate open burning.

Air Quality Dependent Restrictions

Comments expressed a desire to restrict open burning only on days when open burning would have the effect of causing ambient air quality to exceed or increase beyond the NAAQS or the thresholds used to limit wood burning devices used for home or business heating. Commenters further suggested that outdoor open burning bans should be avoided unless warranted by already diminished air quality. Essentially, restricting open burning only on days with air quality alerts or episodes. Comments questioned the need for new regulations, pointing to regulations that currently prohibit open burning on days that an air quality advisory has been declared. Some commenters question whether much open burning is occurring, whether it is a major contributor to the problem, and whether the ban might be an inconvenience to people unnecessarily.

Allowable Open Burning Conditions

Commenters suggested reducing emissions from open burning by prescribing methods that would allow for more efficient burning with fewer emissions. Commenters suggested that burn piles be no more than 10' x 10' and spaced no less than 50' apart in order to allow for fast, non-smoldering fires. Comments also suggested allowing only certain types of fuels to be burned. They suggested prohibiting open burning of putrescible wastes, garbage, animal carcasses, feces, diapers, treated lumber, plastics, carpet, styrene foam, and other materials that produce harmful or toxic compounds when burned.

Permitting Open Burning

Commenters suggested regulating open burning with a permit process for planned burns or burning of burn piles. Suggestions for implementation included administration by the FNSB Air Quality (AQ) Program or a program coordinated between FNSB AQ and the Alaska Department of Environmental Conservation (ADEC) with permits available online, at the Borough building, Borough Air Quality office, and fire departments. Commenters supported substantial fines for violations of permits or failure to obtain permits.

Commenters suggested that permits regulate and consider some or all of the following:

- Appropriate weather conditions or air quality
- Time of year for burning
- Amount and substance to be burned
- How and when a pile can be burned.
- Maximum size of piles (10x10 foot)
- Public notice/notification ahead of time
- Call-in requirements before burning

Comments Outside the Regulatory Proposal: Comments and questions were received that were outside the specific regulatory proposal. Specifically, these comments suggest mechanisms for permitting of open burns, regulation of the size or timing of open burns, public education about regulations, and enforcement of regulations. Those comments and questions are summarized below.

1) Permitting Open Burning

Comments proposed a permitting system as an alternative to a blanket restriction suggesting that such a program would more closely regulate open burning and provide adequate protections to public health while allowing for individuals to conduct open burning in a safe manner.

Response: Current state regulations require department approvals for large scale controlled burns and firefighter training. Those regulations can be found in 18 AAC 50.065 (g)-(i). The department also has general open burning regulations for smaller open burns, like backyard burning, but not specific permitting requirements.

With respect to open burning in the PM 2.5 non-attainment area, DEC is not moving forward to adopt the draft regulatory proposal as written at this time. After careful consideration, the department plans to re-propose revisions to 18 AAC 50.065(f) for public comment. DEC appreciates that a permit system is another means of controlling emissions from small scale burns, but the Division of Air Quality is not currently staffed at a level to implement an effective permit program for these activities occurring at individual households (ie. backyard burning). To avoid the need for additional state growth in this area, the department is considering, as part of a re-proposal, inclusion of provisions for local air quality programs to have open burn permit programs in lieu of the

department's proposed seasonal restriction. This would allow for a local air quality program to provide more flexible and tailored open burning requirements for a specific non-attainment area rather than just having a blanket wintertime restriction.

2) Need for enforcement and consequences of violations

Commenters pointed to a lack of information about consequences of violation. Commenters want to know how this regulation will be enforced, and if it will be enforced. Commenters ask who will enforce it because borough enforcement capability has been removed. Commenters ask whether violations will be illegal, and what punishments will be imposed.

Response: In addressing any violations of state air quality regulations, the Department of Environmental Conservation Division of Air Quality will use the compliance and enforcement tools for which it is allowed under state statute. The Division has not been given the authority in statute by the legislature to issue administrative penalties for violations of Alaska environmental laws. This means the Division cannot issue "tickets" and must use other tools like written notices of violation, compliance agreements, or in rare cases civil court actions. In most cases, the department finds compliance can be achieved through assisting businesses and individuals in understanding the regulatory requirements and how they can comply.

3) Need for outreach

Commenters pointed out needs for considerable public outreach to attain compliance with open burning restrictions.

Response: The Department agrees that public outreach is important and intends to conduct education and outreach to assist citizens in understanding open burning requirements and how to comply.

4) Summer and winter smoke impacts, health effects, and regulatory approach

Commenters questioned the difference between summertime health effects due to wildfire and winter PM 2.5 related health effects. Commenters also questioned the different regulatory approaches to the two: why summer wildfire smoke and associated health effects are not regulated, but less severe winter air pollution needs to be regulated.

Response: Regardless of the time of year, elevated levels of PM 2.5 from smoke can be a concern for public health. There are differences in how smoke from wildfires and smoke from wood-fired heating devices are addressed under the Clean Air Act. The federal "exceptional events" rule governs which air monitoring data can be waived in determining compliance with the National Ambient Air Quality Standards. In general terms, the federal rules allow exemptions for violations of the standards that are clearly caused by events that are singular/unusual or not controllable. This prevents extensive planning and mitigation from being required for one time unusual events or events that

are beyond our control. Even emissions from naturally occurring wildfires are not automatically exempted from the EPA air quality requirements; they may be 'waived' by the EPA, only if all the EPA criteria established in the exceptional event rule is met. Following is a link to the latest DEC Air Quality Exceptional Events Request to EPA for 2010: http://dec.alaska.gov/air/am/exceptional_events.htm.

One of the main differences between summer wildfire events and wintertime pollution episodes during inversions is that it is human-caused pollution sources that result in violations of the ambient air quality standards in the winter. Human sources of pollution can be controlled and mitigated in a variety of ways to reduce air pollution. Many areas of the country experience air pollution episodes as a result of winter inversion conditions and they all, like Fairbanks, are required to lower their emissions to reduce air pollution to meet the air quality health standards.

5) Are wood emissions really worse than oil-fired heater emissions?

Commenters questioned whether wood smoke is really worse than emissions of oil-fired boilers. They note historic use of both coal and wood in Fairbanks. Commenters ask why oil boilers are not being regulated; some oil boilers are putting out black smoke.

Response: In looking at PM2.5 emissions, on average wood is 500 times more polluting than fuel oil (from local and national wood device heat testing and EPA AP-42 research studies on wood devices). Even though a higher percentage of homes use fuel oil, the burning of wood as either a primary or supplemental heat source has a greater contribution to the area's PM 2.5 than fuel oil. Measurement studies in the Fairbanks area have shown that more than 50% of the PM 2.5 measured on the filters at the monitor sites is from wood burning, with an even higher percentage contribution from wood burning at some monitor locations.

6) Ultimate Goals of DEC

Some commenters stated the expectation that ADEC will regulate the size of your campfire, hotdog and marshmallow fire, pig roast and that ADEC wants to regulate how you cook your food.

Response: After careful consideration, the department plans to re-propose revisions to 18 AAC 50.065(f) for public comment. To address these concerns, DEC plans in the new proposal to better define open burning terms providing additional clarification on what constitutes open burning and how campfires fit in.

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

Commenters expressed that open burning regulations affect direct costs for resident's health care and affect indirect costs related to wildfire suppression, land maintenance, residential firescaping, and nonattainment. Comments focused on the length of the seasonal prohibition noting impacts for the proposed season or a longer season.

Commenters suggested that the Department's proposed open burning season, which allows open burning in October and April, will contribute to failure to meet attainment, which may ultimately result in economic sanctions. Commenters that desired a longer open burning prohibition noted there would be reduced health effects due to open burning and it may reduce state costs for fire suppression during the prohibition period. Commenters noted that allowing open burning in October and April will result in higher health care costs for individuals affected by the smoke during those months. Health costs due to open burning cited by commenters included purchase of indoor and outdoor air monitors, advanced air filtration systems (HEPA and gaseous) for homes and cars, added electrical costs, respirator masks and filters for gases and particulates, doctor visits, emergency room visits, asthma medications, and asthma and cardiac medical costs. Fiscal impacts cited by commenters related to a lengthier open burning ban period also included reduced state costs for fire suppression since October is an increasingly hot, dry month. Open burning in those conditions could potentially lead to an increase in late season wildfire.

Other commenters noted that prohibiting open burning during the winter could increase fiscal costs of wildfires and firefighting if slash piles and wood waste are left in place, adding to ground level fuels that can ignite during summer wildfire season. Seasonal residential yard cleanup activities also result in piles of ground level fuels that would need to be removed to protect residences against fire. Fiscal impacts of banning public open burning could include costs of loading and transporting slash piles to dumps or public biomass waste bins, as well as the costs of expanding or creating, and maintaining public wood waste sites. These costs would affect businesses, residents, and governmental agencies. Commenters also expressed impacts related to longer bans (including additional months) which could reduce residential firescaping activities, ultimately leading to increased wildfire and economic losses due to wildfires.

Commenters suggested that a cost analysis for these regulations is needed.

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

1) Do not implement the proposed regulation (keep current regulation)
2) Implement regulation as proposed
3) Implement proposed regulation with amendments
    a) Clarify definition of open burning (e.g. camp fires exempt, etc.)
4) Expand regulation
    a) Expand time period for the seasonal restriction: October-March 31 or October-April or expand to include September as well.
    b) Establish open burn permit program
        i) Within nonattainment area
        ii) During all or portion of the winter
        iii) Allow small pile burning, etc. during periods of good dispersion.

Department Decision: After careful consideration 18 AAC 50.065(f) will be re-proposed for public comment in conjunction with proposed revisions and additions to definitions in 18 AAC 50.990 related to open burning.

Prohibition of Wood-Fired Heating Device Operation- 18 AAC 50.075(b)

DEC proposed to amend this regulation to give the Department the flexibility to prohibit operation of wood-fired heating devices in areas where an air quality episode has been declared under 18 AAC 50.245. The proposed amendment was as follows:

> (b) **The department may prohibit operation of** [A PERSON MAY NOT OPERATE A] wood-fired heating **devices** [DEVICE] in an area for which the department has declared an air quality episode under 18 AAC 50.245.

Summary of Comments: Comments on this section of the proposed regulation revisions expressed varying levels of support for a regulatory pathway that included prohibition as a mitigating measure in cases of impaired air quality. Commenters opposed to prohibition felt that prohibiting the use of wood-fired heating devices during wintertime air quality episodes would interfere with lifestyle choices and would create an undue burden on individuals trying to heat interior spaces. Comments expressed fear that prohibiting sources of heat would negatively impact an individual's ability to provide heat to survive and prevent property damage in conditions of extreme cold. These comments suggested that prohibition should either not be implemented at all, that it should affect only highly polluting individuals, or should affect only specific classes of wood-fired heating devices. Comments supporting prohibition of wood-fired heating device use during air quality episodes argued that reducing or eliminating the emissions caused by wood-fired heating devices would help the nonattainment area to attain the National Ambient Air Quality Standards and protect public health by preventing worsening of air quality during episodes. Comments suggested providing exemptions to individuals in a variety of circumstances. Comments that supported prohibition of wood-fired heating devices during air episodes felt that the existing regulation prohibiting the use of wood-fried heating devices during air episodes was appropriate and would protect human health. Additional details related to comments on various aspects of the proposed regulation follow.

- **Include All Solid-Fuel Heating Devices**

Comments argued that limiting the scope of the prohibition to wood-fired devices would not lead to attainment of NAAQS and could have unintended consequences. Commenters listed a variety of solid-fuel heating devices that emit PM 2.5 that would not be affected by the proposed regulation. Commenters recommended that the wording "*wood-fired heating devices*" be changed in the final regulation to "*all solid-fuel heating devices*." to include pellet fuel devices, coal-fired heating devices, outdoor wood and coal hydronic heaters or boilers, open burning, waste oil burners, incinerators, wigwams and commercial size (non-permitted) solid-fuel heating devices. Comments argued that although studies have not found these devices to be significant contributors to PM 2.5 levels, the devices are readily available and the proposed regulation could drive a transition to these devices with unintended consequences. Comments noted localized air quality impacts of devices such as coal-fired heaters and expressed concern that the proposed regulations are currently and could further incentivize the purchase and use of coal-fired devices in order to circumvent curtailment actions. Commenters expressed fear that a shift away from solid fuel consumption to diesel fuel oil usage in the non-attainment area could increase SO_x emissions, lead to air episodes due to SOx, and

possibly lead to an expensive requirement to use ULSD in heating devices. Some commenters suggested outright banning of certain classes of devices, such as wood-fired and coal fired outdoor hydronic heaters, from the non-attainment area altogether.

- **Provide Exemptions**

Commenters noted burdens of the proposed regulations on individuals who operate wood-fired heating devices and suggested those may be undue in certain circumstances. Comments noted that wood-fired heating devices are used as the primary heating device for a variety of reasons including lifestyle, economic factors, and necessity. The expense of alternative energy sources such as natural gas, fuel oil, and electricity was proposed to be a major contributing factor to the increasing use of wood-fired heating devices. Comments noted that the financial burden of using those more expensive energy sources would be too great on individuals that meet certain income thresholds. Commenters described being on a fixed income and were concerned that the proposed regulations would result in higher home heating costs if they had to heat with oil instead. Other citizens suggested that the FNSB or the State either subsidize their fuel costs or provide the option of heating with natural gas at a lower cost.

Commenters recommended that the final rule include exemptions for the following:

1) if the resident had a financial hardship; Comments suggested defining income limits for an exemption based on the federal poverty level income requirements.
2) if the wood-fired fired heating device was the resident's or commercial building's sole source of heat; Comments proposed defining "sole-source" of heat based on a lack of alternative devices or an inability to operate other devices due to a lack of electrical service and exempting these individuals due to the impact a prohibition would have on safety.
3) if the resident or commercial building was using an EPA certified wood/pellet stove or EPA voluntary Phase 2 approved pellet hydronic heater. Comments also expressed concern that cleaner burning devices such as EPA certified devices and masonry heaters would be affected by prohibition despite lower contributions to PM 2.5 levels. Comments suggested prohibiting these devices in the same manner as other devices would offer little reward to individuals that have replaced older devices with cleaner burning devices and lessen the incentive to replace older appliances with clean burning devices.
4) unforeseen emergency events; Commenters also expressed concern that exemptions should be made in cases of unforeseen emergency events such as power outages or device failure emergencies that would impact the ability to operate non-wood-fired heating devices.
5) extreme cold temperatures; Commenters expressed concern that wood-fired heating devices are needed to supplement other heating devices during periods of extreme cold and proposed that exemptions to any prohibitions be made during extremely cold periods.

Other commenters felt that no exemptions should be made or that individual exemptions should be permitted with the requirement that individuals take advantage of a device change-out program within a specified time frame.

- **Adding Discretion**

Comments addressing the inclusion of the phrase "the department may prohibit" expressed concern over discretion and the lack of detail about how that discretion would be used. Commenters wanted to know how the prohibition would be triggered, suggesting that the proposed wording is vague, and should be rewritten to define exactly when DEC would prohibit operation of wood-fired heating devices. Commenters expressed concern over the lack of specific curtailment action pathway and presented a variety of options for curtailment actions (see below). Commenters that indicated a lack of approval for the proposed amendment felt that no discretion should be given to the Department and that prohibition should be mandatory in the event of a declared air episode. Other comments expressed concern that without prescribed details, the Department could use discretion improperly in response to political or economic concerns. Comments also noted that since DEC proposed to add discretion to the existing approved regulation adopted and approved in the 1998 SIP, DEC must address the Clean Air Act Section110 (l) requirements – an anti-backsliding provision.

- **Suggested Curtailment Strategies**

Commenters expressed concern over the lack of specific curtailment action pathway and presented a variety of options for curtailment actions. Commenters desired a clarification of potential curtailment actions including criteria, authority, implementation, and enforcement. Commenters suggested specific approaches to curtailment actions. Some comments suggested mandatory prohibitions while others suggested a multi-stage approach used in other areas, like Sacramento, CA or Washington state, that selectively prohibits certain classes of devices at certain pollution thresholds. The comments proposed curtailing the largest sources of PM 2.5 by first prohibiting operation of higher polluting devices that aren't EPA certified while allowing the operation of EPA certified devices. Commenters suggested this would provide an incentive to change out older devices and install newer EPA certified devices. Other commenters expressed concern that prohibiting by device class would unfairly affect device users that burn in a manner consistent with public education recommendations and instead proposed curtailments prescribing maximum emission opacity noting that device emissions are highly dependent on the manner in which they are operated. Commenters also noted a need for enforcement of prohibitions and felt the enforcement actions available to DEC and the FNSB were ineffective or too lengthy which could in effect make curtailment actions voluntary and ineffective.

- **Establish a Clear Regulatory Path**

Commenters stated that the proposed language in 18 AAC 50.075(b) was confusing when compared to the language proposed in 18 AAC 50.245 that would add local programs to

agencies that can prescribe curtailment actions. The commenters suggested that the regulations should be made clearer as to who will issue the curtailment, how the curtailment will be announced and enforced. Commenters wanted further clarification, written into the regulations, concerning who is responsible for announcing and enforcing the air quality episode. Some commenters wanted to see a strong local enforcement presence while other commenters wanted the State to take more of the responsibility, still other commenters wanted no new regulations or their enforcement at all.

Comments Outside the Regulatory Proposal: Comments and questions were received that were outside the regulatory proposal. Those comments and questions are summarized below.

Commenters wanted clarification on 18 AAC 50.075(b), stating that flexibility in the prohibition described is important, but how are such determinations to be made and enforced? Commenters suggested that without measures for enforcement, DEC's regulatory proposals will not have much of an effect. Commenters suggested that the flexibility of the language "may prohibit" opens up the potential for little or no enforcement, questioning how the proposed regulation will be enforced. Commenters wanted to know what agency will be responsible for enforcement when an air quality episode has been determined. Commenters opposed this amendment based on DEC's track record, because it took DEC 4.5 years to address the smoke at Wood River elementary school. Commenters suggested that the local DEC and/or police/state troopers be given the authority to write citations with financial penalties.

Commenters also expressed concerns that DEC may regulate heating oil and that DEC should not require the use of ultra-low sufur diesel (ULSD) for home heating.

1) Enforcement Authority

   DEC is responsible for enforcing these state regulations. In addressing any violations of state air quality regulations, the Department of Environmental Conservation Division of Air Quality will use the compliance and enforcement tools for which it is allowed under state statute. The Division has not been given the authority in statute by the legislature to issue administrative penalties for violations of Alaska environmental laws. This means the Division cannot write "tickets" and must use other tools like written notices of violation, compliance agreements, or in rare cases civil court actions. In most cases, the department finds compliance can be achieved through assisting businesses and individuals in understanding the regulatory requirements and how they can comply.

2) ULSD requirements should not be used for home heating

   Concern for fuel switching and the potential to increase sulfur emissions was expressed. DEC's proposed regulations did not suggest any fuel switching for home heating oil nor any mandate for use USLD.

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

Comments stated that the financial burden of using those more expensive energy sources would be too great on individuals that meet certain income thresholds. Commenters also described being on a fixed income and were concerned that the proposed curtailment regulations would impose restrictions on heating with wood or coal which could result in higher home heating costs if they had to heat with oil or electricity. Other comments suggested that more effort be put forth into providing a natural gas line to residents living in the FNSB while other citizens suggested that the FNSB or State either subsidize their fuel costs or provide the option of heating with natural gas at a lower cost. Additional suggestions to improve costs include continuing the wood-stove change-out program by a non-governmental agency and opening more state land so dry wood is more accessible. Commenters indicated concern that curtailment during extreme cold weather could lead to frozen pipes and property damage that would be costly to repair. Commenters also expressed concern regarding costs to upgrade non-compliant devices, especially items that were not covered by any change out programs such as chimneys, stove pipes, etc.

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

1) Do not implement the proposed regulation (keep current regulation)
2) Implement the regulations as proposed
3) Implement proposed regulation with amendments
    a. Include language clarifying discretion,
        i. Clarifying who will call curtailment and how announced/enforced
            1. In regulation, 18 AAC 50.075(b)
            2. In episode plan within SIP
        ii. Ensure Clean Air Act anti-backsliding provisions are met
        iii. Remove discretion
    b. Provide for exemptions and their timing
        i. Sole-source of heat
        ii. Financial hardship
        iii. Temperature
        iv. Clean burning devices
        v. Timing
            1. Unforeseen emergencies
            2. Two-stage trigger
4) Expand Regulation
    a. Include all solid-fueled heating devices
    b. Include units burn trash or waste oil
    c. Ban certain types of devices

Department Decision: After careful consideration, 18 AAC 50.075(b) will not be amended as proposed. The current language will remain in effect. This addresses concerns raised about the Clean Air Act anti-backsliding provisions and the addition of discretion in applying the existing regulation.

To address the other concerns and suggestions associated with exemptions, timing, and other issues, DEC intends to issue a new regulatory proposal that will include a separate subsection addressing the use of solid fuel-fired heaters during PM 2.5 air episodes. That new proposal will be subject to additional public review and comment.

Solid Fuel Heating Device Fuel Requirements- 18 AAC 50.076

DEC proposed to amend 18 AAC 50 by adding a new section (18 AAC 50.076) to clarify the types of solid fuels that can be burned in heating devices operating within the FNSB PM 2.5 non-attainment area.

> **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 burning devices:
>
> (A) clean wood;
>
> (B) wood pellets made from clean wood;
>
> (C) manufacturer recommended starter fuels including home heating oil, propane, natural gas or wood-based material for dual-fired hydronic heaters; and
>
> (D) biomass fuels approved by the manufacturer.
>
> (2) For coal burning devices:
>
> (A) coal; and
>
> (B) coal pellets.

Summary of Comments: Comments on the proposed regulations limiting the types of fuels that can be used in solid fuel-fired heating devices expressed a variety of levels of support for the proposed regulations. Some commenters articulated a desire for limitations on the types of allowable fuels for solid fuel-fired heating devices and felt that the public health and environmental impacts of certain types of fuels outweighed any economic benefits to individuals and warranted the proposed regulations. Commenters also proposed changes to the types of allowable fuels such as specifying allowable wood moisture content, adding locally manufactured fuels, and specifying allowable types of coal. Other commenters felt that the regulation should not be implemented because it may be duplicative of current regulations, would be counter to a local ballot proposition, could prevent the use of fuels derived from recycled materials, could prevent development of technologies to burn potentially prohibited fuels without impacting air quality, would place an undue constraint on individuals who are financially unable to heat using the specified fuels, or would be unenforceable. Comments addressed the types of fuels used by individuals; the impacts of those fuels, wood fuels, manufactured biomass fuels, coal, and coal pellets; the advantages and disadvantages of implementing the proposed regulation; and proposed altering the list.

- **Regulating Fuels**

Comments expressed a range of support for the proposed regulation that restricts the types of fuels that may be used in a solid fuel fired heating device. Some commenters expressed a desire that individuals cease burning highly polluting improper fuels in their heating devices due to the adverse impacts toxic emissions may have on the health of others and ambient air quality. They felt that the proposed regulation was needed to limit individuals to burning only the fuels that devices were designed to burn and prohibit the incorrect use of fuels and other burnable materials in ways that disproportionately degrade air quality and emit hazardous air pollutants. Commenters recognized that

burning highly polluting fuels provided economic savings to individuals but some countered that any savings realized by those individuals caused the public to incur disproportionately high costs. Other commenters felt that the proposed regulation would place a burden upon individuals that could not afford to heat using fuels specified in the proposed regulation. They felt that the state should not infringe on the ability of any individual to heat interior spaces using any means necessary and that the proposed regulation would be counter to citizen's wishes as expressed in local ballot propositions that removed the FNSB's ability to regulate fuel types. Other commenters noted that the consequences of using fuel for which a device was not designed can go beyond impacting air quality. They stated that device warranties may be voided by the use of incorrect fuels and mentioned increased risks of explosions, chimney fires, and structural fires. Commenters felt that these potential outcomes could pose safety and liability concerns, increase public emergency response costs, and unnecessarily place firefighters and other first responders at risk.

- **Currently Used Fuels**

Commenters mentioned a variety of fuels that they believe are or could be used in solid fuel-fired heating devices. Commenters noted the widespread use of the fuels included in the proposed regulation including wood, wood pellets, biomass fuels, coal, and coal pellets. Comments also alleged the use of a variety of highly polluting fuels not mentioned in the proposed regulation such as stained or painted wood, chemically treated lumber, wood treated with creosote, chromated copper arsenate, or pentachlorophenol, manufactured boards, tires, rubber, plastics, paint, solvents, styrene, foam, carpeting, trash, garbage, used or waste oil, diapers, animal carcasses, sewage, animal feces, lawn clippings, and supported prohibiting the use of these highly polluting fuels in solid fuel heating devices. Commenters also alleged that some individuals may burn any combustible materials regardless of potential impacts. Commenters reported being affected by emissions from neighbor's solid-fuel heating devices burning improper fuels including green and un-split wood. Commenters asserted that although most individuals using solid fuel-fired heating devices likely do so in a manner that minimizes emissions, air quality is negatively affected by individuals fueling solid fuel-fired devices using improper fuels.

- **Wood**

Current Use

Commenters described current wood burning practices in the nonattainment area. Commenters note that the use of wood is popular because it is more economical than using fuel oil or electricity to heat especially when harvested by the individual. Commenters also note that wood is an important supplemental heating fuel during periods of extreme cold, is a traditional lifestyle method of heating, is a renewable resource, and may be a building's sole source of heat. Comments noted that many individuals harvest their own wood fuels from private or state lands and process that wood themselves. Commenters cited study findings that 58% of Fairbanks residents supply all of their own wood and 22% supply at least

some of their own wood but that only 40% of wood burned is adequately cured. Commenters describe wood smoke as the source of 60-80 percent of winter PM 2.5. Some commenters suggested that burning wet wood contributes significantly to PM 2.5 levels and should be prohibited. Commenters described processing wood for fuel use and following the "Split, Stack, Store and Save" educational campaign. Some commenters indicated support for the educational program, adhere to its wood seasoning recommendations, and would like the program to continue or expand to reach younger audiences. Commenters also noted that individuals continue to burn wood that has not been split, has not been seasoned, or has become wet due to wet storage conditions. Commenters also said that individuals obtain processed wood fuel through commercial distributors and the moisture content of that wood is not regulated or typically advertised. Commenters also note the availability and use of treated lumber and manufactured boards that contain harmful chemicals and produce harmful emissions.

Availability

Commenters described the availability of wood fuel. Individuals described cutting, processing, and seasoning wood fuel harvested from private and public lands open to wood cutting. Commenters suggested that additional state lands be opened to fuel cutting to increase the availability of dry wood. Commenters also propose that opening additional lands to the harvest of fuels would reduce wildfire fuel and allow for harvest and efficient combustion of wood that may otherwise burn inefficiently and produce pollutants in a wildfire. Commenters note the availability of commercially harvested firewood and cordwood. Commenters note that wood can be delivered to an individual's home and is a source of wood that requires little advanced planning or effort to obtain and burn. Comments also note that commercially sold wood is not subject to any moisture requirements and businesses may be providing wet or unseasoned wood to consumers. Comments also noted the availability of treated wood that contains binders or preservatives such as chromated copper arsenate, creosote, and pentachlorophenol that give off toxic emissions when burned. Commenters reported the availability of chemically treated or preserved wood debris at landfill transfer sites that individuals sometimes scavenge to burn.

Moisture Content

Commenters had various suggestions related to wood moisture content and offered ideas for moisture content requirements. Those comments that proposed restricting wood moisture levels to 20 or 25 percent wet weight or less, suggested adding such a requirement to either this proposed amendment or to the definition of "clean wood" in 18 AAC 50.990 (135). Commenters noted that burning un-split, unseasoned, green, or wet wood decreases efficiency, causes unsafe creosote buildup in chimneys, and creates excessive smoke and toxic particle pollution. Commenters noted that EPA certified woodstove emissions were highly

dependent on the manner in which they are operated and that the 2.5 gram per hour rating a woodstove receives is based on the burning of dry crib wood. Commenters said that a 2.5 gram per hour woodstove would burn dirty with the use of wet wood regardless of its emissions rating. Commenters felt that implementing emission limits for new woodstoves without requiring their correct operation by using dry and seasoned wood would do little to achieve meaningful woodstove emissions reductions.

Commenters suggested that seasoning and maintaining dry wood was easily done with advanced preparation and suggested continuing educational campaigns to educate the public about wood cutting, splitting, and seasoning to help individuals understand the benefits of burning properly seasoned wood. Other commenters felt that the supply of dry wood accessible to residents of the nonattainment area was insufficient and such a requirement could cause financial impacts to individuals who had not seasoned wood or could not commercially obtain dry wood. Commenters argued that that state should facilitate compliance with any regulations that require the use of dry, seasoned wood by increasing the availability of dry, seasoned wood to the public. To increase the public's access to dry wood commenters proposed opening additional state lands to fuel cutting to allow for access to dead standing fuel. Commenters also suggested a warehouse wood exchange program should be created, similar to the woodstove exchange program, to allow individuals to trade freshly cut wood for dry, seasoned wood.

- **Wood Pellets**

Commenters noted the availability and use of wood pellet fuels and supported their inclusion in the proposed amendment. Commenters said that pellet burning devices were economical, convenient, efficient, and clean burning. Commenters noted the availability of locally manufactured wood pellets and felt that pellets were an easier fuel source to obtain, handle, and store than cordwood.

- **Coal**

Commenters expressed varying levels of support for the regulations regarding coal in the proposed amendment. Commenters noted that coal is used as a fuel in certain heating devices and expressed differing opinions about the reasonableness of its use in the nonattainment area. Commenters pointed out that coal is currently used both in very rural areas and in urban areas including downtown Fairbanks and North Pole by individuals, businesses, and organizations. Some commenters felt that coal is a locally extracted resource that is more economical than fuel oil and should remain allowable in the proposed regulation. Other commenters felt that the impacts of coal emissions to air quality and human health were disproportionate to any fuel savings realized by coal burning individuals. Commenters described coal as being a dirty fuel and cited evidence that coal fueled appliances emit up to thousands of times more emissions than oil burning devices. Commenters reported decreased air quality from local coal burning appliances and related negative impressions of air quality gained through travel to other regions in

the country that predominantly use coal. Comments noted that as written, the regulation does not specify the types of coal that can be used. Comments cited manufacturer requirements for the use of anthracite or bituminous coal in appliances and characterized the local coal as consisting mainly of sub-bituminous coal and lignite. Commenters felt that requiring the use of anthracitic or manufacturer specified coal types would ensure safe and efficient operation of coal burning devices when compared to an increased risk of structural fire and increased emissions produced by burning lower grade sub-bituminous coal and lignite. Other commenters felt that coal use should be outright prohibited from either urban areas or the entire nonattainment area due to the high and disproportionate emissions of a coal-fired heating device when compared to other heating devices.

- **Geographic Area of Applicability**

Comments addressed the regional applicability of the proposed regulation. Comments proposed the area to which the proposed regulation apply encompass a greater area than the nonattainment area such as the entire Fairbanks North Star Borough or the entire State of Alaska. Comments mentioned instances of nuisance or hazardous smoke from solid fuel heating devices outside of the nonattainment area. Commenters argued that extending these regulations to other parts of the state would protect ambient air quality and human health throughout the state.

- **Current Regulations**

Commenters that addressed the need for the proposed state regulation either felt that current state regulations were sufficient or felt that the current regulation was insufficient and the proposed regulation would be more easily interpreted by the public. Commenters noted 18 AAC 50.110 that currently stipulates that "no person may permit any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property. (Eff. 5/26/72, Register 42)". Commenters felt that this regulation prohibits the emissions produced by the combustion of materials restricted by the proposed regulation and that the proposed regulation was unnecessary. Other commenters felt that the current regulation was vague and did not help individuals to understand how to comply with the regulation. Those commenters argued that the proposed regulation would help individuals to comply by specifying allowable fuels instead of prohibiting actions based on subjective interpretations of impacts of which individuals may or may not be aware.

Commenters also addressed current FNSB regulations and recent ballot initiatives concerning solid fuel heating. Commenters either felt that the proposed state regulation was needed because ballot initiatives had removed the FNSB's ability to regulate fuel types or that the proposed regulation could violate the will of voters to not have fuels regulated. Commenters that said the FNSB had insufficient protections argued that state regulations would help to protect public health and felt that public health issues should be decided by public health officials and not popular vote.

- **Enforcement**

Comments that addressed the enforceability of the proposed regulation questioned how the rules would be enforced. Some commenters suggested penalties while other commenters argued that authorities would be unable to determine what kinds of fuels were being burned in woodstoves without searching homes, properties, or sampling plumes and commenters vehemently opposed this possibility. Comments proposed that prima fascia evidence consisting of opacity readings, air sampling and monitoring, and citizen complaints could be used to determine compliance with the law. Commenters also addressed the possibility of placing restrictions on commercial sellers of fuels to ensure that the fuel sold in the nonattainment area met the characteristics described in the adopted regulations. Commenters noted that the availability of data to consumers was sparse concerning the moisture content of purchased cordwood. Commenters suggested that regulating the sale of fuels would help to ensure compliance with any possible regulation concerning wood moisture content. Comments expressed a desire for wood moisture content disclosure requirements on sellers to help consumers avoid purchasing inefficient and polluting unseasoned or wet wood. Commenters also proposed a restriction on sellers that allowed only the sale of wood that had been tested and labeled with a moisture content of 20% or less by weight and mentioned regulations in other states that make it illegal to advertise, sell, or supply wood that has a moisture content of greater than 20%. Commenters argued that these requirements on sellers would decrease the use of wet wood by allowing consumers to make informed choices or by preventing the sale of wet wood entirely. Commenters indicated that some wood sellers already work to provide only seasoned and dry wood while others felt that the industry's capacity to provide seasoned and dry wood could not sustain the community's demand for cordwood. Commenters also noted that consumers may season the wood they obtain from sellers themselves before burning and that adding a requirement for sellers to season wood could increase the cost of cordwood to consumers. However comments also suggested requiring the sale of dry wood directly before and during the heating season to prevent the burning of wet wood while also giving consumers the chance to season commercially purchased wood during the summer.

- **Proposed Changes**

Commenters proposed changes to the proposed regulations such as altering the required characteristics of allowable fuels, adding allowable fuels to the list, or explicitly prohibiting the use of certain fuels.

Altering Required Characteristics:

The comments that suggested altering the required characteristics of allowable fuels specifically mentioned wood and coal. Commenters proposed that wood be clean, split, have a moisture content of 20% by weight or less, and seasoned. Commenters felt that by burning clean, dry, and seasoned wood, individuals would be able to heat more efficiently, require less fuel, and cause fewer emissions when compared to burning dirty, wet, unseasoned wood. Commenters

suggested that these requirements could either be incorporated into this section or into definition 135. Other comments proposed adding language that would ensure the use of dry, seasoned wood by requiring that wood be seasoned for various lengths of time such as 6 months to a year.

Commenters that addressed coal characteristics sought to either implicitly allow or prohibit the use of regionally mined coal. Commenters that felt local coal should be an allowable fuel argued that it is a local resource that financially supports local industry and is less expensive to purchase than imported coal. Other commenters that felt local coal should not be allowed arguing that it predominantly consists of low grade sub-bituminous coal and lignite that contains moisture, burns less efficiently and produces more PM 2.5 emissions. Commenters noted that many coal-fueled devices specify the use of higher grade coal such as anthracite and that the use of local coal represented a risk to the individual operator and general public due to the possibility of explosions, the possibility of fires, and greater emissions.

Including Other Fuels as Allowable:

Commenters expressed a desire for the inclusion of other allowable fuels to the proposed regulation. Comments noted the development of new solid fuels in the nonattainment area and felt that the regulations could prevent the use of these forms of fuel such as pellets or logs made from recycled materials or biomass. Commenters expressed a desire that these locally manufactured fuels be added to the list to allow for sustainable local economic activity and to lessen fuel costs to individual consumers when compared to other fuel sources.

Prohibition of Fuels:

Commenters proposed alterations to the regulation that would explicitly prohibit certain fuels. Comments proposed adding language that would prohibit burning materials that are not specified by a device manufacturer; generate noxious, poisonous, or injurious fumes; or are contained in lists developed by NESCAUM or other states. Commenters noted that lists such as those developed by NESCAUM and other states could be adopted by reference.

Comments Outside the Regulatory Proposal: Comments and questions were received that were outside the specific regulatory proposal. Those comments and questions are summarized in more detail below. Commenters felt that the regulation should prohibit certain fuels instead of listing allowable fuels. Commenters also suggested mechanisms that would ensure availability of dry wood to individuals by either opening additional state lands to fuel harvest or placing regulatory restrictions on wood sellers. Commenters also expressed confusion and concern about how the proposed regulation would be enforced.

1) Reasons for Listing Allowable Fuels Instead of Prohibited Fuels

As noted above, commenters expressed belief that listing what is a prohibited fuel would better serve the community and didn't understand why just allowable fuels were listed. Response: The department recognizes the value of having a list of prohibited fuels included in the regulation to provide greater clarity to the public with respect to fuels that should and shouldn't be burned in solid fuel-fired heaters. In response to the concern that the proposed regulations do not have a list of prohibited fuels, DEC plans to re-propose a revised version of 18 AAC 50.076 for further public review and comment. The department plans to include a list of prohibited fuels along with the list of appropriate fuels in the new proposal.

2) Wood Exchange Program

Commenters support a wood exchange program by which wet firewood could be exchanged for dry wood. Commenters consider this warranted, as a stove exchange program already exists. Commenters note that regulations forbidding burning of wet wood would force adoption of wood exchange or other programs.

Response: A wood exchange program may be a viable option to promote additional dry wood supply in the community. There are a number of ways a wood exchange could be established, ranging from a private enterprise to a cooperative/non-profit operation to a government program. In considering such a program, there would be a number of practical, logistical, and operational challenges to address along with funding to initiate and operate the program. Exchanging wood means that wood is handled multiple times, which may be a practical deterrent to participation by some in the community. It is our understanding that the Fairbanks North Star Borough has explored this idea to some extent but has not opted to move forward with such a program to date. The Department will make the Borough aware of the comments of support that were received for this type of program.

3) Regulations on Wood Sellers

Commenters also addressed the possibility of placing restrictions on commercial sellers of fuels to ensure that the fuel sold in the nonattainment area met the characteristics described in the adopted regulations. Commenters noted that the availability of data to consumers was sparse concerning the moisture content of purchased cordwood. Commenters suggested that regulating the sale of fuels would help to ensure compliance with any possible regulation concerning wood moisture content. Comments expressed a desire for wood moisture content disclosure requirements on sellers to help consumers avoid purchasing inefficient and polluting unseasoned or wet wood. Commenters also proposed a restriction on sellers that allowed only the sale of wood that had been tested and labeled with a moisture content of 20% or less by weight and mentioned regulations in other states that make it illegal to advertise, sell, or supply wood that has a moisture content of greater than 20%. Commenters argued that these requirements on sellers would decrease the use of wet wood by allowing consumers to make informed choices or

by preventing the sale of wet wood entirely. Commenters indicated that some wood sellers already work to provide only seasoned and dry wood while others felt that the industry's capacity to provide seasoned and dry wood could not sustain the community's demand for cordwood. Commenters also noted that consumers may season the wood they obtain from sellers themselves before burning and that adding a requirement for sellers to season wood could increase the cost of cordwood to consumers. However comments also suggested requiring the sale of dry wood directly before and during the heating season to prevent the burning of wet wood while also giving consumers the chance to season commercially purchased wet wood during the summer.

Response: In response to concerns that the proposed regulations do not address commercial wood sellers, DEC plans to re-propose a revised version of 18 AAC 50.076 with a new section addressing some aspects of commercial wood sales. The new proposal will be subject to additional public review and comment. DEC also plans to initiate a voluntary program late in 2014 that would encourage commercial wood sellers to provide information on wood moisture content to their consumers when wood is sold. DEC also plans to establish a voluntary certification program for dry wood vendors. Wood sellers that agree to the moisture content disclosure and/or certified dry wood program requirements will be listed on the DEC Internet web site to assist consumer confidence in understanding the moisture content of the wood they purchase and in locating sources of dry wood.

4) Enforcement Concerns

As noted above commenters had enforcement concerns and questions.

Response: DEC is responsible for enforcing and final regulations. In addressing any violations of state air quality regulations, the Department of Environmental Conservation Division of Air Quality will use the compliance and enforcement tools for which it is allowed under state statute. The Division has not been given the authority in statute by the legislature to issue administrative penalties for violations of Alaska environmental laws. This means the Division cannot write "tickets" and must use other tools like written notices of violation, compliance agreements, or in rare cases civil court actions. In most cases, the Department finds compliance can be achieved through assisting businesses and individuals in understanding the regulatory requirements and how they can comply.

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

Commenters addressed the fiscal impacts to individuals heating spaces using fuels not allowable under the proposed regulation or in final regulations that may incorporate suggestions found in the comments. Commenters felt that individuals may need to burn any combustible material to heat spaces and that limiting those individuals to burning certain fuels would cause financial strain or hardship. Other commenters said that wood could be harvested and seasoned inexpensively or that the cost savings to individuals or businesses should be compared to costs incurred by the public. Commenters also felt that any regulation that explicitly or implicitly

prohibits the use of Healy coal would force coal burners to use more expensive coal types that are not locally extracted or would lead to expensive replacement of coal burning devices with devices that burn other fuels.

Commenters also addressed potential savings to individuals that heat with cleaner burning fuels such as seasoned and dry wood. Commenters noted increased heating efficiency and decreased maintenance costs associated with burning clean, split, dry, and seasoned wood.

Commenters addressed the costs associated with health issues caused by breathing pollution in part caused by burning of solid fuels that release harmful emissions. Commenters indicated having purchased and incurred expenses operating home and car filtration systems including particle counters, HEPA filters, masks and gaseous pollutant filters. Commenters reported incurring significant medical expenses from emergency room visits, specialist appointments, medications, treatments, and surgeries. Commenters also reported lost work, recreation, and schooling. Commenters were also concerned about decreased property values due to impaired ambient air quality.

Commenters that addressed financial impacts of increased risk of fires and explosions to building owners and occupants and to public services felt that the proposed regulation would lead to decreased cost and risk. Commenters noted the increased likelihood of chimney fires from creosote accumulation, house fires, and explosions resulting from the use of improper fuels in solid fuel heating devices. Commenters noted that firefighters and first responders must use financial resources to respond to these emergencies and that building owners and occupants are financially impacted by such emergencies. Commenters argued that encouraging the use of proper fuels in devices by implementing the proposed regulation would decrease the incidence of fires and lower risks and costs associated with responding to them.

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

1) Do not implement the proposed regulation (keep current regulation)
2) Implement the regulations as proposed
3) Implement the proposed regulation with amendments
    a. Include language:
        i. Requiring the use of split and seasoned wood that meets moisture criteria
        ii. Specifying lengths of time wood must dry
        iii. Requiring the use of anthracitic or bituminous coal and coal pellets
        iv. Allowing the use of fuels made of recycled or biomass materials
        v. Requiring use of manufacturer or warranty specified fuels
    b. Specifically prohibit fuels
        i. List prohibited fuels
        ii. Prohibit coal
        iii. Prohibit fuels that release noxious, poisonous, or injurious emissions
        iv. Incorporate NESCAUM or other lists by reference

4) Expand Regulation
    a. Regulate wood moisture content through controls on suppliers and retailers
    b. Make regulation apply statewide
    c. Ban certain types of devices

Department Decision: DEC appreciates the many and varied comments received on this proposed regulation. After careful consideration, DEC is not planning to move forward with the proposed regulations as written. Instead, the department plans to make additional revisions to the draft requirements in 18 AAC 50.076, which will be re-proposed for additional public review and comment.

Wood-Fired Heating Device Emission Standards- 18 AAC 50.077

DEC proposed to amend 18 AAC 50 by adding a new section (**18 AAC 50.077**) to establish particulate matter emission limits for new wood-fired heating devices, including outdoor hydronic heaters and woodstoves, being manufactured, sold or installed within the FNSB PM 2.5 non-attainment area.

18 AAC 50.077. Wood-fired heating device standards.

(a) **Applicability**. These regulations apply to

(1) air quality and special protection areas identified in 18 AAC 50.015(b)(3);

(2) any manufacturer, supplier, distributor or person intending to sell, lease, distribute, market, or convey a new wood-fired heating device for use in areas listed in (a)(1) of this section; and

(3) any person who owns or operates a wood-fired heating device in areas listed in (a)(1) of this section.

(b) **Prohibitions**. Except as provided in (4) of this subsection, no person subject to (a) of this section may supply, distribute, lease, sell, convey, or install

(1) a new hydronic heater unless the model has been

(A) tested by an EPA-accredited lab to meet the particulate matter emission limit of 2.5 grams per hour using the EPA hydronic heater test procedure, "Test Method 28 WHH for Measurement of Particulate Emissions and Heating Efficiency of Wood-Fired Hydronic Heating Appliances", approved by EPA as of October 12, 2011 and adopted by reference; or

(B) listed on EPA's Phase II White Tag Model list, provided the unit meets the emission standard in (A) of this subsection and its rated size is under 300,000 BTU as of {*the effective date of regulation*};

(2) a new woodstove unless the model has been

(A) tested by an EPA-accredited lab to meet the particulate matter emission limit of 2.5 grams per hour using the applicable EPA Test "Method 28" and appropriate emission concentration measurement procedures "5G" or "5H" found in Appendix A to Part 60, revised as of December 23, 1971 and adopted by reference; or

(B) listed on EPA's certified woodstove list, provided the unit meets the emission standard in (A) of this subsection and its rated size is under 300,000 BTU, as of six months after the {*effective date of regulation*}.

(3) a new wood-fired heating device greater than 300,000 BTU unless the model has been

(A) tested by an EPA-accredited lab to meet the particulate matter emission limit of 2.5 grams per hour using ASTM test procedures E2515-11, approved as of November 1, 2011, and E2618-09, approved as of February 15, 2009, and adopted by reference.

(4) the prohibitions in subsection (b) do not apply to:

(A) the supply, distribution, lease, sale, conveyance or installation of a new wood-fired device by a person subject to (a) of this section where that person has confirmed in writing with the buyer or user of the device that they intend the device will be installed and used in an area other than one of the areas described in (a) (1) of this section.

(B) the sale, lease or conveyance of a wood-fired heating device where the device is being sold, leased or conveyed as part of a single or multifamily residence and the device was installed in that residence prior to {*effective date of regulation*}.

Summary of Comments:

- **Grandfathering**

Commenters addressed the applicability of the proposed regulation to only devices sold and installed after the adoption of any regulations. Commenters argued that this would in effect grandfather older devices that would be noncompliant under new regulations and could have varying impacts. Commenters that felt that, by grandfathering older devices, any regulations would fail to have an appreciable impact on current air quality were countered by commenters that felt that not grandfathering older devices would have a significant negative impact on the local economy.

Comments expressed concern that the proposed regulations would not significantly improve air quality in the nonattainment area because they would grandfather devices that currently contribute significant emissions and could last for many years. Commenters felt that allowing currently operated highly polluting devices to continue to operate would not improve air quality. They said that allowing the worst polluters to continue polluting by grandfathering their devices was preposterous. However, commenters noted that 18 AAC 50.110 – Air Pollution Prohibited (Eff. 5/26/72, Register 42) would still govern the operation of any grandfathered device. Comments noted that solid-fuel heating devices can last for decades before needing to be replaced and that the proposed regulation would not be able to reduce pollution from such devices until many years into the future. Commenters argued that this would do nothing to resolve air quality issues in hotspot areas and would slow the change-out of older devices for efficient and clean new devices. In addition, commenters said that many potentially non-compliant devices were being installed in response to the proposed regulations. Commenters desired regulations that would require replacement of highly polluting devices either immediately or over a period of time.

Commenters expressed concern that not grandfathering heating devices would require individuals and businesses to purchase and install new heating devices at significant expense. Commenters suggested that these economic impacts could include lack of disposable income to spend at area businesses and undue financial costs to individuals unable to afford compliant heating devices. Other comments countered that individuals could take advantage of programs such as the borough change-out program to reduce any associated costs. Comments indicated, however, that individuals may be unwilling to participate in the government-run program or be unable to afford any upfront or other costs not covered by the FNSB change-out program. Comments suggested modifications to the FNSB change-out program to alleviate these and other challenges such as transferring the program to a non-government entity, eliminating required upfront costs, funding the entire cost of purchase and installation of a heating device, funding

inspection and modifications to flues and chimneys, and prioritizing low-income individuals and highly polluting devices.

- **Geographic Area of Applicability**

Commenters that addressed the geographic area in which the proposed regulations would cover had a variety of opinions about the areas of the state this regulation should apply to. Commenters that argued that the regulations should apply to areas outside of the nonattainment area raised a variety of points. Some commenters argued that the air quality protections offered by these regulations could benefit air quality in other areas of the state or areas outside of the nonattainment area such as adjacent neighborhoods. Other commenters worried about the implications of only regulating device sales in the nonattainment area. Commenters argued that placing limitations on the supply, distribution, or sale of heating devices only in the nonattainment area would enable individuals to bypass the regulations and purchase appliances in other areas accessible by road. Commenters felt that individuals would travel to retailers on the road system that were not affected by the proposed regulation to skirt the proposed regulation and obtain an uncertified device. Commenters worried that this would put retailers in the nonattainment area at a competitive disadvantage and reduce the effectiveness of the proposed regulation. Other comments suggested that allowing retailers in the nonattainment area to sell noncompliant devices if the customer verifies in writing that they intend to install the device outside of the nonattainment area would allow for customers to easily subvert the regulation by providing a false verification. Comments suggested that customers should be required to provide a notarized verification specifying the physical address the appliance would be installed.

- **Coal-Fired Devices**

Commenters noted the proposed regulations do not place restrictions on the supply, distribution, lease, sale, conveyance, or installation of coal-fired heating appliances. Commenters indicated that coal-fired heating devices were currently used in the nonattainment area and had disproportionately negative impacts on air quality. They cited a study that found fuel oil to be 137 times cleaner burning than a coal stove and 2,328 times cleaner burning than a non-qualified coal-fired hydronic heater. Commenters also note that coal combustion emits more and different pollutants than wood combustion including potentially harmful metals. Commenters felt that a lack of regulations regarding coal-fired device supply, distribution, sale, lease, conveyance, or installation would incentivize consumers to switch to heating residences and buildings using coal-fired instead of wood-fire heating devices. Commenters noted that while studies have shown that coal currently contributes only a small fraction of the total PM 2.5 emissions, inadvertently increasing the usage of coal-fired heating devices could cause that contribution to grow to a significant enough percentage of overall emissions that it could require a time-consuming and controversial regulatory package proposal process for coal-fired devices similar to the current proposal for wood-fired heating devices. They suggested regulating coal-fired devices now would avoid the possibility of a similar effort in the future.

Commenters requested that emissions standards apply to coal-fired heating devices and that such emission standards should exist due to the inclusion of coal as an approved fuel type in the proposed regulations package. Commenters noted that no EPA emissions testing methods or standards currently exist for coal-fired heating devices. Comments suggested that Alaska create such testing methods and standards. Commenters noted that DEC had indicated that developing emission standards for coal-fired heating devices would require significant research, testing, time, and resources; regardless, commenters desired some form of emissions standards for coal-fired heating devices. Commenters suggested emissions standards based on opacity readings, such as emitting no visible emissions or allowing visible emissions for only 6 minutes of any 60 minute period, as an alternative to developing emissions standards through research and testing.

Other comments suggested that the fuel savings to individuals heating their homes or businesses using coal-fired heating devices were significantly outweighed by health and other costs incurred by the public as a result of the emissions of those devices. For this reason, commenters suggested coal-fired heating devices be banned altogether in the nonattainment area or in any populated area. They suggested prohibiting the installation of new coal-fired heating devices and either an immediate prohibition of their use or a phase out of coal-fired device use over a several year period.

- **Hydronic Heaters**

Commenters addressed hydronic heaters. Commenters indicated that there are an estimated 150 Outdoor Hydronic Heaters in the nonattainment area and expressed varying opinions about the reasonableness of their use in the nonattainment area, the reasonableness of the proposed regulation, and offered alternatives to the proposed regulation.

Some commenters felt that the use of outdoor hydronic heaters was an economical alternative to heating by more expensive means such as fuel oil or electricity. Commenters also noted that hydronic heaters provide greater benefits and safety to users when compared to woodstoves. Commenters said that hydronic heaters provide individuals with hot water and provide heat for an entire building whereas a woodstove may provide heat for only a single room. Commenters also said that outdoor hydronic heaters provided increased safety to individuals due to decreased risk of indoor CO poisoning, indoor smoke, and chimney or structural fires. Some commenters said that outdoor hydronic heaters, while economical, were inconvenient due to maintenance and fueling requirements. Commenters said that some outdoor hydronic heaters were operated only for economic reasons and users may switch to more convenient heating oil if it were less expensive.

Other commenters felt the use of hydronic heaters in the nonattainment area was unreasonable due to their impacts to ambient air quality and public health. Commenters suggested prohibiting the use of hydronic heaters either in the nonattainment area, the entire Fairbanks North Star Borough, or any populated area. While some commenters reported operating hydronic heaters in populated areas without complaints from neighbors, other commenters reported individual financial and health impacts from the

emissions of their neighbor's hydronic heaters and noted that hydronic heater emissions may have highly localized impacts that are not measured by air monitors. Commenters noted the two outdoor hydronic heaters near Woodriver Elementary School that were declared to be a public nuisance and had caused $500,000 in documented expenses over a four year period. Commenters said that these boilers were EPA Phase 2 qualified devices but still had significant negative impacts on neighbors and school students and staff including missed days of school and or work, asthma attacks, discomfort, increased medical costs, and ongoing medical conditions. Commenters argued that the fuel savings to individuals were outweighed by the costs incurred by the individuals and the public. Commenters stated that those costs included absences from school, missed days of work, air filtration systems, increased health care, travel, relocating, and loss of future productivity.

- **Masonry Heaters**

Commenters that addressed masonry heaters and rocket stoves detailed their benefits when compared to other solid-fueled heating devices and argued for modifications to the proposed regulation to allow for their use and installation in the nonattainment area. Commenters said that masonry heaters and rocket stoves are highly efficient and clean burning wood-fired heating devices because of the ability to store and radiate heat stored from short, hot, and efficient fires rather than continuous, smoldering fires often required in other devices. Commenters reported that masonry stoves burned less wood and were clean burning but were a significant financial investment for individuals. Commenters said that, as written, the proposed regulation would not allow the installation of wood-fired masonry heaters. Commenters said that masonry heaters are locally manufactured and cannot be transported to EPA testing facilities to obtain certification and should be exempt from any emission standards. To ensure proper construction, commenters suggested requiring masonry heater installation by only certified heater masons according to ASTM E1602.

- **Device Installation**

Commenters addressed device installation and the effects of certain considerations on the impact of emissions on immediate neighbors and overall emissions. Commenters relayed experiences of working cooperatively with device owners to abate the effects of emissions on neighboring properties by raising the stack height or relocating stacks on the operator's property.

Stack Height

Commenters noted that the elevation at which device exhaust is emitted affects the dispersal of emissions and can help to lessen the impacts of emissions on neighbors. Comments suggested requiring that stack heights reach certain heights relative to the ground or relative to surrounding rooflines to ensure proper dispersion of emissions.

Device Setback

Commenters noted that the position of stacks had an effect on the concentration of emissions reaching neighboring properties by promoting dispersion of emissions before reaching property lines. Commenters suggested requiring outdoor hydronic heating devices to be setback a minimum distance from a property's boundaries. Commenters suggested values such as 100 feet to allow proper dispersion of emissions or to prevent the installation of outdoor hydronic heating devices in urban areas where property lot sizes would likely be too small for an owner to install a device and meet setback requirements.

Sole-Source

Commenters noted that a solid-fuel heating device may be the sole source of heat for a residence or business and that exemptions to any curtailment strategies should be made for individuals providing essential heating or operating a sole-source heating device. Comments noted building codes in Juneau that were implemented to help alleviate PM 10 pollution that prevent construction of new homes where a solid-fuel heating device is the sole source of heat. Commenters suggested similar strategies for the nonattainment area to prevent new homes from being constructed with a solid fuel fired heating device as the sole source of heat.

- **Testing Methods**

Commenters argued that the results obtained from laboratory test methods may not accurately predict the emissions of appliances that operate using cordwood in the nonattainment area. Commenters said that, because of this, either emissions standards should not be implemented or that testing methods should be altered. Commenters noted that the EPA test methods required the use of crib wood which is dry dimensional lumber with spacers for air flow. Commenters pointed out that the species and preparation of cordwood burned in the nonattainment area has different characteristics than crib wood which may result in a device emitting more or less PM 2.5 during real-world operation than a controlled laboratory test predicts. Commenters suggested requiring wood-fired heating devices to be tested using cordwood to better predict real-world performance and to make the emission cap an absolute cap rather than averaging results over 24 hours which can hide emissions spikes. Commenters questioned the reliability of EPA's testing methods and results and cited a study that indicated many EPA hydronic heater tests had questionable results for efficiency or emission rates or were missing data necessary for their determination. These comments suggested strong emission standards using modified testing methods that predict real world emissions and efficiency would inform customers of device efficiency, protect customers from marketing hype, and prevent the installation of inefficient or highly polluting devices. Commenters said that device performance was highly dependent on factors such as the type of fuel used, the use of un-split or unseasoned wood, burn rate, heat requirements of a space compared to the BTU rating of the appliance used, whether a device is allowed to smolder or burn efficiently, the knowledge and skill level of the device operator, air temperature, device maintenance,

and device condition. Commenters also cited a field study testing real-world stove operation that found no statistically relevant difference in emissions between stoves with emissions ratings less than or equal to 2.5 g/hr and stoves rated between 2.5 and 4.5 g/hr.

Commenters desired the inclusion of additional testing methods in the proposed regulation. Commenters suggested that the regulation allow the use of devices tested using method ASTM E2618 – Standard Test Method for Measurement of Particulate Emissions and Heating Efficiency of Solid Fuel-Fired Hydronic Heating Appliances. Commenters also requested the inclusion of test method ASTM E2515 – Standard Test Method for Determination of Particulate Matter Emissions Collected by a Dilution Tunnel. Commenters noted the lack of available test methods for determining emissions from coal-fired heating appliances and desired testing of these devices to ensure an emission standard was met.

- **Device Standards**

Hydronic Heaters

Commenters addressed the proposed device standards for hydronic heaters. Commenters felt that the proposed regulation would likely be inconsistent with potential future EPA NSPS for outdoor hydronic heaters. Comments detailed the efforts of manufacturers and the EPA to cooperatively develop the voluntary Phase 1 and Phase 2 Outdoor Hydronic Heater Programs. Commenters indicated that manufacturers have developed many appliances that meet the Phase 2 program limit of 0.32 lb/MMBtu for devices under 350,000 Btu/hour and that these efforts have yielded devices that emit 90% less particulate matter when compared to unqualified models, commenters noted that the white hangtags that indicate qualification are regulated by EPA. Comments suggested that aspects of the Phase 2 program standards should be incorporated into DEC's regulations such as changing the Btu threshold from 300,000 to 350,000 Btu/hour, the emissions standard units from g/hr to lb/MMBtu, and adopting the emission limit of 0.32 lb/MMBtu. Commenters said that a majority of states and EPA use 350,000 Btu/hour as the cutoff when regulating outdoor hydronic heaters and argued that units above 350,000 Btu/hour are generally considered commercial units that would be regulated by individual permits. Commenters also felt that limiting the choices of consumers available through the Phase 2 qualification program by only allowing devices under 300,000 Btu/hour would interfere with an individual's ability to choose a device that ideally suited their needs and may place limitations on manufacturer's ability to design and produce devices that best suit the needs of their customers. Commenters also felt that regulating hydronic heaters on a g/hr basis disregarded the relative utility and efficiency of outdoor hydronic heaters when compared to indoor woodstoves and ignored precedents both within the Phase 2 program and regulations adopted by other states. Some commenters suggested that the limit of 0.32 lb/MMBtu should be adopted instead of the proposed 2.5 g/hr limit, however, other commenters felt that an emissions limit of 2.5 g/hr should apply to all solid-fuel heating devices including hydronic heaters. Commenters also said that other states have requirements that solid-fuel

heating devices such as hydronic heaters must meet both EPA Phase 2 qualification standards and stricter state imposed emissions standards and suggested that Alaska adopt such a requirement.

Woodstoves

Comments addressed emission standards for woodstoves. Commenters felt that emissions standards should be more stringent, less stringent, or that other factors should dictate which woodstoves are allowed in the nonattainment area. Commenters noted that the 2014 proposed EPA NSPS included a two-step implementation scheme where the first step was 4.5 g/hr and the second step, five years later, was 1.3 g/hr. Commenters suggested adopting the 1.3 g/hr value to be consistent with the proposed NSPS and prevent having to amend regulations at a later date to reflect any adopted NSPS. Commenters noted that studies have shown that the emissions of 4.5 g/hr and <2.5 g/hr stoves had no statistically significant difference and recommended that the woodstove emissions standard be raised to 4.5 g/hr. Commenters also noted that device operation dictates emissions and that relying on EPA method test results to set standards may be counterproductive because either the methods were unreliable and should be modified to more accurately predict real-world emissions or that <2.5 g/hr stoves may actually produce more emissions than a 4.5 g/hr stove due to nonattainment area wintertime conditions. Other commenters felt that no emission standards should be adopted. Commenters suggested all woodstoves sold or installed in the nonattainment area should have a catalytic element to reduce device emissions. Commenters also suggested standards based on the presence or absence of a catalytic element such as 2.5 g/hr for catalytic stoves and 4.5 g/hr for non-catalytic stoves. Comments also suggested that instead of creating emissions standards, DEC could adopt an approach used in other states and only allow the sale of EPA certified or qualified devices.

- **Solid Fuel-Fired Heating Device Sales**

Commenters addressed possible impacts of the proposed regulations on local businesses and individuals trying to sell solid fuel-fired heating devices.

Commenters noted that local businesses may be at a competitive disadvantage to businesses outside of the nonattainment area because the proposed regulation would limit the types of stoves that they were able to sell to local customers whereas other retailers on the road system could still offer non-compliant appliances. Comments indicated that individuals had preferences for both devices that would be compliant under the proposed regulation and devices that would not be compliant. Commenters reported that wood-fired heating devices with an EPA emissions rating of 2.5 g/hr or less were desirable due to their efficiency, reduced fuel consumption, and reduced pollution. Commenters noted and reiterated a finding in the peer review that numerous models of woodstoves with emissions less than 2.5 g/hr were available and were comparable in cost. Commenters said that even if a woodstove were more expensive than a less efficient model, a customer would recoup that cost over time as a result of increased fuel efficiency. Other

commenters felt that the peer review did not accurately assess the woodstove market. Commenters said that many customers purchase the least expensive stoves for economic reasons and that 2.5 g/hr woodstoves were only comparable in price to higher end or specialty woodstoves with emissions ratings greater than 2.5 g/hr. Commenters also expressed disappointment that regulations would prevent them from buying stoves they might otherwise have chosen. Commenters felt that these factors created an easily exploited loophole that would lead to individuals travelling to unregulated businesses on the road system to purchase a non-certified woodstove. Commenters suggested that the regulations should apply to all road-accessible retailers in Alaska or should not be implemented at all.

Commenters noted that there have been instances of retailers not abiding by previous borough regulations regarding the sale of woodstoves. These commenters feared that some businesses within the nonattainment area may choose not to follow the regulations and gain an unfair competitive advantage. Commenters suggested that to prevent this scenario, the regulation should either be enforced or should not be implemented at all. Commenters were concerned about potential paperwork that retailers could be required to have their customers sign to complete a sale. Commenters argued that this would put the enforcement burden on businesses who may lose sales to customers that refuse to sign any statements.

Commenters addressed a provision within (b)(2)(B) that stipulates a period of six months after the effective date of the regulation. Commenters viewed this as an opportunity for retailers to sell non-certified inventory and either felt that this was not a long enough period or that no such period should be allowed. Commenters that felt that the period should be longer than six months argued that excess inventory of non-compliant devices likely consisted of specialty woodstoves which were slow moving and would be unlikely to sell out before six months had elapsed, causing retailers to be stuck with those devices and incur financial losses. Other commenters felt that allowing a six month period was unproductive. They argued that allowing the sale of uncertified appliances after the effective date of the regulation would allow non-compliant devices with long effective lifespans to be sold, installed, and operated in the nonattainment area which would not help to reduce emissions. Commenters felt that retailers could have foreseen coming regulations and not risked losses by acquiring excess inventory of non-certified woodstoves. Commenters suggested retailers should either have or not have the opportunity to sell excess inventory and either receive or not receive reimbursement for financial losses incurred as a result of the proposed regulations.

Commenters noted that the proposed regulation would also impact woodstove sales between private parties. Comments suggested that the proposed regulation would wrongly deprive an individual of any financial gains an individual could realize through selling their used non-certified device to another individual after purchasing a new woodstove for their residence.

- **Home Sales**

Commenters that addressed 50.077(b)(4)(b) had varying levels of support for the provision.

Some commenters expressed a desire that the provision be removed from the regulation. These commenters felt that the regulations should not allow residences to be sold without requiring the replacement of non-certified devices and that requiring the replacement of a non-compliant device was a reasonable means of increasing the turnover of existing devices. Commenters noted that the cost of new certified devices was small in comparison to the average price of a residence in the nonattainment area. Commenters argued that these costs could be incorporated into mortgages and enforced by the real estate and mortgage industries similar to requirements that septic systems and other aspects of homes meet building codes before a bank will issue a loan. Commenters noted that replacing older devices with newer and more efficient models upon the sale of a home would speed the replacement of non-certified devices in the nonattainment area, provide fuel savings to new owners, and that homeowners could participate in the woodstove exchange program to help cover the cost of replacement. Commenters felt that, as proposed, the regulation would slow the change-out of older devices that may continue to pollute for decades due to long useful lifespans and that other states have successfully implemented requirements to change-out of non-certified devices upon the sale of a home.

Other commenters expressed support for the exemption or expressed concern that the exemption would only apply to single and multi-family residences. Commenters felt that not exempting woodstoves sold, leased, or conveyed as part of a residence would place a financial burden on individuals and businesses. Commenters noted that the regulation did not mention buildings other than residences such as businesses, garages, outbuildings, and others. They argued that requiring the replacement of a non-compliant device each time such a property is sold or leased would place an undue financial strain on individuals and businesses which would impact the local economy due to the large number of structures in the nonattainment area that use wood-fired heating devices but are not considered single or multi-family residences.

Comments Outside the Regulatory Proposal: Comments and questions were received that were outside the specific regulatory proposal. Those comments and questions are summarized below.

Commenters addressed a variety of air quality topics that are outside of the specific regulatory proposal. Commenters addressed existing EPA approved laboratory test methods that are used to determine the emissions of wood-fired heating devices. These comments suggested that the methods do not accurately predict device performance under real world conditions. Commenters proposed changes such as requiring the use of area-specific cordwood as fuel. Other comments indicated a desire that the regulation encompass coal-fired heating devices. Commenters noted that no EPA standards for coal-fired heating devices exist and suggested that DEC develop

standards or regulate emissions using opacity. Commenters also addressed installation of heating devices and factors that influence device emission dispersion.

1) Using Cord Wood Test Methods

Woodstoves are tested using EPA Reference Method 28 and sampling methods 5G or 5H by an accredited laboratory. EPA test methods for certifying wood heaters use standardized fuel to ensure results are repeatable and can be compared to results obtained by testing other devices. DEC appreciates that there is debate and discussion over the EPA test methods and that consideration is being given to revising them to a cord wood fuel standard in the future. However, those methods are not yet fully developed and vetted by EPA, the industry, and others. DEC proposed its wood heater emission standards so that they could rely on the testing already used in current EPA programs. These methods have been in place for many years and are used by EPA in certifying or approving heating devices. If Alaska mandated a different test method, manufacturers would then need to conduct separate laboratory tests to certify to both EPA and Alaska emission standards. To change fuel requirements in existing EPA methodologies and establish different test methods for Alaska, would require considerable time, expense, and may be less reliable than existing methods. Given the immediate need and efforts to improve heating devices in the nonattainment area, DEC decided to move forward using the test methods currently established and in use within the industry.

For more information on the EPA testing methods, please visit:
http://www.epa.gov/Compliance/monitoring/programs/caa/whlabs.html

2) Developing Emission Standards for Coal-Fired Devices

As part of the air quality planning effort, studies have been conducted to determine the specific sources of the pollution found on the monitor filters from within the non-attainment area. The studies found that the portion of particulate coming from coal burning is small compared to the particulate on the filters from wood burning. This is consistent with surveys of residents' home heating devices which show wood heaters are much more prevalent that coal heaters. Given that the majority of the problem, area wide, is wood smoke, the current proposed regulations are focused there. However, the department is very aware of citizen concerns regarding smoke from coal-fired heaters. Unfortunately, the U.S. EPA has not developed any emission standards for new residential coal-fired indoor stoves or outdoor boilers nor has EPA established any specific test methods or program to certify residential coal heating devices. As a result, DEC does not have an existing federal program or framework to use to make a regulatory decision on an emission standard for coal heaters. For DEC to regulate coal-fired heating devices, significant research is needed to establish standards for these devices. DEC would need to work with a testing laboratory to test and develop a method for certifying coal-fired heating devices and then use that method to test many types of coal-fired devices. This research, testing, and development would take time and resources.

DEC continues to evaluate the need for and the options to address emissions from residential coal-fired heating devices. DEC plans to propose additional revisions to state regulations that would help to address emissions from these devices. Given the time and resource constraints discussed above, that proposal will focus on reducing smoke from coal heaters during operation rather than through a new heater emission standard. The public will have opportunity to review and comment on that new proposal.

3) Device Installation

The proposed regulations, while specifying installation, are not intended to dictate how a device is installed, only whether a device can be installed. Regulating stack height, setbacks, and presence of non-solid-fuel-fired heating devices is outside the proposed regulation. Local building codes may be a more appropriate place to regulate how devices are installed in a community.

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

Commenters felt that grandfathering currently installed devices would have both negative and positive fiscal impacts on individuals and the public. Commenters noted that the regulation does not affect currently installed devices that can be highly polluting and are currently contributing to the problem. Commenters said that requiring devices to be replaced would have a negative impact on the local economy and to the individuals that must change their devices. Other commenters noted that those individuals could take advantage of the change-out program. Commenters also suggested that allowing devices to be grandfathered would force the public to incur greater health costs.

Commenters indicated that devices that emit less than 2.5 g/hr may cost more than higher polluting stoves in contrast to the findings in the peer-review. Commenters feared that purchasing compliant devices would limit the available selection of devices and raise costs to the consumer. Other commenters suggested that any additional costs of purchasing a <2.5 g/hr device would be recouped over time due to increased device efficiency.

Commenters felt that there could be fiscal impacts on retailers and resellers. Commenters said that retailers may lose business to retailers outside of the nonattainment area or even businesses within the nonattainment area that do not follow any adopted regulations. Comments also said that retailers would likely be stuck with inventory they could not sell under the proposed regulation. Comments were also received that suggested the proposed regulation would wrongly take the resale value of a non-compliant device from private individuals who could have sold their device after purchasing a new device.

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

1. Do not implement the proposed regulation
2. Implement the regulations as proposed
3. Implement proposed regulation with amendments
    a. Technical edits
        i. Consider using lb/MMBTU as opposed to just g/hr for Outdoor Hydronic Heaters
        ii. Large unit break point should be 350,000 BTU heat output
        iii. Consider scaling standards for larger units
        iv. Consider stack height and set back provisions for OHH/larger units
        v. Clarify masonry heater provisions
        vi. Remove the term "installation" in 50.077(b)(4)(A) and strengthen to require more than just confirmation in writing that the device will be installed in another area (e.g. address and notarization)
        vii. Consider other test methods for certifying some devices
        viii. Consider using a cordwood test method
    b. Clarify grandfathering exemption to include existing buildings that are not homes
4. Modify regulation
    a. Expand emission standards to cover all wood-fired heating devices, not just those currently in an EPA program (single burn rate stoves, pellet stoves, masonry heaters, forced air heaters, fireplace inserts, etc.)
        i. Align more with EPA proposed NSPS
        ii. Consider moving to the more stringent (out year) levels from the NSPS now
    b. Prohibit installation of coal heaters and outdoor wood hydronic heaters (OWHH) within populated areas
    c. Remove grandfathering provision– upon resell seller required to upgrade to 2.5 g/hr implementation.
    d. Exempt masonry heaters from the regulations
    e. Make emission standards statewide
    f. Include emission standards for coal-fired heaters

Department Decision: The department appreciated the feedback received on the proposed emission standards for wood heating devices. DEC thinks it is important to move forward with regulations specifying the emission standards for new wood stoves, hydronic heaters, and larger heating devices within the nonattainment area. Significant efforts and resources are being expended to upgrade wood heating devices in the nonattainment area through incentive programs. It is critical that the heaters used in this air quality problem area be as clean as possible in order to reduce the impacts of air pollution while maintaining the option for residents to use wood as an affordable source of heat. The department's analysis contained in the peer review indicated that there are affordable heating device options in various sizes that can meet the emission standards.

In response to comments received the department agreed that a number of technical revisions were warranted based on the comments received. Therefore, after careful consideration, 18 AAC 50.077 will be adopted with changes.

- Subsection (a) is being adopted without changes, as proposed.

- Changes to Subsection (b) will include:

  - Increasing the maximum BTU/hr rating from 300,000 to 350,000 in categorizing wood heating devices;

  - Referring to EPA's Phase 2 Hydronic Heater Program as "Phase 2" instead of "Phase II";

  - Adopting hydronic heater emissions standards that are more consistent with the EPA's Voluntary Phase 2 Hydronic Heater Program by expanding beyond a simple 2.5 gram per hour requirement. The adopted provisions would include an annual average emission level of 0.32 pound per million BTU of heat output, a maximum individual test run of 18.0 grams per hour, and a particulate matter annual average emission rate of 2.5 grams per hour;

  - Incorporating ASTM Method E2618, "Standard Test Method for Measurement of Particulate Emissions and Heating Efficiency of Outdoor Solid Fuel-fired Hydronic Heating Appliances," and ASTM Method E2515, "Standard Test Method for Determination of Particulate Matter Emissions Collected in a Dilution Tunnel," as methods for demonstrating device compliance with relevant emissions standards;

  - Requiring submission of proof of EPA certification or test results demonstrating compliance with the final state emissions standards limits in (b)(1)-(3) for departmental approval before inclusion on a publicly available list of approved devices;

  - Clarifying "wood-fired device" in (5) as "wood-fired heating device"; and

  - Changing "single or multi-family residence" in (5) to "an existing building or other property."

These changes address a number of issues raised by commenters on this proposal. The program has been better aligned with EPA's programs and industry standards with respect to the size classes of heaters, the requirements for hydronic heaters, and relevant test methods. DEC also clarified the masonry heater requirements within the definition section. These emission standards would not apply to masonry heaters unless they are sized over 350,000 BTU per hour.

DEC did not move ahead, as suggested by some commenters, to adopt EPA's proposed wood heater emission standards at this time. Should EPA finalize those standards in the future, they

would ultimately result in more stringent requirements than the regulations being adopted and the state could revisit its requirements.

DEC also maintained the nonattainment area as the geographic area covered by these requirements. DEC recognizes an immediate need to reduce air pollution in this area that does not exist in all parts of the state. With EPA working to update its emission standards for wood heaters, future federal requirements will likely help in maintaining and improving air quality in other areas of the state. Further, the proposed rules do not prevent a retailer from selling wood heating devices that do not meet these emission standards to residents located outside the nonattainment area. This should address retailer concerns about existing inventory of heating devices that do not meet the proposed emission standards as there is still a market for these units. Also, to address concerns about sales from retailers outside the nonattainment area, DEC plans during implementation of this regulation to contact retailers throughout the state, not just those located within the nonattainment area, to ensure the requirements related to the nonattainment area are known and complied with. In addition, DEC will assist retailers as needed to address concerns with implementation.

With respect to clarifying the exemption grandfathering existing heaters from emission standard requirements, DEC did make changes to the exemption language to expand from “residences” to “existing buildings or property”. This should better capture the universe of devices already existing in the community. However, in response to concerns that grandfathering should not be allowed due to the need to significantly improve air quality in the nonattainment area, DEC is planning to propose revisions to the adopted regulations that would seek to provide additional requirements in the future if the area fails to attain the air quality standards. The new proposal would require the replacement of wood heaters that do not meet emission standards upon the sale of a property inside the nonattainment area. This new proposal will be available for public review and comment.

As discussed previously, DEC did not revise its regulations to alter the testing methods to rely on cordwood or to add specific device installation requirements, such as setbacks or stack heights. DEC thinks that these specific installation requirements would fit better within the structure of any local building codes rather than in an environmental regulation. DEC also did not extend the emission standards to residential coal heaters, but will be proposing other requirements that will help to address smoke for these units during operation.

PM 2.5 Concentrations Triggering an Air Quality Episode (Table 6) - 18 AAC 50.245(a)

DEC proposed to amend 18 AAC 50.245 (a) to establish PM 2.5 concentrations in **Table 6** that will be used to trigger air quality alert, air quality warning, or air quality emergency episodes.

The proposed PM 2.5 concentrations for Table 6 are as follows:

Episode Type	Pollutant	Concentration in µg/m^3
Air Alert	PM 2.5	56 (24-hour average)
Air Warning	PM 2.5	251 (24-hour average)
Air Emergency	PM 2.5	351 (24-hour average)

Summary of Comments: Comments on the proposed changes to 18 AAC 50.245(a) and Table 6 suggested the proposed concentrations were arbitrarily derived, not stringent enough, or too stringent. Others suggested altering the format of Table 6 or adding other pollutant criteria to Table 6.

- **Air Alerts**

Comments focused primarily on the first episode level, the air alert, with varying degrees of support or concern. Commenters felt the value of 56 µg/m^3 was arbitrarily derived and was either too stringent or not attainable, not likely to lead to attainment of the National Ambient Air Quality Standard (NAAQS), or not protective enough of public health. Some comments proposed a higher value or suggested a higher value that could be reduced over time as the situation within the nonattainment area improved. Other commenters suggested the proposed PM 2.5 alert level in Table 6 should be consistent with the 24-hour PM 2.5 NAAQS of 35 µg/m^3 to be protective of public health and to help achieve the NAAQS. Some commenters suggested that DEC's proposed PM 2.5 concentrations are not protective for sensitive individuals such as children and the elderly. Commenters noted that other communities and states use a lower PM 2.5 concentration for curtailment programs, for example: Juneau, AK uses 30 µg/m^3; Washington State uses 25 µg/m^3 and 35 µg/m^3; Sacramento, CA uses 31 µg/m^3 and 35 µg/m^3; and Utah's nonattainment areas use 25 µg/m^3.

Comments noted that the proposed alert level of 56 µg/m^3 would interfere with attainment of the NAAQS because it was above the NAAQS level of 35 µg/m$^{3.}$ They indicated this would not comply with Clean Air Act provisions. These comments proposed values at or below the NAAQS to prevent exceedances by curtailing emissions. Comments also cited scientific studies that show negative health effects impact children, the elderly, and sensitive groups at levels equal to or below the NAAQS. These comments proposed setting the value to 35 µg/m^3 or lower to be more protective of public health. Other comments argued that the value should be lowered because an air alert should serve the purpose of alerting sensitive groups to unhealthy conditions and allowing those individuals to protect their health by minimizing their exposure to polluted air.

- **Air Warnings and Air Emergencies**

  Comments addressing the thresholds for warning and emergency episodes suggested they be lowered to 55 and 150 µg/m^3 respectively or eliminated altogether in favor of a single threshold for air quality episodes and curtailment actions.

- **Other Comments**

  Commenters suggested creating an episode level below the air alert level that would be publicized in the same manner as other episodes but would not involve any curtailment actions to alert the public of the potential for a declaration of an air alert. Comments suggested adding other pollutants to Table 6 or altering existing thresholds within the table. Comments also suggested considering weather and inversion forecasts as criteria when declaring air episodes as is done for air quality advisories.

Comments Outside the Regulatory Proposal: Comments and questions were received that were outside the specific regulatory proposal. Those comments and questions are summarized below.

1) Coarse particulate matter (PM 10) should be added to the statewide curtailment regulations.

   Comments indicated a desire to add PM10 to the statewide air quality episode regulations.

   Response: DEC has already established air quality episode thresholds for a number of criteria air pollutants as required by the Clean Air Act and is not proposing to revise these thresholds at this time. The pollutants already included in state regulations at 18 AAC 50.245(a) are: carbon monoxide (CO), PM 10, and sulfur dioxide (SO2).The thresholds established for these pollutants have been approved by the EPA as part of Alaska's State Implementation Plan.

2) Adding other contaminants or altering existing thresholds

   Commenters suggested adding other air pollutants or changes to existing thresholds in Table 6.

   Response: DEC has already established air quality episode thresholds for other criteria air pollutants as required by the Clean Air Act and is not proposing to revise these thresholds at this time. The pollutants already included in state regulations are: CO, PM 10, and SO2. The thresholds established for these pollutants have been approved by the EPA as part of Alaska's State Implementation Plan. This regulation was meant to add PM 2.5 to this existing table of pollutant episode thresholds. EPA established a NAAQS for PM 2.5 in 1997 and this regulation amendment was proposed to allow the state to meet Clean Air Act requirements for this pollutant.

3) Altering design of Table 6 to remove air warnings and air emergencies.

Comments suggested that Table 6 should be altered to have just one triggering level for air episodes for the pollutants listed.

Response: DEC is not proposing to change existing episode thresholds and levels. The episode thresholds included in Table 6 are a required element of the Clean Air Act and part of the existing EPA-approved State Implementation Plan for Alaska. The framework was established to allow DEC or a local air quality program to implement progressive actions reflecting the severity of unique air pollution events.

4) Explain the NAAQS attainment calculations.

Questions were raised about the calculations used to demonstrate attainment with the NAAQS.

Response: The 24-hour NAAQS for PM 2.5 is 35 $\mu g/m^3$. To comply with this, 24-hour measurements taken every third day within the non-attainment area are statistically analyzed. The 98^{th} percentile values for each year over a period of three consecutive years are averaged and rounded to the nearest whole number. If this result is less than or equal to the NAAQS 24-hour standard of 35 $\mu g/m^3$ then the area is determined to be in attainment. Further information on determining compliance with the NAAQS can be found in the Code of Federal Regulations.

5) How are NAAQS values obtained (every third day, long analysis times) and how is continuous monitoring data used to declare real-time advisories and episodes?

Questions were raised about how the data used to demonstrate attainment with the NAAQS is obtained.

Response: Compliance with NAAQS is determined using 24-hour measurements from federal reference method monitors. In Fairbanks, those monitors operate every third day. Each filter is sent to Juneau for analysis. To monitor PM 2.5 levels in near real time, continuous monitors are employed that take hourly measurements and report the values to the officials responsible for declaring air quality advisories.

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

1) Healthcare costs from health issues exacerbated by PM 2.5.

Commenters cited scientific studies that have indicated negative health effects may occur in some segments of the population at PM 2.5 concentrations below the proposed thresholds for Table 6. Commenters suggested that these negative health impacts would cause individuals in sensitive groups to incur additional health care costs if emissions were not curtailed at thresholds that prevented concentration of PM 2.5 to reach levels equal to or below the NAAQS value of 35 $\mu g/m^3$.

2) Costs of complying with more episodes if thresholds are too low.

   Commenters noted that potential curtailment actions that include prohibition of wood burning heating devices would require individuals to heat spaces using other more expensive energy sources. Comments suggested that low episode thresholds would increase the number of days an individual would incur additional expenses associated with heating spaces without using wood as a primary or supplemental source of heat.

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

1) Do not implement the proposed regulation (keep current regulation)
2) Implement the regulations as proposed
3) Implement the proposed regulation with amendments:
   a) Lower initial air alert episode threshold to 45 µg/m^3, 35 µg/m^3 or lower to prevent NAAQS violations
   b) Lower air alert, warning and emergency thresholds to 35 µg/m^3, 56 µg/m^3 and 150 µg/m^3, respectively.
   c) Raise the thresholds to higher levels
   d) Add another level before an air alert is triggered

Department Decision: After careful consideration, only the amendment to the title of 18 AAC 50.245(a) Table 6 will be adopted. The remainder of Table 6 will not be amended as proposed and the current language will remain in effect.

DEC intends to issue a new regulatory proposal to address PM 2.5 episode thresholds. This new proposal will be subject to additional public review and comment.

Authority to Declare Air Episodes and Advisories - 18 AAC 50.245 (a) (b) (c)

The proposed amendment to this regulation would clarify that, in addition to the Department, authorized local air quality control programs may declare air quality episodes and air quality advisories and prescribe and publicize emissions curtailment action in the event that the air pollutant concentrations in Table 6 (18 AAC 50.245 (a)) are exceeded.

> 18 AAC 50.245 is amended to read:
>
> (a)The department **or a local air quality control program authorized by the department under AS 46.14.400** may declare an air **quality** episode and prescribe and publicize curtailment action if the concentration of an air pollutant in the ambient air has reached, or is likely in the immediate future to reach, any of the concentrations established in Table 6 in this subsection.
>
> (b) The department **or a local air quality control program authorized by the department under AS 46.14.400** will declare an air quality advisory if, in its judgment, air quality or atmospheric dispersion conditions exist that might threaten public health.
>
> (c) If the department **or a local air quality control program authorized by the department under AS 46.14.400** declares an air quality advisory under (b) of this section, the department **or a local air quality control program authorized by the department under AS 46.14.400** will…

Summary of Comments: Commenters expressed varying opinions on the proposed regulatory changes that clarify the role of authorized local air quality programs in declaring air quality episodes and advisories and managing air pollution during events.

With respect to the delegation of authority to local programs, comments voiced a number of opinions including a lack of support for any regulations and lack of support for delegation to local programs. A number of comments focused on the delegation of authority specific to the FNSB. Commenters cited the passage of the Home Heating Proposition #3 (2012) in FNSB as a wish by citizens to not be regulated by anyone and as a perception by the public of the FNSB abusing powers related to the regulation of solid fuel heating devices. Commenters felt these proposed changes ignored the intentions of Proposition #3 by giving authority to the Borough to declare episodes and prescribe curtailment actions or declare air advisories.

Comments also raised a concern that within the regulation there is no specific designation of which entity would be responsible for declaring air episodes or advisories and prescribing curtailment actions. Commenters wanted further clarification written into the regulations concerning who is responsible for announcing and enforcing the air quality episode. Commenters suggested that the proposed amendment does not specify a single authority responsible for air alerts and that without a single, designated authority there is potential for confusion and inaction.

Comments also expressed concern that the regulations may go unimplemented by potentially unwilling local programs affected by local political climates. Therefore, comments suggested no ability for local discretion and instead suggested that the regulation use terms such as *will* instead

of *may declare*. Other comments expressed doubt that the FNSB could effectively prescribe curtailment actions citing failures to attain the NAAQS despite the State's 2010 delegation of authority to the Borough for PM 2.5 air pollution planning and given the language of Proposition #3 that resulted in the removal of local PM 2.5 regulations by removing the Borough's authority and enforcement related to home heating and fuel use.

Commenters also felt the delegation of authority to implement the program would constitute an unfunded mandate that should be funded by the state. Some comments expressed a desire for state regulation or a state partnership with a local program. Other commenters interpreted Proposition #3 as a mandate by the citizens of the FNSB that the state take over the authority previously held by the FNSB. Commenters felt state implementation would be less prone to local political volatility and be more able to ensure NAAQS compliance. Other commenters desired a partnership between local and state programs or even a citizen's advisory panel to ensure transparent and constructive discourse between citizens, local government, and state government.

Commenters supportive of delegating authority to local programs favored local authority in general and felt that local programs would have a greater ability to react quickly and to allow for enforcement actions not available to the state. Comments expressed a desire for a clear description of how a local program would use discretion in declaring an advisory or episode. Other comments suggested that discretion be eliminated and curtailment actions be mandatory. Comments also suggested a comprehensive alert system.

Comments Outside the Regulatory Proposal: Comments and questions were received that were outside the regulatory proposal. Those comments and questions are summarized below.

1) Regulation Enforcement

   Some comments focused on the need for a strong local enforcement presence. Commenters felt that advisories had limited value if local authorities did not have the power to enforce through fines and the threat of legal action. Comments received indicated the belief that the proposed regulations were illegal as they would give the Fairbanks North Star Borough authority that is contrary to or in violation of the enacted local ballot Proposition #3.

   Response: The proposed regulations do not empower the Borough or any other local government to act outside the authority of its duly-authorized local air quality program, which is established by enabling ordinance. In other words, these proposed regulations do not give the Borough new powers unless there is a local ordinance already in place. The proposed regulations are statewide regulations.

   With respect to addressing any violations of the state air quality regulations, the Department of Environmental Conservation Division of Air Quality is responsible and will use the compliance and enforcement tools for which it is allowed under state statute. The Division has not been given the authority in statute by the legislature to issue administrative penalties for violations of Alaska environmental laws. This means the

Division cannot write "tickets" and must use other tools like written notices of violation, compliance agreements, or in rare cases civil court actions. In most cases, the department finds compliance can be achieved through assisting businesses and individuals in understanding the regulatory requirements and how they can comply.

2) Improving State and Local Discourse

Commenters suggested that a partnership between local and state programs or a citizen's advisory panel to ensure transparent and constructive discourse between citizens, local government, and state government was needed.

Response: The Department does enter into partnerships with local governments to address air quality issues in communities. These partnerships are generally outlined through the use of Memorandum of Understanding between the Department and a local government. In the case of the Municipality of Anchorage and the Fairbanks North Star Borough, more formal partnerships have been established under Alaska Statute 46.14.400-410 delegating authorities to the local governments for air pollution activities in lieu of the Department administering all aspects of the air quality program in these areas. The Department has found these local partnerships to be critical in addressing air quality concerns within communities and gaining local input and perspectives on approaches to improve air quality. The Department has not formed a formal citizen's advisory panel to address statewide air quality concerns, however both the Municipality of Anchorage and the Fairbanks North Star Borough have air quality related committees whose members include local citizens representing the public and various stakeholder groups within the community. These committees provide input and recommendations to the local air quality planning process in these communities.

3) Specify which party is responsible for calling episodes and advisories

Comments were received that requested the regulations be more specific as to who is responsible for calling episodes and advisories.

Response: These particular regulation sections apply statewide and to other possible local air quality programs beyond the Fairbanks North Star Borough. Local governments derive their authorities from their citizens. The Department may delegate state authority to the local air quality program. In order for a local air quality program to have the authority to call an episode under these proposed regulations, two things must occur. First, the department and the local program must enter into a Memorandum of Understanding (MOU) that delegates authority to the program and outlines the roles and responsibilities for each agency (DEC and local program) including how advisory and episodes will be addressed. Second, the local governing body, such as an Assembly, must concur with or approve of the MOU and its delegation of authority.

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

Commenters addressed possible costs to local air quality programs identified under the proposed regulations. Commenters suggested that programs would incur costs implementing the regulations and that those costs would be borne by local tax payers instead of the State. Commenters felt that requiring local programs to implement or enforce the regulations would constitute an unfunded mandate and that the State should either fund those programs or not delegate to local programs.

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

1) Do not implement the proposed regulations (keep current regulation)
2) Implement the regulations as proposed
3) Implement proposed regulations with amendments
    a. Rephrase to replace "…*may* declare an air **quality** episode and prescribe and publicize curtailment action…" with "…*will* declare an air **quality** episode and prescribe and publicize curtailment action…"
    b. Rephrase to replace "…*may* declare an air **quality** episode and prescribe and publicize curtailment action…" with "…*will* declare *and publicize* an air **quality** episode and *may* prescribe and publicize curtailment action…"
    c. Specify which party is responsible
    d. Clarify regulation to remove the confusion over whether the regulations provide additional authority to a local government beyond that provided by its citizens

Department Decision: One concern expressed by the public with this regulatory revision was a perception that it granted a power to the local air quality program that was in conflict with the authorities provided by citizens to their local government. Legal review on this point clarified that this perception was not correct and the wording does not provide additional authorities to a local government beyond that provided by its citizens.

DEC's statutory authority to implement regulations and enter into agreements with local programs is contained in AS 46.03.010, AS 46.03.020, AS 46.14.010, AS 46.14.030, and AS 46.14.400. 18 AAC 50.245 is a statewide regulation. The proposed regulations do not empower the Fairbanks North Star Borough to act outside the authority of its duly-authorized air quality program and enabling ordinances. This regulation recognizes that some communities may give their local program more duties and authorities than other communities. Further, this regulation does not change the local air quality Memorandum of Understanding (MOU) between DEC and the Fairbanks North Star Borough. The MOU may only be changed by joint agreement of both parties. The finalization of the proposed regulations provides an opportunity for the Department and the Borough to further clarify their respective roles, responsibilities, and the Borough's delegated authorities related to air quality activities, but only through a separate process to update the MOU.

However, to alleviate this concern overall, the department is clarifying this point in the final adopted regulation. Therefore, DEC is adopting the amendments to 18 AAC 50.245 with changes.

- The amendment to (a) will be adopted with a clarification stating that the regulation does not alter a local government's powers or obligations under a local air quality control program or other applicable laws.

- The amendments to (b) and (c) will be adopted as proposed.

The department is not changing the remainder of paragraph 18 AAC 50.245(a) in response to public comments seeking less discretion on the declaration of air episodes. Because of the many types of situations that could lead to an air pollution event, DEC thinks it is important to maintain flexibility to address and respond to unique situations and circumstances.

Definitions- 18 AAC 50.990

DEC proposed to amend this regulation to clarify the definition of a wood-fired heating device and to add the definitions for “wood heater/wood stove”, “clean wood”, “hydronic heater”, and “solid fuel-fired heating device”.

The proposed amendment to 19 AAC 50.990(123) is as follows:

> (123) "wood-fired heating device" means a device designed **or used** for wood combustion so that usable heat is derived for the interior of a building; “wood-fired heating device” includes wood-fired **or pellet-fired** stoves, fireplaces, **wood-fired forced air furnaces,** wood-fired **or pellet-fired** cooking stoves, **hydronic heaters** and combination fuel furnaces or boilers that burn wood; “wood-fired heating device” does not include a device that is primarily a part of an industrial process and incidentally provides usable heat for the interior of a building.

The proposed additions to 18 AAC 50.990 are as follows:

> (135) “clean wood” means wood that has no paint, stains, or other types of coatings, and wood that has not been treated with preservatives including copper chromium arsenate, creosote, or pentachlorophenol.
>
> (136) “hydronic heater” means a fuel burning device, including wood boilers and pellet boilers, designed to
>
> (A) burn wood, biomass or other solid fuels;
> (B) that the manufacturer specifies for installation in structures not normally occupied by humans (e.g., garages); and
> (C) heats building space or water via the distribution, typically through pipes, of a fluid heated in the device, typically water or a water/antifreeze mixture.
>
> (137) "solid fuel-fired heating device" means a device designed or used for wood or coal combustion so that usable heat is derived for the interior of a building; “solid fuel-fired heating device” includes wood-fired heating devices, coal stoves, coal forced air furnaces, coal-fired cooking stoves, coal-fired hydronic heaters and combination fuel furnaces or boilers that burn wood and coal; “solid fuel-fired heating device” does not include a device that is primarily a part of an industrial process and incidentally provides usable heat for the interior of a building
>
> (138) “woodstove” or “wood heater” has the meaning given to “wood heater” in 40 C.F.R. 60.531, revised as of October 17, 2000 and adopted by reference.

Summary of Comments: Comments on this section of the proposed regulation revisions expressed varying levels of support for the proposed definitions amendment and additions. Some commenters expressed support for the proposed revisions saying that they included most devices in common usage today while others proposed alterations to the proposed definitions or adding definitions of additional terminology.

- **(123) "wood-fired heating device"**

Commenters expressed support for this amendment but also proposed several changes. Commenters felt that it was appropriate to add devices not designed for but used for wood combustion, wood-fired forced air furnaces, and hydronic heaters. Other commenters noted that the listed devices may use either cordwood or pellets and argued that pellet fuels were dry and cleaner burning. For this reason, they requested that pellet-fired devices be separated from cordwood burning devices. Commenters also requested that additions be made to the list including masonry heaters and rocket stoves but similarly suggested that they are cleaner burning than other devices and should not be included in any curtailment actions.

- **(135) "clean wood"**

Comments expressed support for defining "clean wood" and for the list of contaminants in the definition but also made several suggestions to strengthen the definition. Commenters noted that additional contaminants can be found in wood in addition to those listed in the proposed definition. They said that often burned plywood and particle board contains glues and binders that produce toxic emissions. Comments suggested adding a requirement that "clean wood" be required to have a moisture content of less than or equal to 20% by weight but other commenters desired a separate definition of dry, seasoned, and split wood for use in defining allowable fuels. Other commenters suggested expanding the definition to define not only clean wood but all clean fuels.

- **(136) "hydronic heater"**

Comments expressed support for defining hydronic heaters but made suggestions to make the definition more representative of the types of hydronic heaters currently used and available on the market. Commenters noted that some hydronic heaters are designed and rated for standalone installation outdoors. Commenters suggested changing (B) to "that the manufacturer specifies for installation **outdoors or** in structures not normally occupied by humans (e.g., garages)" so that it is more inclusive. Other commenters noted that many hydronic heaters use coal as fuel and supported the addition of coal boilers to the definition of hydronic heaters.

- **(137) "solid fuel-fired heating device"**

Commenters expressed support for the proposed definition and desired that other sections in the regulations proposal refer to "solid fuel-fired heating devices" instead of the less inclusive "wood-fired heating device" as a way to ensure that the regulations also applied to coal burning devices.

- **Commenter Proposed Additions**

"Essential Residential Heating"

Commenters proposed defining "essential residential heating" to clarify the term in the event that 18 AAC 50.075(b) provides exemptions to curtailment actions for "essential residential heating" in any finalized regulations. Commenters suggested defining "essential residential heating" as instances when a potentially curtailed device is the sole-source of heat, i.e., the only available heat source for an entire residence not including small portable heaters.

"Curtailment Actions and Flexibility"

Commenters proposed defining the actions the department would take and the flexibility the department would have in the event of a curtailment action described by 18 AAC 50.075(b). Commenters said that without such a definition, the regulation was vague and possibly ineffective. Commenters suggested listing the devices that would be affected and the type of evidence that could prove a violation. Comments listed solid fuel-fired heating devices including coal burning devices, incinerators, and waste oil burners as devices that should be affected by any curtailment action and that smoke or visible emissions should be prima fascia evidence of a violation. Commenters note that other states have defined curtailment actions and strategies.

"Dry Wood"

Commenters suggested incorporating a definition of "dry wood." Commenters proposed that by defining dry wood and using that definition in 18 AAC 50.076, excess emissions caused by the combustion of wet, unsplit, or unseasoned wood could be avoided. Comments suggested defining dry wood as having dried to a moisture content of less than or equal to 20% by weight. Other comments suggested requiring specific amounts of time wood must season before being an allowable fuel or requiring wood to be split and seasoned before being considered an allowable fuel.

"Pellet Fuels"

Commenters proposed adding a definition of pellet fuels that includes pellets manufactured from clean wood and from materials other than clean wood such as recycled paper products, grass, and other biomass.

"Petroleum and Used Oil Products"

Comments proposed defining petroleum and used oil products that are commonly burned in waste oil burners or in other devices to produce heat.

"Open Burning"

Commenters requested clarification on the types of burning that are considered "open-burning" and would be regulated by 18 AAC 50.065(f). Commenters worried that the regulation would affect campfires, cooking fires, fireworks, and other instances where open flame meets the current definition of open burning in 18 AAC 50.990(65) but is not a significant contributor to ambient air quality degradation.

Comments Outside the Regulatory Proposal: Comments and questions were received that were outside the specific regulatory proposal. Those comments and questions are summarized below.

Commenters proposed specific definitions that are outside of this portion of the regulatory proposal. Commenters desired a definition detailing the actions DEC would take in the event an air quality episode warranted a curtailment action and what kind of flexibility would be allowed. Commenters also requested definitions pertaining to petroleum and used oil fuels as well as clarification of what types of burning constitute "open burning".

1) Essential Residential Heating

   Commenters felt this term could be useful in any changes to 18 AAC 50.075(b). As DEC is not moving forward with revisions to that section and the term is not included in the final regulations proposed for adoption, it was not added to the definitions in 18 AAC 990.

2) Curtailment Actions and Flexibility

   The regulation definition section is meant to clarify terms used in the chapter. While curtailment is a term used, it can take different forms for different air pollutants and pollution sources. DEC has decided that curtailment action plans and flexibilities cannot be readily incorporated into a definition term in 18 AAC 50.990. The department thinks that this type of action plan and its detail would need to appear in either 18 AAC 50.075, another section of the state regulation, or in the Alaska Air Quality Control Plan adopted by reference in 18 AAC 50.030; this would require a new regulatory proposal.

3) Dry Wood

   Commenters suggested adding a definition for the term "dry wood" in conjunction with the regulatory proposal for a new section 18 AAC 50.076 dealing with fuels that can be burned in solid fuel-fired heating devices. Since the department plans to make additional revisions to the draft requirements in 18 AAC 50.076 and release a new proposal for additional public review, there is no need to adopt a definition of "dry wood" at this time. Should this or any other definition changes be needed to address

terms referenced in the new proposal for 18 AAC 50.076 they will be included in that subsequent proposal.

4) Pellet Fuels

Commenters proposed adding a definition of pellet fuels that includes pellets manufactured from clean wood and from materials other than clean wood such as recycled paper products, grass, and other biomass. Again, this suggestion would be coupled with a new section 18 AAC 50.076 dealing with fuels that can be burned in solid fuel-fired heating devices. Since the department plans to make additional revisions to the draft requirements in 18 AAC 50.076 and release a new proposal for additional public review, there is no need to adopt a definition of "pellet fuels" at this time. Should this or any other definition changes be needed to address terms referenced in the new proposal for 18 AAC 50.076 they will be included in that subsequent proposal.

5) Petroleum and Used Oil Fuels

These regulation revisions do not propose to regulate non solid fuel-fired heating devices. While comments indicate that these substances may be used as fuel in solid fuel-fired heating devices by some individuals, DEC had proposed that 18 AAC 50.076 would stipulate what types of fuel can be used in solid fuel-fired heating devices rather than what cannot be burned in a solid fuel-fired heater. As the proposed 18 AAC 50.076 did not refer to petroleum and used oil products there was not a need to define them in the chapter.

However, the department plans to make further revisions to the draft requirements in 18 AAC 50.076 and release a new proposal for additional public review. Should any definition changes be needed to address terms referenced in the new proposal, they will be included in the revised proposal.

6) Open Burning

Commenters proposed that open burning definitions be clarified. Open Burning is already defined in 50.990(65) as:

> "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;

In reviewing the comments received on the open burning requirements at 18 AAC 50.065(f) and after careful consideration, DEC plans to revise and re-propose changes for additional public review including proposed revisions and additions to the definitions in 18 AAC 50.990 related to open burning.

Fiscal Concerns: DEC did not receive any comments specifically addressing fiscal concerns associated with the definitions proposed in this section.

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

1) Do not implement the proposed regulations (keep current definitions in regulation)
2) Implement the regulations as proposed
3) Implement proposed regulations with amendments to definitions as needed to address the comments received in other sections of the proposed regulations

Department Decision: Definition of terms rely on their use within the final regulations. Given the comments received on the definitions in conjunction with the action being taken on the other regulation provisions, DEC proposes to move ahead with amendments to 18 AAC 50.990. The final definitions adopted were changed as a result of both the comment process and the finalization of certain aspects of the regulation proposal as described below.

The amendment to definition paragraph (123) "wood-fired heating device" is being adopted with a change to add "masonry heater" to the list of devices. This change reflects DEC's agreement with commenters that masonry heaters were not clearly identified as wood-fired heating devices in the regulation. Because masonry heaters burn wood, it is appropriate to include them specifically in this definition. With respect to additional comments received on this definition, the department responds as follows:

- With respect to comments that suggested the department should split out devices like pellet-fired heaters and masonry heaters from the wood-fired heater definition because they are cleaner burning, DEC decided to keep them in this definition to ensure that general regulatory provisions apply equally to all wood-fired heating devices. The primary operational requirements that relate to all wood-fired heating devices are the visible emission standards found in 18 AAC 50.075. While the department agrees that pellet units generally burn cleanly, DEC thinks that all units should be operated to burn cleanly with low visible emissions.

  These concerns can also be viewed in the context of the wood-fired heating device emission standards being adopted in 18 AAC 50.077. In this case the emission standards apply to specific types of new wood-fired heaters, which have their own definitions, including: woodstoves and, hydronic heaters. New wood-fired heating units over 350,000 BTU/hour do have to meet emission requirements, but these are larger units that are not typically installed in homes and few comments were received on this category of heaters.

- Regarding comments on allowing cleaner burning wood-fired heating devices to operate during any curtailment, DEC plans to propose a new regulatory approach to address the use of wood-fired heating devices during fine particulate matter air quality episodes. That new proposal will be released for public review and comment.

The regulatory proposal also included the addition of several definitions relevant to the new provisions under consideration. DEC's actions in response to comments on these new definitions are detailed below:

- The definition of "clean wood," listed as (135) in the proposal, is not being adopted at this time. This definition was defined to support the proposed revisions to add a new section 18 AAC 50.076. Since the department plans to make additional revisions to the draft requirements in 18 AAC 50.076 and release a new proposal for additional public review, there is no need to adopt a definition of "clean wood" at this time. Should this or any other definition changes be needed to address terms referenced in the new proposal for 18 AAC 50.076 they will be included in that subsequent proposal.

- Because the definition for "clean wood" is not being proposed for adoption, the remaining definition paragraphs that are being adopted will be re-numbered in the final regulations as follows: (135) "hydronic heater", (136) "solid fuel-fired heating device", and (137) "woodstove" or "wood heater".

- Proposed paragraph (136) "hydronic heater" is being adopted with changes. The department agreed with commenters that the definition could be clearer with respect to outdoor installations. However, hydronic heating units may also be indoors. As a result, DEC is broadening the definition to clearly include both indoor and outdoor units that may or may not have heat storage units. The adopted definition also clarifies that forced air furnaces are not considered hydronic heaters. This definition will be re-numbered as (135).

  Commenters also noted that many hydronic heaters use coal as fuel and supported the addition of coal boilers to the definition of hydronic heaters. No change was made to the definition because the proposed hydronic heater definition notes the burning of "other solid fuels," which would include coal. As a practical matter, DEC's regulations may specify whether a provision applies to all solid fuel-fired hydronic heaters or just to those that burn wood products.

- Proposed paragraph (137) "solid fuel-fired heating device" is being adopted as proposed but will be re-numbered as (136). No comments suggesting specific changes were received on this definition.

- Proposed paragraph (138) "woodstove" or "wood heater" is also being adopted as proposed but will be re-numbered as (137). No comments suggesting specific changes were received on this definition.

- A new paragraph (138) “masonry heater” is being added to define masonry heaters based on their function and design or as otherwise described in the International Building Code, ASTM E1602, or UL1482. DEC added this definition in response to concerns raised that masonry heaters were not included in the wood-fired heating device definition in section (123). When the term “masonry heater” was added to (123), DEC decided that it would also warrant its own definition to further ensure clarity for this type of heating device within the regulations.

General Comments

Summary of Comments: Comments received in response to the proposals for changes to regulations governing the nonattainment area for the PM 2.5 NAAQS standards in the Fairbanks North Star Borough (FNSB) represented the views of the public, businesses, and special interest groups. Comments were submitted via oral testimony and in writing. General comments are categorized and summarized as follows:

- **Efficacy of Proposed Regulations**

Commenters identified Clean Air Act State Implementation Plan (SIP) requirements and expressed opinions about the effectiveness of the proposed regulations at bringing the nonattainment area into attainment for the 2006 PM 2.5 24-hour NAAQS. Commenters noted that DEC's SIP must demonstrate a 22% reduction in EPA's designated ambient design value concentration of 44.7 µg/m^3 which would constitute an approximately 9.7 µg /m^3 decrease. Commenters felt that the materials and evidence DEC provided to the public as part of the review process did not demonstrate the potential for the proposed regulations to achieve a 22% reduction and either argued that stronger regulations were needed to protect public health and attain the NAAQS or that certain proposed regulations should not be implemented because they would only provide insignificant improvements. Commenters also noted that the DEC did not release a proposed SIP for examination during the public review process. Commenters felt that this made it impossible to determine the overall role of the proposed regulations in achieving attainment and their possible efficacy.

- **Air Quality/Health**

Commenters reported experiencing impaired air quality as a result of the operation of solid fuel-fired heating devices including wood and coal burning devices. Commenters reported a visible layer of smoke, impaired visibility, smells of smoke, and physical reactions attributed to the smoke including: stinging eyes, coughing, asthma, and other acute or chronic health conditions. Commenters reported sometimes substantial or staggering medical expenses as high as one million dollars that they had accumulated due to treatment of conditions caused by air pollution including prescriptions, doctor and specialist appointments, emergency room visits, surgeries, out of state treatments, treatment of acute conditions such as heart attacks, stroke, and asthma attacks, and treatment of chronic conditions such as emphysema, asthma in children, and atrial fibrillation. Some commenters felt that the proposed regulations were not protective enough of human health and wanted DEC to consider the health costs borne by these individuals and the public as a result of implementing or not implementing the regulations as proposed. Comments identified scientific materials that demonstrate a causal relationship between PM 2.5 and effects on human health. Other commenters questioned the validity of the results of researchers and denied assertions that the burning of solid fuels by individuals heating their homes or businesses had caused the physical reactions experienced by others in the community. A sentiment was expressed that individuals affected by smoke should voluntarily relocate instead of insisting on the imposition of new regulations.

- **Impacts of Pollution on Community**

Comments identified further impacts of air pollution on the community within the nonattainment area. In addition to medical expenses, commenters reported declines in property values, inability to sell property, expenses incurred relocating to cleaner areas within the nonattainment area or outside of the nonattainment area, travel, lost wages due to work absences, absences from school, loss of outdoor recreation opportunities, and installing air filtration units. Commenters also pointed to hypothetical impacts such as loss of tourism revenue and potential loss of jobs as companies or even government agencies either relocate or choose not to operate in the nonattainment area due to health concerns.

- **Use of Airshed**

Comments addressed the use of exterior air during periods of high pollution levels. Commenters noted that pollution events occurred year round and sometimes coincided with conditions that otherwise would limit outdoor activity and exposure to air such as extreme cold. Comments also noted the persistence of wildfire smoke during summer months when outdoor activities would not otherwise be limited by natural conditions. Commenters expressed doubt that the airshed is used during extreme cold weather events while other comments cited multiple uses of the airshed that would benefit from the reduction of PM 2.5. Commenters noted that all indoor air within confined spaces such as households, public buildings, schools, businesses, and automobiles ultimately comes from the outside and that while the presence of pollution could be mitigated through the installation and operation of expensive filtration units, laser particle counters, or masks, this option was unavailable to many affected citizens due to financial constraints. Commenters listed outdoor activities that require individuals to breathe polluted air such as bicycling, walking, running, jogging, skiing, dog mushing, and other recreational activities. It was proposed that PM 2.5 pollution limited access to clean air and outdoor activities that promote positive impacts on physical and mental health during winter months.

- **Sources of PM 2.5**

Comments showed acceptance that the combustion of solid fuels in solid fuel-fired heating devices and through open burning during winter contributed to the formation of PM 2.5 but also identified other contributing sources of PM 2.5. Commenters pointed to major and minor permitted sources, idling vehicles and construction equipment, aircraft, coal fired power plants, refineries, local industries, forest fires, diesel engines, and regional haze as sources of PM 2.5 and argued that the proposed regulations unfairly burdened solid fuel heating device users and open burning practices. Commenters identified coal fired power plants as emitting visible plumes and causing deposition of contamination outside the boundaries of the facilities. Comments suggested curtailing other sources of PM 2.5 and offered mitigation technologies and strategies that could be used to reduce the pollution caused by those other sources. Commenters suggested promotion of renewable, non-biomass, energy sources such as wind, solar, geothermal,

and hydroelectric. Commenters also felt that natural gas would be a clean energy source but may take too long to have an effect or may not be adopted by residents due to upgrade costs or higher fuel cost compared to wood or coal.

- **Causes of Air Quality Episodes**

Commenters noted two scenarios under which PM 2.5 exceedances occurred, wildfires during the summer months and inversions during the winter. It was suggested that efforts would be better spent on the prevention and fighting of wildfires during the summer to reduce the intense wood smoke experienced in the nonattainment area during wildfires; however, other comments pointed out that wildfires do not cause the majority of exceedances. Commenters noted that wildfires were a natural occurrence that could not be regulated. Comments said that the inversions that lead to episodes in the winter are also a natural occurrence that cannot be controlled and that exceedances resulting from inversions either should or should not be addressed through regulation. It was noted that inversions occur during extremely cold temperatures that necessitate the burning of fuels to maintain safe interior environments and prevent property damage such as burst pipes.

- **Monitoring**

Commenters made note of the current monitoring efforts and expressed concerns on the use of the current model of using only several monitors to regulate the entirety of the non-attainment area. Comments suggested the installation of additional monitoring stations or subdividing the nonattainment area to allow regulators to target specific areas for curtailment. Other comments expressed concern with this strategy pointing out that even areas outside of the nonattainment area contributed to the PM 2.5 levels and that exempting certain sources within the nonattainment area during curtailment periods would unfairly penalize the residents of areas where PM pollution from other areas tends to accumulate. Comments expressed concern over the timeliness of changes to curtailment action levels in response to the real time improvement of air quality or conditions and suggested that regulators would update information or curtailment actions during non-business hours. Commenters also desired an explanation of how the monitoring data would be used in calling an air episode.

- **Need for Solid Fuel Heating Devices (SFHDs)**

Commenters expressed need for SFHDs. They noted that exceedances typically occur during extreme cold weather conditions when SFHDs are used to heat spaces to maintain safe, survivable, and habitable environments and to prevent property damage. Commenters addressed the types of heating options available to residents including electric heaters; hydrocarbon based systems such as fuel oil, propane, natural gas, and kerosene fueled devices; and solid fuel burning devices such as biomass, wood, pellets, and coal. Commenters noted that fuel sources that produce significantly less PM 2.5 can be significantly more expensive than their alternatives. Comments suggested that economic factors influences the need for the use of cheaper solid fuels and that the use of wood as a fuel source contributes less to greenhouse gas emissions. Commenters proposed fuel oil subsidies as a solution to the use of solid fuels due to the use of SFHDs

for economic reasons. Other commenters noted that SFHDs were the sole source of heat for their homes or businesses citing a lack of electricity or lack of any other heating device. Commenters expressed concern over the need for electricity to operate devices other than woodstoves and worried about curtailment actions at times when power outages prevented usage of alternative heating devices. Other commenters noted that their woodstoves were needed as supplements to other heat sources during extreme cold weather events or in the event of non SFHD inoperability or failure.

- **Need for Regulations**

Commenters expressed both a desire for and rejected a regulatory approach to the air pollution problem. Those that rejected the need for regulations offered multiple explanations including: a perceived adequacy of current regulations, alleged political and economic motivations behind the regulations, a desire for legislative action on the issue, disapproval of government involvement, a local ballot proposition that voiced a desire to not be regulated, enhanced access to natural gas or improved technology developed by the free market would solve the problem, or preferred a community based approach that emphasized cooperation and education. Other commenters expressed dissatisfaction with current regulations, felt the proposed regulations would not be effective, pointed to a need to curtail PM 2.5 emissions to protect public health in the nonattainment area, desired state regulations due to an impotency of the FNSB caused by the local ballot initiative, maintained that waiting for access to natural gas would not solve the problem quickly enough and that effective technologies already existed, or pointed out that a community and education based approach had already been tried and was not working to a satisfactory extent. Commenters felt that the proposed regulations may fail to establish federally required enforceable control measures or contingency measures.

- **Possible Regulatory Options**

Industry experts offered the results of an informal survey of local chimney sweeps that found that the number of non EPA certified woodstoves in residences approached 50% and surmised that a majority of pollution was caused by non-certified stoves. Citing a low turnover rate of woodstoves due to the long lifespan of wood stoves and the current availability of cleaner burning appliances, commenters offered several options for incentivizing or requiring replacement. Commenters expressed need for an expanded change-out program that is less financially burdensome and less intrusive that would cover the entire cost of a stove installation to incentivize the installation of devices that could provide users with greater economy through increased efficiency. Comments also sought a provision requiring the replacement of non-certified devices upon the sale or transfer of property suggesting the cost of upgrades could be included in a mortgage and could be enforced by the real estate industry. Commenters suggested that upgrades would be more attractive if they could be incentivized through an exception to curtailment under certain conditions that would curtail the use of non-certified appliances. Commenters also suggested citations or imposition of fines for highly polluting appliances to further incentivize replacement or compliance with regulations. Comments questioned the effectiveness of the results of EPA testing labs in predicting the real world performance of devices in the nonattainment area. Comments also

expressed concern that a regulation that expressly required EPA-certified devices could stifle local technological innovation due to a lack of a local EPA-certified testing facility. Comments also stated a need for increased insulation of buildings through building codes applicable to new structures suggesting that increased insulation would decrease the energy needed to heat a space and result in less PM 2.5 emissions. Commenters also felt that regulations could protect the most vulnerable portions of the population by placing more strict restrictions in areas directly surrounding public places and schools.

- **Regional Applicability of Regulations**

Commenters suggested various alternatives for the extent to which regulations applied throughout the state. Some comments sought the imposition of the proposed regulations on the entire state of Alaska, the entire FNSB, the entire nonattainment area, or subdivisions of the nonattainment area. Comments reasoned that expanded impositions would reduce instances of purchasing non-certified appliances outside of the nonattainment area for installation within and reduce or possibly allow enforcement in cases of localized nuisance problems elsewhere in the state.

Fiscal Concerns Summary: Comments listed a variety of ways in which the current conditions have fiscal impacts and ways in which the proposed regulations would have fiscal impacts on individuals and businesses within the non-attainment area

Commenters noted a variety of costs including those associated with the present pollution patterns, costs predicted if the area is not brought into attainment, and costs associated with compliance with the proposed regulations. Commenters said current and past costs associated with the pollution problem in Fairbanks included increased healthcare costs associated with an increase of emergency room visits during exceedances, increased doctor and specialist visits, medication costs, surgery costs, and travel expenses. Commenters reported having missed days of work or school due to health effects associated with pollution or to prevent exposure to pollution. Commenters experienced losses in property values in highly polluted locations impacting an individual's ability to relocate to less polluted areas. Commenters who were able to move and moved due to pollution levels reported costs associated with selling old homes, purchasing new homes, and moving. Other commenters reported costs associated with purchasing and installing and operating home air monitoring and filtration systems. Commenters addressed financial impacts that could possibly continue or arise if pollution control measures are not adopted. Comments suggested continuation of the pollution problem would cause a continuation of currently reported expenses. Comments also suggested that impacts to the FNSB economy could occur due to pollution levels. These impacts included the loss of productivity, loss of employers, loss of residents, and loss of potential tourism. Comments addressed the potential costs associated with complying with the proposed regulations. Commenters stated that the costs of complying with a burn ban by using other fuels or energy sources would be financially unfeasible for residents of the nonattainment area. Commenters listed a variety of financial impacts including the costs of upgrading heating devices, switching to different heating fuels, and purchasing certified devices.

Responses to Comments:

- CAA Requirements for Attainment of NAAQS and Efficacy of Proposed Regulations

The U.S. Environmental Protection Agency has determined that a portion of the Fairbanks North Star Borough is in nonattainment for the health-based National Ambient Air Quality Standard for fine particulate matter. As a result, Alaska is required under the Federal Clean Air Act to develop and implement a State Implementation Plan (SIP) that commits to implement measures that will provide for timely attainment and comprise the SIP.

These proposed regulations are being developed in an effort to reduce PM 2.5 emissions in the Fairbanks nonattainment area. These regulations coupled with other programs and requirements will help to bring the Fairbanks nonattainment area into compliance with the NAAQS. The full suite of measures will be incorporated into Alaska's SIP, which is being released for public review and comment along with the re-proposal of certain aspects of this regulation package and new regulatory proposals.

- Public Health Impacts

One of ADEC's primary objectives is the protection of human health and welfare via the safeguarding of air quality. At the same time, DEC recognizes that citizens of Alaska face extreme winter temperatures and high energy costs. The PM 2.5 and PM 10 NAAQS are health-based standards, and the health effects due to inhalation of particulate matter are well documented. Particles smaller than 2.5 microns in aerodynamic diameter tend to diffuse across the alveoli of the lung. This diffusion allows for systemic distribution of the particles and their contents throughout the body via the circulatory system. In addition to asthma and lung-related irritation, research indicates that exposure to PM 2.5 can cause premature death in individuals with heart and lung diseases and it can increase the risk of nonfatal heart attacks, irregular heartbeat, and decreased lung function. Children, older adults, and those with heart and lung issues are affected more commonly than healthy adults. PM 2.5 monitoring data collected during the 2008-2009, 2009-2010, and 2010-2011 winters in the FNSB suggest that the 24-hour PM 2.5 NAAQS is being exceeded about 25% of the days during the winter months. These regulatory proposals are meant to address the public health impacts from poor air quality within the nonattainment area.

- The Airshed and How it is Used

The Clean Air Act (CAA) regulates ambient air pollution. This includes the outside air that people breathe. While indoor air quality is very important, it is not regulated by the CAA. However, it is important to note that indoor air comes from the outdoor airshed and that outdoor air pollution can enter indoor spaces. People use the outdoor air when they do any outdoor activity including transportation and recreation. People can encounter and breathe polluted air that may affect their health. People are also affected by polluted air entering vehicles or the buildings in which they visit, work, go to school, or live.

The Fairbanks North Star Borough nonattainment area can be considered an airshed, although there are some distinct sub-areas within the nonattainment area boundary. The boundary was determined in 2009 by the Environmental Protection Agency through the designation process. The Borough and State provided information to EPA and made recommendations on a boundary. EPA considered the recommendations but also used additional analytical tools, and other relevant information, to make final decisions on nonattainment area boundaries including: emission data, air quality data, population density and degree of urbanization (including commercial development), traffic and commuting patterns, growth rates and patterns, meteorology (weather/transport patterns), geography/topography (mountain ranges or other air basin boundaries), jurisdictional boundaries (e.g., counties, , metropolitan planning organizations), and the level of control of emission sources. Additional information on the area designation process is available on EPA's web site at:
http://www.epa.gov/airquality/particlepollution/designations/2006standards/index.htm

- Sources of PM 2.5

Studies have consistently shown that space-heating by wood-fired devices is the largest single category of PM 2.5 emissions in the nonattainment area during the period of wintertime PM 2.5 exceedances. The 2008 Baseline Episode average daily emission estimates for the air quality plan indicates that space heating devices are responsible for approximately 2.76 tons of PM 2.5 emissions per day as compared to the nonattainment area total emissions from all sources of 4.93 tons per day. Thus, all space heat represents an estimated 56% of total emissions during winter episodes of high PM 2.5 concentrations and 96% (2.66 tons per day) of those PM 2.5 space heating emissions are attributed to wood burning. Other winter episode sources include power and industrial plants, commercial sources, vehicles, coal burning devices, and non-road equipment.

- Causes of Air Quality Episodes: Wildfires and Winter Emissions

The FNSB experiences PM 2.5 exceedances caused by wildfires and by anthropogenic emissions. Fairbanks is regularly impacted by wildland fire smoke in the summer months. While some wildfires are caused by the actions of humans, others are naturally occurring. The Federal, State, and Local firefighting agencies cannot control or extinguish every wildfire that may impact air quality in the FNSB nonattainment area. EPA allows states to apply for exemptions to exclude the data affected by exceptional events such as wildfires from the calculations used to determine attainment or nonattainment. Alaska applies to EPA for exemptions for exceedances caused by wildfire smoke. These events are considered natural phenomenon that have effects on pollution levels that human activity cannot fully mitigate.

Inversions are periods when air is trapped close to the ground and is often paired with stagnation events that prevent dispersion of atmospheric pollutants. While these events are a natural phenomenon, they do not directly cause the emissions of pollutant as

wildfires do, they simply alter the dispersion of the pollutants and cause them to accumulate. Human actions can mitigate emissions to lower the level of pollutants in the air trapped under an inversion. EPA's definition of 'exceptional event' in 40 CFR 50.1 (j) specifically excludes stagnation of air masses and meteorological inversions. EPA will not exclude any exceedances that cannot be attributed to exceptional events that occurred during an inversion or stagnation event.

Anthropogenic emissions within the nonattainment area have been identified as the cause of wintertime exceedances. These proposed regulations are part of a suite of actions proposed to be taken by local, state, and federal regulators in an effort to reduce emissions and improve air quality within the Fairbanks nonattainment area.

- Air Monitoring Program

The Fairbanks non-attainment area was designated based on the State Office Building (SOB) PM2.5 air monitoring site using the data from 2006- 2008. At the time there only existed one PM2.5 monitoring site in Fairbanks. Only one official site is required by federal rules for a metropolitan area the size of the Fairbanks/North Pole non-attainment area. (40 CFR 50 Appendix D 4.7)

Since 2008 DEC and FNSB have established numerous short term monitoring sites to determine the extent of the PM2.5 impacted areas within the non-attainment area and the various levels of PM2.5 in the community. Monitoring is resource intensive and efforts are made to find sites that generally represent certain parts of the community, whether at a broader neighborhood scale or on a micro-scale.

Compliance with the NAAQS is determined using a testing method that differs from the method that would be used to call air quality episodes. The NAAQS is based on a 24-hour average taken using equipment that passes ambient air through a filter for a period of 24 hours every third day. Each filter is then analyzed for the amount of PM 2.5 and for other characteristics. Using this method to call advisories and episodes would be ineffective and slow. As a result, advisories are called using continuous monitoring technology that measures the amount of PM 2.5 in the air hourly, giving regulators an up to date picture of air quality to use to call advisories. This same technology would be used to call PM 2.5 episodes in the future.

Concerns continue to be raised about the extent of the air monitoring network in the nonattainment area. Community discussions and the programs developed under the SIP may result in changes to the monitoring network in the months and years to come.

- Need for Solid Fuel Heating Devices and Economical Heating Options

Commenters expressed concern about maintaining economical heating options within the nonattainment area and that wood was the most economic choice for heating their homes. DEC recognizes that individuals gather wood for fuel as part of their lifestyles. DEC also understands the shift away from cleaner burning fuel oil and electricity towards wood, biomass, and coal as fuels for heating as costs for fuel oil and electricity have risen. The portion of the regulation package that DEC has finalized does not prevent the use of wood as a heating option within the nonattainment area.

Some commenters proposed a fuel oil subsidy to help address the high costs of heating and reduce dependence on more affordable wood. DEC understands these comments about high heating oil costs in the Interior driving the use of more solid fuels for home heating in the nonattainment area and the desire to lower those costs for the primary base heating fuel, which is fuel oil. There are a number of ways to address the air quality impact of solid fuel use in lieu of and in addition to fuel oil. Given the work and priorities identified by the local community through the air planning process to date, the state is currently focused on a project to enhance the availability of natural gas in the community as well as providing funding to subsidize the replacement of high emitting wood heaters with of cleaner burning stoves.

While switching from solid fuels to a less polluting fuel source such a fuel oil would have an effect on air quality, the department has heard that many homes that have heating oil systems require supplemental wood heat during extreme cold periods. This is why the department has focused on finding economical cleaner burning fuel options and reducing emissions from wood heaters by ensuring the cleanest burning devices are installed and operated correctly. The regulations being adopted would ensure that only clean burning wood heaters are installed when residents upgrade or put in new devices inside the nonattainment area. The department plans to release additional regulation options and the overall air quality plan for the nonattainment area for further public review and comment. A fuel oil subsidy would require additional resources beyond those currently available to DEC and identified to date. As a result, this option would need to be addressed through either the local government process or through the state legislative process.

In discussing sources of PM 2.5 and the need for affordable heating options in the nonattainment area, commenters noted that the enhanced availability of natural gas and other energy alternatives would provide air quality benefits. While promoting these types of activities is not specific to this regulatory action, the State of Alaska is involved in a variety of efforts to provide additional energy sources to the FNSB including a natural gas pipeline, natural gas trucking, hydroelectric power, and the Healy coal-fired power plant. Of particular significance for the nonattainment area is the effort by the State of Alaska in expanding the availability and use of natural gas in the nonattainment area through the implementation of the Interior Energy Project. The Interior Energy Project provides the financial tools needed to bring natural gas to the Fairbanks and North Pole area. The project was established through Senate Bill 23 which passed the Alaska

Legislature unanimously in April 2013. The legislation authorizes the Alaska Industrial Development and Export Authority (AIDEA) to provide the financing package to partner with the private sector to build a liquefied natural gas (LNG) plant on the North Slope and natural gas distribution system in Fairbanks and North Pole. The current projections indicate that the earliest this project will provide additional natural gas into the community is 2016.

- Need for Regulations

Commenters expressed both a general desire for regulations to address air pollution or rejected regulatory approaches. Responses related to these general comments are contained in the sections of this Response to Comments dedicated to the specific sections of the regulatory proposal.

- Possible Regulatory Options

Commenters provided ideas and options to revise the proposed regulations and for potential regulations and programs beyond those proposals identified in this regulatory proposal. Many of the options raised as general comments are included in the sections of this Response to Comment specific to various aspects of the proposal.

In terms of some of the general comments received, DEC's Justification Document and Peer Review demonstrated the economic feasibility of establishing wood-fired heating device regulations. With respect to incentivizing additional upgrades to wood-fired heating devices, the FNSB wood heater change-out program provides such an opportunity to individuals living in the nonattainment area. Individuals who upgrade to more efficient devices will not only help to lessen the air quality problems in the nonattainment area, they will enjoy increased efficiency that will save them time and money by using less fuel to provide heat.

With respect to energy efficiency, there are many ways of reducing PM 2.5 emissions by increasing efficiency. As noted in the comments, one example is increasing the amount of insulation in a building. Increased insulation leads to less heat loss and a reduced need for fuel to heat a space. Newly constructed homes usually incorporate features that reduce heat loss, however energy efficiency improvements can also be made to older homes. Programs exist to help homeowners improve the energy efficiency of their homes such as programs administered by the Alaska Housing Finance Company. While there are many benefits to increasing home energy efficiency to both the individual and community, DEC has not proposed to implement regulations regarding home insulation requirements as there are other non-regulatory programs and building codes where this issue could be addressed.

- Regional Applicability of Regulations

Portions of the proposed regulatory package apply to all of Alaska and others apply only to PM 2.5 nonattainment areas, current and future. The regulations were crafted to give the state flexibility to consider the circumstances and causes of non-attainment in specific areas to best address the root cause and bring the area into attainment. As a result, the department has focused some regulations to the nonattainment area while others are being proposed to take effect statewide. For example, wood heater fuel requirements and emission standards and winter open burning restrictions were proposed for the nonattainment area to assist with addressing the specific air quality problem. Air episode levels and changes to visible emission requirements were already statewide regulations and were proposed for revision statewide.

Comments on Public Review Process

DEC provided an extended 120 day public review opportunity for the public and interested stakeholders to evaluate and comment on the proposed regulations. During this process open houses and public hearings were held. 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: Comments on the public review process included general comments about the process, reports of experiences of individuals participating in the process, aspects of the process that could be improved, and suggestions for improving the process. DEC tracked these comments as they were received and adjusted its approach and process, in some cases during the comment period.

- **General Comments**

Commenters made general comments about the public review process including the effectiveness of the process in conveying information and providing opportunities for public comment, the length of time of the public review and comment period, and the responsiveness of DEC during the public review process. Some commenters said that DEC did a reasonable job of conveying information and providing opportunities for public comment but other commenters indicated areas that DEC could have improved. Some commenters felt that the amount of advertising done by DEC was inadequate and that proposed regulations should be printed or made available in other formats than newspaper legal notices and that public hearings should have been better publicized. Comments also addressed the length of the public review process. Some commenters felt that the 120 day length was excessive and served only to delay the implementation of any regulations until after the end of winter. Other commenters felt that the 120 day public review period was necessary to provide adequate time for the public to review, understand, and comment on the proposed regulations. Commenters also felt that it was difficult to get responses from DEC during the process about how comments were being answered and what changes to the proposed regulations were being considered as a result of the comments. Commenters suggested that posting comments online like other states have done and responding to those comments during the comment period would promote a more constructive discourse between the public and DEC. Commenters also felt the public review process could have benefited if the regulations had been more specific about curtailment actions, enforcement, and delegation to local authorities. Commenters suggest that the process could have been more focused if the public were aware of these aspects of the proposed regulations.

- **Electronic Comment Submission**

Commenters used the online Air Quality Electronic Comment Submission form to submit comments on the proposed regulations and noted several characteristics of the process that they found either helpful or not helpful. Commenters felt that the online comment form was a valuable tool for promoting public involvement. Comments were submitted on personal computers and on computers provided for public use during DEC's open

houses. Commenters noted that they were able to conveniently make comments without needing to attend a public hearing which individuals may have found unattractive or impossible due to work, school, or out of state travel. Commenters indicated that they liked being able to comment on each issue individually on the comment form. Commenters expressed confusion about whether comments would be emailed to them after they were submitted and felt that a confirmation email would allow them to retain their comments and confirm that DEC had successfully received their comments. Other commenters noted that if they had not clicked a box indicating the presence of fiscal impacts for each section that DEC's automatically generated email confirmation would say "FALSE" in the fiscal impacts category. Commenters felt that this did not accurately represent their comments and chose to resubmit their comments with the fiscal impact box checked to ensure DEC understood that they felt the regulations would have fiscal impacts.

- **Public Hearings and Open Houses**

Timing and Frequency

Commenters addressed the timing and frequency of public hearings. Commenters felt that public hearings were an important venue for individuals to provide comments. Commenters reported difficulty in attending hearings due to timing. Commenters felt that the public hearing that were scheduled during the day time made it difficult for individuals attending school or work to be present. Comments suggested possible motivations for holding hearings during the daytime including convenience for DEC employees or as an attempt to avoid or limit public comment opportunities. Commenters suggested the addition of evening hearings to better suit the needs of individuals who must attend school or work during the daytime to strengthen the public hearing process. Commenters appreciated DEC's responsiveness and subsequent addition of an evening public hearing. Commenters also expressed disappointment that testimony was limited to three minutes for each private individual testifying at the Fairbanks hearings. Some commenters were unable to finish their testimony in their allotted time. Commenters suggested alleviating this problem by adding additional hearing opportunities.

Facilities

Commenters addressed the facilities used by DEC for the public review process. Commenters felt that the rooms used were too small and resulted in overcrowding, that microphone and speaker systems were not used effectively, and that it was sometimes smoky in the venues which impacted sensitive individual's ability to participate. Commenters suggested that these issues be remedied at future events. Commenters also relayed difficulty locating meeting rooms for public hearings.

Advertising

Commenters addressed the amount and types of advertising done as part of the public review process. Commenters noted that the draft regulations were available online and in newspaper legal sections. Commenters felt that these forms of advertisement were not sufficient. Commenters described adequate advertisement for open houses but felt that, by comparison, public hearings were less advertised. Commenters viewed this as an attempt to avoid public participation through comment. Some commenters said that they were unaware of public hearings until seeing or hearing advertisements by private parties.

Outside Parties Accepting Comments

Comments were received that expressed concerns about an outside party who was soliciting comments from the public on the regulatory proposal which were to be forwarded on to DEC.

Public Hearing Decorum

Commenters addressed participant decorum at the public hearings by describing inappropriate behaviors, speculating on the causes, suggesting corrective measures, and reacting to actions taken by DEC. Commenters mentioned inappropriate participant behaviors at public hearings including booing, making "raspberries", speaking out of turn, interruptions, threatening and intimidating behaviors, disrespectful testimony, open display of firearms, and suggested there was a mob mentality. Commenters speculated that the facilities contributed to the negative decorum demonstrated. Commenters said that the spaces rented for the hearings were too small which resulted in overcrowding and that audience members were unable to hear testimony due to a lack of or proper use of a microphone and speaker system. Commenters felt that these factors helped lead to the lack of decorum observed. Commenters suggested that the observed lack of decorum prevented a respectful environment where individuals can freely voice their opinions and suggested measures to improve decorum at hearings.

Commenters suggested laying out ground rules for behavior and consequences for breaking those rules. Commenters suggested that violations of ground rules be met with consequences such as being warned to comply with rules, being asked to leave, being removed, losing the opportunity to provide oral testimony, or extending the time allotment of the specific individual whose testimony is affected by inappropriate behaviors. Commenters suggested that DEC staff should have called for interruptions to cease during testimony or should use a professional facilitator to run the hearings. Other commenters complimented DEC staff performance during difficult circumstances. Some commenters suggested that DEC Commissioner Larry Hartig attend the hearings to prevent intimidation of DEC staff. Commenters also addressed the presence of a uniformed police officer at one hearing in response to the behaviors at the previous hearing. Some commenters said that the officer's presence was welcome

and helped to ensure proper behavior during the hearing. Other commenters, however, interpreted the officer's presence as an intimidation tactic by DEC to wrongly influence individuals present at the hearing.

Response to Comments:

DEC appreciated receiving comments on the public review process. These comments are helpful because they allowed DEC to actively modify its public review process for these proposed regulations and will help DEC plan future public review processes. Comments on the public process help DEC facilitate more effective public involvement for issues that are important to our communities.

During this public review process DEC responded to several concerns addressed in these comments. DEC responded to concerns about the timing of the first public hearing by adding a second hearing scheduled in the evening. DEC also requested the presence of a local police officer at the second hearing in response to comments about safety/security concerns and the decorum demonstrated at the first hearing.

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 published its first public notice on September 20, 2013 in three newspapers for three days each which fulfilled the minimum requirements. DEC also posted the public notice on the State of Alaska online public notice portal and on the Division's public notice webpage. In addition, all those individuals who were signed up with the Division to receive electronic notices received an email notification.

In addition to the public notice, DEC held four 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. Ultimately, DEC issued 4 more public notices (9/25, 11/14, 12/13, and 1/10/14) to fix a notice issue, announce the availability of the justification document for wood heater emission standards, to announce the addition of an evening public hearing (as requested by commenters), and to clarify the public comment end date.

With respect to process comments about an individual soliciting and gathering public comments to be submitted to the department, DEC notes that it has no control over individuals who wish to collect and provide comments to the department on a regulatory proposal. However, DEC can only consider comments it receives during the public comment period, so the best way to ensure

that comments are received and considered is to submit them directly to the department following the methods provided and announced in the public notice. The primary goal of a public review period is to obtain feedback and comments from the public to allow for full consideration of all aspects of the proposal. In this case, DEC did receive a number of batches of public comments during the comment period that had been collected in the community and those comments were considered and are summarized in this Response to Comments. Overall, the comments received regarding the public comment review process have been very helpful as DEC looks toward making improvements to future public comment processes.

Wood Heater Emission Standard Justification Document and Peer Reviews

Alaska Statute 46.14.010 requires DEC to develop a peer reviewed written finding when it intends to adopt an emission standard more stringent than those set by EPA. The standards proposed in 18 AAC 50.077 for wood-fired heating devices are more stringent than current EPA standards. In November 2013, DEC released "Department Findings: The Need and Basis for More Stringent Wood-fired Heating Device Emission Standards" and contracted with three independent consultants to conduct a peer review of the findings in DEC's justification document. The justification document and the findings of the three peer reviewers were made available for public review as part of the public review process and DEC solicited public comment.

Summary of Comments: Comments received addressing the justification document and peer reviews expressed varying degrees of support for the scope and findings of the analysis.

- **Scope of Analysis**

Commenters mentioned topics that had not been covered in the justification document or peer reviews that they felt should have been considered. Some commenters felt that the peer review should have encompassed all of the proposed regulations and included a peer review of the evidence and causes of the PM 2.5 nonattainment. Other commenters felt that the analysis should have, but did not, fully considered all of the potential financial impacts of the proposed regulation. Commenters said that the analysis focused on the cost to consumers of needing to purchase 2.5 g/hr woodstoves. Commenters felt that the analysis should have considered the fiscal impacts of the proposed standards on public health. Commenters felt that although these costs may be difficult to quantify, they are important to consider when deciding to adopt or not adopt the proposed standards. These commenters suggested that an analysis of the public health costs in comparison to the costs of cleaner burning woodstoves would show that adopting the proposed standards would have a greater financial benefit than not adopting the proposed standards. Commenters also felt that the analysis should have included a peer review by a public or respiratory health expert of the physical health impacts of PM 2.5 on the health of individuals including sensitive groups such as children and other vulnerable populations.

- **Analysis Findings**

Commenters indicated that they agreed with or didn't agree with certain findings of the analysis and peer reviews. Some commenters agreed with the finding in the justification document and the peer review comment by Steve Colt, UAA Institute of Social and Economic Research that the standards that require the purchase of cleaner burning woodstoves were unlikely to increase costs to the public because cleaner burning devices, Btu for Btu, were not more expensive than less clean burning stoves. Commenters said that the finding justified holding new devices to the highest attainable standards under current technology and proposed that the standards be updated periodically. Other commenters took issue with this finding. These commenters said that a majority of stoves sold would not meet the proposed standards and that these stoves were popular

because of their lower costs compared to 2.5 g/hr stoves. Commenters said that the 2.5 g/hr stoves were similarly priced with more expensive woodstoves, purchased for their aesthetic appeal rather than their cost, but were more expensive than the most popular non-certified woodstoves that are purchased because of their lower price.

Commenters also addressed findings in the peer review about the effectiveness of the new standards in helping to attain the 2006 24-hr PM 2.5 NAAQS. Commenters felt that there was a lack of verifiable evidence supporting the proposed standards. Commenters also noted that the emissions reduction resulting from the proposed standards would not bring the nonattainment area into attainment. Commenters suggested that this was because the proposed standard only applies to new devices and that the standards could have a greater effect if they targeted older, currently installed, highly polluting devices.

Commenters desired a more inclusive justification document and peer review that analyzed the impacts and effects of the entire regulatory proposal package and suggested topics they felt should have been included in the review.

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

Commenters addressed the finding that PM 2.5 stoves were not more expensive than uncertified stoves. Some commenters agreed with the finding or felt that even if a PM 2.5 stove happened to be more expensive upfront, any increased costs would be regained through efficiency and fuel savings. Other commenters felt that the review did not consider the different price ranges within each category and incorrectly compared the least expensive PM 2.5 stoves with more expensive stoves purchased primarily for aesthetic appeal instead of more popular lower cost non-certified stoves.

Commenters noted that the review did not include a more comprehensive analysis of the costs associated with operating non-certified heating devices. Commenters felt that the analysis focused only on the costs to the purchasers of woodstoves while it should have also included the costs associated with increased emissions by non-certified stoves such as healthcare costs.

Response to Comments:

Alaska Statute 46.14.010 requires DEC to develop a peer reviewed written finding when it intends to adopt an emission standard more stringent than those set by EPA. The standards proposed in 18 AAC 50.077 for wood-fired heating devices are more stringent than current EPA standards and DEC therefore focused its analysis on this portion of the regulatory proposal. The statutes in place at the time did not require an additional peer review analysis for the remainder of DEC's regulatory proposals. As a result, DEC did not expend the additional resources to prepare a similar peer reviewed justification for the remainder of the package. In future packages, new state statute provisions will require that additional information, particularly related to the estimated cost to private parties, be provided to the public for each regulation package.

Commenters that asserted that cleaner burning wood heaters were similarly priced with more expensive woodstoves and were more expensive than the most popular non-certified woodstoves being purchased did not provide data to support their claim. DEC's analysis as presented in the peer-reviewed document did not find such a result.

With respect to comments about the effectiveness of new standards in helping to attain the PM2.5 NAAQS, DEC notes that the wood heater emission standards are just one of a number of strategies designed to work together to reduce PM2.5 air pollution in the nonattainment area. It is being adopted to support and backstop the local, voluntary incentive program to change out old, high-emitting wood heaters with cleaner burning units. This regulation, in combination with other programs and control strategies, will improve air quality over time. This is demonstrated in the air quality plan or SIP that is being made available for public review and comment.

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 $\mu g/m^3$, 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 $\mu g/m^3$, 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 $\mu g/m^3$, 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 $\mu g/m^3$ 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.

The Proposed SIP fails to require RACT for Major Stationary Sources

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.