

**ALASKA DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION**



**Amendments to:**

**State Air Quality Control Plan**

**Vol. II: III.D.5.11**

**Fairbanks Emergency Episode Plan**

**Public Notice Draft**

July 18, 2017

**Bill Walker, Governor**

**Larry Hartig, Commissioner**

## 5.11. Fairbanks Emergency Episode Plan

Section 127(a) of the 1990 Clean Air Act Amendments (CAAA) requires all SIPs to include measures providing public notification of instances or areas in which any NAAQS is exceeded, and of the health hazards associated with such pollution. EPA previously issued guidance on the adoption of emergency episode plans designed to keep air pollution concentrations below those levels considered to have adverse consequences on human health.

### 5.11.1. Forecasting PM<sub>2.5</sub> Air Quality Episodes

The Fairbanks North Star Borough (FNSB) provides daily air quality forecasts using EPA's Air Quality Index (AQI) on its web site at <http://co.fairbanks.ak.us/airquality/>. The Borough posts separate AQI forecasts for Fairbanks and North Pole. The forecasts are based on PM<sub>2.5</sub> data collected from the ambient monitoring/meteorological reporting network and supplemented by a predictive model developed specifically for the purpose of forecasting PM<sub>2.5</sub> events in the community.

The AQI is an index for reporting daily air quality. It provides information on how clean or polluted the air is, what associated health effects may be of concern, and actions to take to reduce exposure and health impacts. The AQI provides six categories that correspond to a different level of health concern:

- Good – Air quality is satisfactory and poses little or no health risk.
- Moderate – Air quality is acceptable; however, pollution may pose a moderate health concern for a very small number of individuals.
- Unhealthy ~~to~~ for Sensitive Groups – Members of sensitive groups (like elderly, children, those with heart or lung disease) may experience health effects, but the general public is unlikely to be affected.
- Unhealthy – Everyone may begin to experience health effects. Members of sensitive groups may experience more serious health effects.
- Very Unhealthy – Everyone may experience more serious health effects.
- Hazardous – The entire population is even more likely to be affected by serious health effects.

To support this function, FNSB uses an air quality forecasting tool called the AQ Alert Model that projects PM<sub>2.5</sub> concentrations over a four day window (the remainder of today, tomorrow, and the following two days). The model outputs include the predicted values for PM<sub>2.5</sub> concentrations (rolling ~~8~~12-hour averages and 24-hour daily averages) at each monitor site over the next four days along with the weather conditions forecast by National Weather Service (NWS) as context for understanding the PM<sub>2.5</sub> predictions. To accomplish this, the model accesses in near-real time a wide range of data on recent PM<sub>2.5</sub> concentrations and meteorological conditions at the monitor sites, surface observations and upper air soundings taken at the Fairbanks airport, and forecasts of surface and upper air conditions from the Global Forecast System (GFS) weather prediction model operated by the National Weather Service. These data are combined within the model to drive a statistical representation of the relationship between meteorological conditions and ambient PM<sub>2.5</sub> concentrations. The statistical model is

based on a detailed analysis of data from the FNSB area and is updated annually to account for changes in consumer behavior that influence PM<sub>2.5</sub> concentrations. FNSB recently completed an assessment of the model's performance in the 2013-2014 winter and found that 88 percent of the time it correctly predicted whether an exceedance would occur on the following day.

Air quality specialists at FNSB use the model during the day to monitor changing air quality conditions at the monitors. Forecasts of future PM<sub>2.5</sub> levels can be generated at any time but are normally prepared in the hour preceding 5 pm local time. Air quality specialists use the modeled forecasts as one input to the decision-making process for issuing an air quality advisory. Other inputs are the afternoon forecast of dispersion conditions issued by the NWS forecasting office in Fairbanks and the assessment by FNSB personnel of many factors based on their long-standing experience in observing air quality in Fairbanks, including the rate of change in concentrations at the monitors and the location and movement of weather fronts seen in satellite photos.

### 5.11.2. Borough Episode Program

In June 2010, the FNSB Assembly adopted revisions to the Borough's Code to establish the local PM<sub>2.5</sub> Air Quality Control Program in Chapter 8.21.<sup>1</sup> A copy of this ordinance, 2010-28, is included in Appendix III.D.5.12. The PM<sub>2.5</sub> Air Quality Control Program chapter has undergone significant changes beginning in 2015. Ordinances modifying the chapter include 2015-01, 2015-18, 2015-29, 2015-73, 2016-21, 2016-37, **and 2016-20-1A, and 2017-18.**<sup>2,3,4,5,6,7,8,9,10</sup> Ordinance 2016-30 renumbered and reorganized Borough Code, resulting in the relocation of the PM<sub>2.5</sub> Air Quality Control Program chapter from Title 8 Chapter 21 to Title 21 Chapter 28.<sup>11</sup> The Borough ordinances that have been adopted following the adoption of the Fairbanks moderate plan have been inserted into Appendix III.D.5.12 – Assurance of Adequacy.

Borough code, 21.28.050, requires the Borough to issue daily weekday PM<sub>2.5</sub> forecasts during the winter months of October through March before 4:30 pm. Air quality staff evaluate hourly and 24-hour average air quality monitoring and meteorological data when making forecasts. If the PM<sub>2.5</sub> concentration has exceeded **or is forecasted to exceed** the threshold for an **advisory or** alert and is forecasted to remain at that level for 12 hours or more, then the Borough declares an air **advisory or** alert. ~~Advisories and alerts~~ **Alerts and warnings** implement a multi-staged episode program that progressively restricts different classes of devices based on the severity of the forecasted air quality conditions. The episode program does not affect the whole nonattainment area, only the Borough's 'Air Quality Control Zone' which encompasses the State's Fairbanks and North Pole zones but excludes the Goldstream zone. ~~Advisories and alerts~~

<sup>1</sup> Fairbanks North Star Borough Assembly Ordinance No. 2010-28, June 10, 2010.

<sup>2</sup> Fairbanks North Star Borough Assembly Ordinance No. 2015-01, February 27, 2015

<sup>3</sup> Fairbanks North Star Borough Assembly Ordinance No. 2015-18, April 23, 2015

<sup>4</sup> Fairbanks North Star Borough Assembly Ordinance No. 2015-29, June 25, 2015

<sup>5</sup> Fairbanks North Star Borough Assembly Ordinance No. 2015-73, January 14, 2016

<sup>6</sup> Fairbanks North Star Borough Assembly Ordinance No. 2016-21, May 4, 2016

<sup>7</sup> Fairbanks North Star Borough Assembly Ordinance No. 2016-37, July 28, 2016

<sup>8</sup> Fairbanks North Star Borough Assembly Ordinance No. 2016-20-1A, August 11, 2016

<sup>9</sup> **Fairbanks North Star Borough Assembly Ordinance No. 2017-18, March 9, 2017**

<sup>10</sup> **Fairbanks North Star Borough Assembly Ordinance No. 2017-44, June 19, 2017**

<sup>11</sup> Fairbanks North Star Borough Assembly Ordinance No. 2016-30, April 28, 2016

**Alerts** can apply to the whole ‘Air Quality Control Zone’ or to one or more sub-areas. When a local air quality ~~advisory or~~ alert is issued, the Borough notifies local media to ensure that the declared ~~advisory or~~ alert is broadcast to the public. This notification includes the PM<sub>2.5</sub> forecast, episode curtailment requirements, and additional information on how the public can further reduce PM<sub>2.5</sub> emissions. Tables ~~1-5.11-1~~ and ~~2-5.11-2~~ detail the advisory and alert requirements in 21.28.050 as amended through ~~June 25, 2015~~ June 19, 2017 in Ordinance ~~2015-29~~ 2017-44.

**Table 5.11-1 Air Quality Episode Thresholds and Exceptions**

Episode Feature	Stage 1 Air <del>Advisory</del> Alert	Stage 2 Air Alert	Stage 3 Air Alert
PM <sub>2.5</sub> Threshold, <u>micrograms per cubic meter,</u> ( $\mu\text{g}/\text{m}^3$ ) $\mu\text{g}/\text{m}^3$	25	35	<b>55</b>
Exceptions during cold weather?	No	No	Yes, see Table 2
Exceptions During a Power Outage	<del>No</del> <b>Yes</b>	Yes	<b>Yes</b>

**Table 5.11-2 PM<sub>2.5</sub> Air Quality Episode Device-Specific Actions**

Device Type	Stage 1 Air <del>Advisory</del> Alert	Stage 2 Air Alert	Stage 3 Air Alert
EPA-certified Solid Fuel Burning appliances, <2.5 g/hr	Voluntary Curtailment	Voluntary Curtailment	Operation Prohibited except below 15°F
EPA-certified Phase II Qualified Hydronic Heaters, <2.5 g/hr	Voluntary Curtailment	Voluntary Curtailment	Operation Prohibited except below 15°F
Non-listed Solid Fuel Burning Appliances	Voluntary Curtailment	Operation Prohibited	Operation Prohibited
Non-listed Pellet Fuel Burning Appliances	Voluntary Curtailment	Operation Prohibited	Operation Prohibited except below 15°F
Masonry Heaters	Voluntary Curtailment	Voluntary Curtailment	Operation Prohibited except below 15°F
Fireplaces	Voluntary Curtailment	Voluntary Curtailment	Operation Prohibited
Cook Stoves	Voluntary Curtailment	Voluntary Curtailment	Operation Prohibited

Waste Oil Burning Appliances	Voluntary Curtailment	Operation Prohibited	Operation Prohibited
Non-Permitted Outdoor Incinerators, Burn Barrels	Voluntary Curtailment	Operation Prohibited	Operation Prohibited
Campfires, Bonfires, Ceremonial Fires, Fire pits	Voluntary Curtailment	Voluntary Curtailment	Voluntary Curtailment
No other adequate source of heat designations, meets other requirements in 21.28.060	Voluntary Curtailment	Voluntary Curtailment	Voluntary Curtailment

**Table 5.11-2 PM2.5 Air Quality Episode Appliance-Specific or Waiver-Specific Actions**

<b><u>Appliance Type Or Waiver Type</u></b>	<b><u>Stage 1 Air Alert</u></b>	<b><u>Stage 2 Air Alert</u></b>
<b><u>No other adequate source of heat (NOASH) designation, meets other requirements in 21.28.060</u></b>	<b><u>Operation Prohibited except Borough Listed Solid Fuel Burning Appliances (SFBA)</u></b>	<b><u>Operation Prohibited except Borough Listed Solid Fuel Burning Appliances (SFBA)</u></b>
<b><u>Approved Stage 1 Waiver, meets other requirements in 21.28.060</u></b>	<b><u>Operation Prohibited except Borough Listed Solid Fuel Burning Appliances (SFBA)</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Wood Stoves</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Coal Stoves</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Wood-fired hydronic heaters</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Wood-fired Furnaces</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Coal-fired Hydronic Heaters</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Coal-fired Furnaces</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Fireplace Inserts</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Pellet Fuel Burning Appliances</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Masonry Heaters</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Cook Stoves</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Fireplaces</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Waste Oil Burning Appliances</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>

<b><u>Non-Permitted Outdoor Incinerators, Burn Barrels</u></b>	<b><u>Operation Prohibited</u></b>	<b><u>Operation Prohibited</u></b>
<b><u>Campfires, Bonfires, Ceremonial Fires, Fire pits</u></b>	<b><u>Voluntary Curtailment</u></b>	<b><u>Operation Prohibited</u></b>

Ordinance 2015-01 grants the FNSB Air Quality Division the ability to receive, log, and investigate complaints as well as issue warnings and citations for verified violations of FNSB code. In June of 2015 the division added two complaint investigation and response staff members. These two positions utilize a mobile air quality monitoring vehicle (sniffer) to **verify compliance with the requirements in 21.28.030 D, PM<sub>2.5</sub> Emissions Crossing Property Lines. 21.28.030 D states that no person shall cause or permit particulate emissions from a nonmobile source to impact the resident(s) of a neighboring property through creation of an emissions plume that: crosses a property line, is observable using EPA Method 22, and is 25µg/m<sup>3</sup> greater than the surrounding immediate vicinity background PM<sub>2.5</sub>, track PM<sub>2.5</sub> concentrations in real-time as well as a** ~~track PM<sub>2.5</sub> concentrations in real-time as well as a~~ **Additionally, camera based opacity-reading service (EPA Method ALT 082) may be used** to verify air quality violations. Once verified, the staff members have the ability to engage the resident, discuss emissions reduction strategies, or issue mandatory warnings and citations in accordance with FNSB Code 21.28.030 and 1.20.080. Fines range from ~~\$100~~ **100** to \$1,000 depending on violation and number of offenses.

Property owners or managers may obtain a “No Other Adequate Source of Heat” (NOASH) waiver to ~~episode-Stage 1 or Stage 2 air alert~~ burn cessation requirements if a property relies on a solid fuel-fired heating device as its sole source of heat. **A Stage 1 Waiver is granted to a property owner or manager who verifies that the solid fuel burning appliance (SFBA) being operated during a Stage 1 air alert is a Borough listed appliance.**<sup>12</sup>To ensure no new construction occurs that would be eligible for a NOASH waiver, Ordinance 2016-37 limits the waiver eligibility to properties constructed prior to December 31, 2016. NOASH applicants are urged to participate in the Borough change out program to help reduce emissions by installing an eligible wood or pellet-fired device or replace a solid fuel-fired device with a non **solid fuel-fired solid-fuel-fired** device.

On August 11, 2016, the assembly passed Ordinance 2016-20-1A to allow design and operation of a “low cost” air quality monitoring network in the Air Quality Control Zone. This network will be comprised, initially, of six Thermo Scientific pDR-1500 monitors and 20 MetOne Neighborhood monitors. A pDR-1500 network will monitor air quality throughout the Air Quality Control Zone and supplement regulatory monitor data when issuing advisories and alerts and tracking air quality trends. A network of MetOne Neighborhood monitors will be used to locate and identify high-emitting sources by deploying a small grid of monitors centered around “Hot Spot” areas identified by the “sniffer vehicle” or through complaints. Staff will investigate high-emitting sources and seek compliance with regulations through education and will issue warnings or citations on a case-by-case basis. The MetOne monitors will be relocated to other hot spot areas in the Air Quality Control Zone as needed. Future operation of this air quality

<sup>12</sup> **Fairbanks North Slope Borough Assembly Ordinance No. 2017-44, June 19, 2017**

monitoring network is contingent on FNSB appropriations. This enforcement strategy will focus limited resources to areas that are most affected by poor air quality as identified through complaints, sniffer vehicle data, and other information. The ability to detect large emitters in nighttime conditions with monitoring equipment will provide for more effective enforcement of the Borough episode program than visual detection of smoke alone, especially when a smoke stack's emissions are obscured or cannot be seen or photographed from a public right-of-way. Locating and engaging high-polluting device operators with enforcement efforts will provide greater emission reductions than traditional program enforcement methods alone.

In 2014, prior to Ordinance 2015-01 which codifies the mandatory episode program described above, the Fairbanks North Star Borough established a voluntary **burning curtailment** program (VBCP). **The VBCP was designed to encourage, incentivize, and facilitate the voluntary cessation of the use of wood burning appliances (i.e., wood stoves, wood-fired hydronic heaters, wood-fired furnaces, fireplaces, fireplace inserts, masonry heaters or pellet fuel burning appliances) in the nonattainment area during air quality episodes. It is recognized that it will be difficult or impossible for some households to participate in this program (e.g., those that heat solely with wood or for which wood is a necessary supplement during periods of cold weather). Therefore, this program was intended for households that were able to use space heating alternatives with significantly lower PM<sub>2.5</sub> emissions, including those fueled by gas, oil, electricity, propane or district heat.** ~~to further encourage, incentivize, and facilitate the voluntary cessation of the use of wood burning appliances (i.e., wood stoves, wood-fired hydronic heaters, wood-fired furnaces, fireplaces, fireplace inserts, masonry heaters or pellet fuel burning appliances) in the nonattainment area during air quality alerts. The Borough recognized that it will be difficult or impossible for some households to participate in this program (e.g., those that heat solely with wood or for which wood is a necessary supplement during periods of cold weather). Therefore, this program is designed and intended for households that are able to use space heating alternatives with significantly lower PM<sub>2.5</sub> emissions, including those fueled by gas, oil, electricity, propane or district heat, but not wood or pellet stoves or other wood burning appliances. Then in 2017 the Borough repealed the VBCP in order to strengthen its burn cessation program by lowering the concentration where a burn cessation would be called.~~

The VBCP-consisted of five separate components; an Alert System, Social Media, Public Awareness, Marketing, and Incentive program.

- **Alert System:** Alert Media selected as the notification platform. Alert messages during episodes are sent out through email, text messaging and social media.
- **Social Media:** Alerts, daily forecast, and program signup are available via Facebook.
- **Public Awareness:** 4 updateable reader-boards and 10 static sandwich board signs placed alongside roads in Fairbanks and North Pole displaying VBCP activity.
- **Marketing:** Radio, TV, and Newspaper advertising to create awareness of the VBCP and current air quality.
- **Incentives:** The Borough will recognize all participants of the program at the end of the year through a Fairbanks Daily Newsminer advertisement.

**While the VBCP program has ended, the public involvement elements above are still being utilized for outreach for the mandatory curtailment program.**

5.11.3. State Episode Program

In addition to the Borough AQI forecast and local episode actions, ADEC has also been implementing actions to address high concentration episodes. ADEC’s statewide PM<sub>2.5</sub> air episode and air advisory requirements are framed in regulation at 18 AAC 50.246. The regulations split the overall emergency episode response approaches into two categories: air episodes and air advisories. PM<sub>2.5</sub> air episodes rely on air monitoring data and are called when concentrations reach specific thresholds defined in the regulation. Air advisories are not strictly reliant on air monitoring data and may be called when the department finds that, in its judgment, that air quality conditions exist that might threaten public health; the advisory regulation allows for ADEC response to poor air quality in areas where no air monitors may exist. These two categories have differing response features and trigger different supporting requirements within the state regulations. In both cases, like the Borough, ADEC publicizes the air quality episode or advisory and any actions to be taken to protect public health. However, 18 AAC 50.246 also allows ADEC to take action upon a Borough air quality ~~episode or advisory alert~~. **18 AAC 50.246 provides that “the episode thresholds and actions prescribed for any area that has a local air quality plan included in the State Air Quality Control Plan adopted by reference in 18 AAC 50.030 must be consistent with the emergency episode provisions included in that plan.** To avoid duplication of effort, ADEC and the Borough ~~may~~ clarify their respective roles under 18 AAC 50.246 through the Air Quality Memorandum of Understanding (MOU). **As the Borough episode program has evolved to address the PM<sub>2.5</sub> pollution concerns of the local area, it provides for implementing local air alerts at lower concentration thresholds than the statewide PM<sub>2.5</sub> episode program presented in this section. As a result, the ADEC implements episodes within the nonattainment area using the local thresholds identified in Section 5.11.2.** ~~In the absence of a revised MOU, ADEC will continue addressing high concentration episodes as described in this section.~~

~~State a~~**Air episodes for PM<sub>2.5</sub> are defined in 18 AAC 50.246. Formal episodes may be triggered 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 6a of the regulation. However, as noted above, DEC under the provisions of 18 AAC 50.246, will declare episodes in the FNSB nonattainment area based on the local area thresholds identified in Table 5.11-31. Prior to the implementation of more stringent local episode program thresholds, ADEC relied on For PM<sub>2.5</sub> the statewide formal episode concentrations for PM<sub>2.5</sub> adopted in 2014, and updated in 2016, and adopted in 2017 are described in Table 5.11-3 as follows:**

**Table 5.11-3:  
State of Alaska PM<sub>2.5</sub> Episode Levels**

Episode Type	24-hour Average PM <sub>2.5</sub> Concentration ( $\mu\text{g}/\text{m}^3$ ) (micrograms per cubic meter)
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Air Alert Episode	35.5
Air Warning Episode	55.5
Air Emergency Episode	150.5

During a formal air episode, in addition to providing information on protecting an individual's health, ADEC will provide information on how an individual may assist in reducing emissions. In some instances, ADEC may prescribe and publicize opacity limits for solid fuel-fired heating devices as described further below. ADEC tailors its response and curtailment actions to address the specific conditions surrounding a specific air pollution event. The following state regulations are also triggered by the declaration of an air episode (in addition to any regulations triggered by the declaration of an air quality advisory as described below):

- 18 AAC 50.075 (d) – (e)

(d) A person may operate a solid fuel-fired ~~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 or under emergency episode provisions included in a local air quality plan incorporated in the *State Air Quality Control Plan*, adopted by reference in 18 AAC 50.030, only if

(1) visible emissions or opacity from the 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 solid fuel-fired heating device obtains a written temporary waiver from the department or local air quality control program from the opacity limits identified in the episode announcement; the department or local air quality program may grant a temporary waiver after considering

(A) financial hardship information provided by the owner or operator;

(B) technical feasibility information provided by the owner or operator;

(C) potential impact to locations with populations sensitive to exposure to PM-2.5; locations under this subparagraph include hospitals, schools, child care facilities, health clinics, long-term care facilities, assisted living homes, and senior centers;

(D) mitigation measures implemented by the owner or operator to prevent adverse health impacts to individuals sensitive to exposure to PM-2.5; and

(E) the contribution of the device to the exceedance of the PM-2.5 concentration triggering the episode announcement.

(3) the department has not prohibited operation under 18 AAC 50.075(e).

(e) The department may prohibit operation of a solid fuel-fired ~~solid fuel-fired~~ heating device in an area for which the department has declared a PM-2.5 air quality episode under emergency episode provisions included in a local air quality plan incorporated in the *State Air Quality Control Plan*, adopted by reference in 18 AAC 50.030, only if

~~(1) the temperature is above the triggering threshold identified in a local air quality plan incorporated in the *State Air Quality Control Plan*, adopted by reference in 18 AAC 50.030;~~ (2) the announcement identifies the air quality zone(s); and

(32) the announcement identifies exemptions as identified in the *State Air Quality Control Plan*, adopted by reference in 18 AAC 50.030.

Air advisories are established under 18 AAC 50.245 and 18 AAC 50.246(b), which sets forth that “the department will declare an air quality advisory if, in its judgment, air quality or atmospheric dispersion conditions exist that might threaten public health”. If the department declares an air quality advisory it may request voluntary emission curtailment actions. For PM<sub>2.5</sub>, the department declares air advisories in the FNSB nonattainment area when pollutant concentrations have reached, or are expected to reach, 25 µg/m<sup>3</sup> using a 24-hr rolling average of 1-hr BAM or other DEC-approved monitoring equipment data indicating air quality conditions exist that might threaten public health or, alternatively, using meteorological data indicating atmospheric dispersion conditions exist that might threaten public health.

**Table 5.11-4**  
**FNSB Nonattainment Area PM<sub>2.5</sub> Advisory/Alert Level**

Type	24-hour Average PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> ) (micrograms per cubic meter)
Advisory/Alert	25

DEC may exclude individual air quality zones from an advisory/alert announcement when air quality conditions in that zone are not expected to exceed 25 µg/m<sup>3</sup> based on monitoring or meteorological data. The following specific state regulations are triggered by the declaration of an air quality advisory:

- 18 AAC 50.065(e)

“Open burning is prohibited in an area if the department declares an air quality advisory under 18 AAC 50.245 or 18 AAC 50.246, stating that burning is not permitted in that area for that day. This advisory will be based on a determination that there is or is likely to be inadequate air ventilation to maintain the standards set by 18 AAC 50.010. The department will make reasonable efforts to ensure that the advisory is broadcast on local radio or television.”

- 18 AAC 50.075(a)(2)

“A person may not operate a solid fuel fired heating device in a manner that causes

- (1) black smoke; or
- (2) visible emissions that exceed 20 percent opacity for more than 6 minutes in any one hour, except during the first 15 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;

Given the history of significant wintertime air quality episodes within the FNSB PM<sub>2.5</sub> nonattainment area and concerns of local residents related to the implementation of wood heating curtailment during air quality episodes, ADEC defined an approach for allowing **solid fuel-fired** ~~solid-fuel-fired~~ devices to operate during an episode provided they meet an opacity level during formal air quality episodes inside the nonattainment area under 18 AAC 50.075(d). During 2015, the FNSB established local curtailment requirements. In 2016, ADEC adopted similar curtailment requirements into this SIP. The existing ADEC opacity requirements will remain in effect in any instances when **solid fuel-fired** ~~solid-fuel-fired~~ heating curtailments are not announced during air episodes.

***Solid Fuel-Fired ~~Solid-fuel-Fired~~ Device Opacity Levels during Air Quality Episodes and Advisories Under 18 AAC 50.075(d)***

The visible emission regulations in 18 AAC 50.075(d) apply specific opacity levels during formal air quality episodes and advisories. Properly operated, efficient solid-fueled heating devices using the proper fuels should be able to meet the stated opacity limits during an episode or advisory. Efficient operations not only reduce air pollution but allow for the burning of less wood, an economic or time savings to residents who buy or cut wood.

In the FNSB nonattainment area, solid fuel-fired heating devices are subject to a more stringent requirement; a 20% visible emission or opacity limit must be met during air quality advisories/**alerts** in addition to episodes. Should ADEC determine that the specific conditions surrounding a specific air pollution event within the FNSB nonattainment area warrant an announcement for opacity restrictions for solid fuel-fired heating devices, ADEC will issue an announcement that identifies the 20% opacity limit that is in effect. For purposes of implementing the opacity regulations, PM<sub>2.5</sub> episodes and advisories within the FNSB PM<sub>2.5</sub> nonattainment area are treated equally. The opacity limit for the FNSB non-attainment area during an air episode or advisory are as follows **in Table 5.11-5**:

**Table 5.11-5  
FNSB Nonattainment Area Opacity Limits during Air Pollution Events**

<b>Opacity Limit</b>	<b>PM<sub>2.5</sub> Concentration (<math>\mu\text{g}/\text{m}^3</math>)</b>
20%	> 25 (24-hour average)

For compliance and enforcement purposes, opacity is measured using EPA method 9, as modified by 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, by a person who has passed and is current in their Method 9 certification. DEC has also adopted into regulation the option to use a camera-based EPA method 9 alternative (EPA Method ALT-082) and may consider using camera based opacity measurements in the future.

Upon observing an opacity limit exceedance during a declared episode, the department will attempt to provide education on the correct maintenance and operation of the solid fuel-fired device. Education could also include the use of proper fuels. If education does not provide a remedy to the opacity exceedances, the department may issue a Notice of Violation, Abatement Order, or may pursue other administrative enforcement remedies.

**In July of 2017, 18 AAC 50.077 was amended to add subsection (f) to address opacity during operations for solid fuel-fired devices.**

- **18 AAC 50.075(f)**

**“A solid fuel-fired heating device located in an area identified in 18 AAC 50.015(b)(3) shall be operated so that the visible emissions or opacity shall not exceed 20 percent opacity for more than six minutes in any one hour, except during the first 15 minutes after initial firing of the device when the opacity limit shall be less than 50 percent. Visible emissions are measured as defined in 18 AAC 50.075(a)(2).”**

**Solid Fuel-Fired Solid-fuel Fired Device Curtailment during Air Quality Episodes Under 18 AAC 50.075(e)**

In 2016, ADEC expanded its regulations to include a framework that would allow ADEC to institute curtailments during air quality episodes if an episode plan includes specific requirements of the burn curtailment. ADEC also divided the nonattainment areas into three zones to allow for the ability to tailor its response to air pollution events specifically to a more defined area.

For PM<sub>2.5</sub>, the department declares air episodes in the FNSB nonattainment area when pollutant concentrations have reached, or are expected to reach, the thresholds identified in ~~table~~ **Table 5.11-31**. DEC relies on 24-hr rolling average of 1-hr BAM measurements or 24-hr rolling average data from other DEC-approved monitoring equipment when determining if conditions for an air quality episode have been met.

Under the 18 AAC 50.075(e) framework, the department will declare prohibitions on the operation of **solid fuel-fired solid-fuel-fired** heating devices during air quality episodes if, at a minimum, the following conditions exist:

- An air quality episode has been declared under 18 AAC 50.246, based on air quality episode thresholds located in Table 5.11-~~31~~
- ~~The temperature is not lower than 15° Fahrenheit as measured at the Fairbanks International Airport~~

ADEC must also issue an episode announcement that identifies the following:

- The Air Quality Control Zone or Zones where the prohibitions are in effect; the boundaries of the Goldstream, Fairbanks, and North Pole Air Quality Control Zones are located in III.D.5.03.
- Exceptions to the prohibition of solid fuel-fired ~~solid-fuel-fired~~ heating device operation.

Given previous community concerns about the reasonableness of requiring residents to cease use of solid fuel-fired heating devices during periods of poor air quality coupled with extreme cold temperatures, ADEC's regulations provide exceptions for continued use of solid fuel-fired heating devices during air quality episodes if conditions or individual circumstances require the use of solid-fuel heating devices.

Exceptions to the requirement to cease operation of a solid-fuel heating device during an episode must include:

- Cases where electrical power outages prevent the use of alternative heating devices
- Cases where the device owner or operator has obtained a temporary waiver from the Department or local program under 18 AAC 50.075(d)(2)

Exceptions to individual episodes may also include:

- Exceptions based on the class of solid fuel-fired ~~solid-fuel-fired~~ heating device
- Exceptions based on device particulate matter emission rates

However, before declaring a prohibition on the operation of solid fuel-fired heating devices in each air quality zone during an air quality episode, ADEC will review the relevant and available NWS, FNSB, and state meteorological data, weather forecasts, affected area, strength of the inversion, and potential duration of the inversion. It is possible that ADEC will issue air quality episodes that do not include a prohibition of the use of solid fuel-fired heating devices or do not include prohibitions in all three zones, especially if weather conditions indicate a clearing prior to any effect of a curtailment could be realized. ADEC will endeavor to ensure a curtailment is a reasonable approach given the conditions and available data, with the objective of realizing air pollution reduction benefits from the action.

ADEC will use the following approaches to notify the public of requirements and address any compliance issues. The public will be notified of an air quality episode that has specific opacity limits and/or curtailment requirements utilizing several outreach methods. All episode announcements are emailed to ADEC's up-to-date distribution list. This distribution list contains all local media outlets (radio, TV), the FNSB Air Quality Program staff, elected officials, and anyone who signs up for electronic notices. ADEC has online sign-up capabilities for various electronic notices and alerts through its *Air Online Services* accessible through the Division of Air Quality's home page at: <http://dec.alaska.gov/air> . In addition to these electronic emailed announcements, all advisories (alert and episode) are posted to the Division's Air Quality Advisories web page at: <http://dec.alaska.gov/Applications/Air/airtoolsweb/Advisories/>, which includes the actual advisory, the start and end dates, the area, and status (expired, active) of the

advisory. ADEC will also post advisories on its Burn Wise Alaska face book page as well as the department's Twitter account.

In addition to providing notification when the opacity limits and/or curtailment requirements are in effect, the department plans to provide on-going public information on the opacity limits and ways that residents can comply. Difficulty meeting opacity limits could be due to wet wood. Under state regulation, residents are required to use dry wood during winter months. Under Borough code, residents are required to use dry wood year round.<sup>13</sup> Residents will be directed to those wood sellers participating in the *Moisture Disclosure Program* where wood sellers either disclose the moisture content of purchased wood or agree to provide dry wood. The program ~~will become~~ **became** a mandatory requirement in the nonattainment area following reclassification of the area as serious. Brochures on proper maintenance and operation of a **solid fuel-fired solid-fuel-fired** device ~~will also be~~ **are also** available. To the extent that ADEC resources allow, staff can assist residents who request help in determining in advance of episode conditions whether their typical burning operations meet the opacity limits outlined in this plan.

If a resident is found to be out of compliance with the opacity limits or curtailment requirements identified for a specific episode, ADEC is responsible for taking actions to enforce the state requirements. The FNSB is responsible for taking actions to enforce any local requirements. Where the local and state requirements are substantively similar, the two agencies coordinate to ensure that only one agency takes enforcement action. The department's compliance activities are conducted using the tools and authorities provided under the state statutes. The Division of Air Quality does not have statutory authority to issue administrative penalties for violations of Alaska environmental law. This means that ADEC staff cannot simply write "tickets" to individuals that are found to be violating the opacity limits. All compliance and enforcement activities are case specific, however, ADEC generally initiates compliance activities in response to complaints received that indicate the potential for violations of a state regulation. ADEC staff investigate complaints to verify or corroborate a problem or violation of a state requirement. In most cases, the department finds that compliance can be achieved through assistance to businesses and individuals in understanding the regulatory requirements and how they can comply. In the case of problem burners failing to meet these opacity levels during air quality episodes, it is important to bring a unit into compliance quickly to reduce smoke and assist in bringing levels of PM<sub>2.5</sub> into compliance in the local area. As a result, if a resident working with or without the assistance of ADEC does not come into compliance, ADEC staff would request that the resident stop burning for the duration of the air quality episode if they have another heating source available. In the event that compliance assistance is not successful in resolving a recurring smoke concern at a specific residence or business, the department staff may use additional administrative enforcement tools, such as nuisance abatement orders or Notices of Violation, to address the concern.

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<sup>13</sup> Fairbanks North Star Borough Assembly Ordinance No. 2015-01, February 27, 2015