ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Amendments to:

State Air Quality Control Plan

Vol. II: III.D.7.4

Ambient Air Quality Data and Trends

Adopted

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7.4 Ambient Air Quality Data and Trends

At 65º latitude, Fairbanks has a subarctic continental climate, which strongly exacerbates wintertime air pollution and contributes to exceedances of the 24-hour average NAAQS for $PM_{2.5}$. Due largely to the short period of daylight, low sun angle, and relatively dry continental air, average monthly temperatures in Fairbanks are below freezing from October through April,[1] and the average January temperature is -10ºF. The below-freezing temperatures result in predictable snow cover and the strong radiation properties of the snow cover help inversion formation. As a result of these climatological influences, Fairbanks is frequently subjected to ground-based temperature inversions that are among the strongest surface-based inversions found anywhere in the United States.[2] A stable air mass is the result of radiation cooling under calm and usually clear weather conditions, and radiational cooling is enhanced by snow cover. A temperature inversion is an extreme form of a stably stratified atmosphere, one in which the temperature increased with height. A stable air mass can form as result of changing weather conditions, for example where a warm less dense air mass moves over a dense cold air mass. Temperature inversions limit the rate and extent of vertical mixing of surface-based emissions and, together with the low wind speeds, low mixing depths,[3] and extremely low temperatures that commonly accompany them in Fairbanks,[4] create atmospheric conditions that are conducive to the buildup of $PM_{2.5}$ concentrations from little dispersion of low-release-height emission sources.

Temperature inversions are a semi-permanent feature of the winter atmosphere in Fairbanks, occurring about 80% of the time in December and January. During this period of minimal solar radiation, the midday temperature rarely changes more than a few degrees, and daytime heating is not enough to overcome the stably stratified boundary layer.[5] However, similar inversions can occur anytime during the cold months and can last for days, often accompanied by clear skies, low temperatures, and very poor air pollution dispersion. Because of low vertical mixing accompanying a very stable atmosphere, the concentration levels of ground level pollutants in the atmosphere in Fairbanks can approach that of much larger metropolitan areas in the contiguous United States.[6] Such conditions in Fairbanks frequently result in elevated $PM_{2.5}$ concentrations and exceedances of the NAAQS.

[1] Climatology of the United States No. 84, "Daily Normals of Temperature, Precipitation and Heating and Cooling Degree Days, 1961-1990," Alaska, Fairbanks, WSPO AP, National Oceanic and Atmospheric Administration.
[2] Wendler, Gerd, et al, "Low Level Temperature Inversions in Fairbanks, Central Alaska," *Monthly Weather Review*, January 1975.
[3] Brader, Jim et al, "Meteorology of Winter Air Pollution in Fairbanks," accessible here: *ftp://ftp.co.fairbanks.ak.us/AQ-Symposium/Symposium_Presentations_ftp/James_Brader_Weather.pdf*
[4] Hartmann, Brian et al, "Climatology of the Winter Surface Temperature Inversion in Fairbanks, Alaska," Geophysical Institute, University of Alaska, Fairbanks, accessible here: *https://ams.confex.com/ams/pdfpapers/84504.pdf*
[5] Bowling, Sue Ann, 1985 "Climatology of High-Latitude Air Pollution as Illustrated by Fairbanks and Anchorage, Alaska," *Journal of Climate and Applied Meteorology*, **25**, 22-34.
[6] *Ibid*, Low Level Temperature Inversions.

7.4.1 Overview of $PM_{2.5}$ Monitoring Network

The DEC Air Monitoring and Quality Assurance Program currently operates and manages three permanent monitoring stations for $PM_{2.5}$ and one currently temporary site that may become a permanent site:

- Two State and Local Air Monitoring Sites (SLAMS);
- One combined Chemical Speciation Network (CSN) and Multipollutant (NCore) Site; and
- One Special Purpose Monitoring Site (SPM).

The nonattainment area SLAMS, NCore, SPM, and CSN sites for $PM_{2.5}$ are identified below in Table 7.4-1; their locations are presented in Figure 7.4-1. Siting criteria and other details about each site are documented elsewhere.[7] Federal Reference Method (FRM) $PM_{2.5}$ data from these monitoring locations have been used for regulatory purposes to characterize ambient $PM_{2.5}$ concentrations at neighborhood and middle scale sites in the nonattainment area. FRM $PM_{2.5}$ data from the Fairbanks and North Pole sites are stored in the EPA Air Quality System (AQS) database and are available for download by the public through the AQS Data Mart.[8,9] Most of these sites also house continuous $PM_{2.5}$ monitors (Beta Attenuation Monitors – BAM) which are used to issue air quality advisories. These BAM continuous analyzers are not configured to meet $PM_{2.5}$ Federal Equivalent Method (FEM) criteria and are not used to measure compliance with the NAAQS. More information about the operation of the $PM_{2.5}$ monitoring network is presented in Section III.D.7.5.

Table 7.4-1
Monitoring Sites for $PM_{2.5}$ in FNSB

Site Name	Location	AQS-ID	Designation	Install Date	Scale
State Office Building	Fairbanks	02-090-0010	SLAMS	Oct, 1998	neighborhood
NCore	Fairbanks	02-090-0034	NCore	Oct, 2009	neighborhood
			CSN	Jan, 2015	neighborhood
A Street	Fairbanks	02-090-0040	SPM	Nov, 2018	neighborhood
Hurst Road, *Previously North Pole Fire Station	North Pole	02-090-0035	SLAMS	Mar, 2012	neighborhood
North Pole Elementary (discontinued)	North Pole	02-090-0033	SPM	Nov, 2008 (discontinued Mar, 2013)	neighborhood

[7] *dec.alaska.gov/air/air-monitoring/monitoring-plans*
[8] https://www.epa.gov/aqs
[9] https://aqs.epa.gov/aqsweb/documents/data_mart_welcome.html

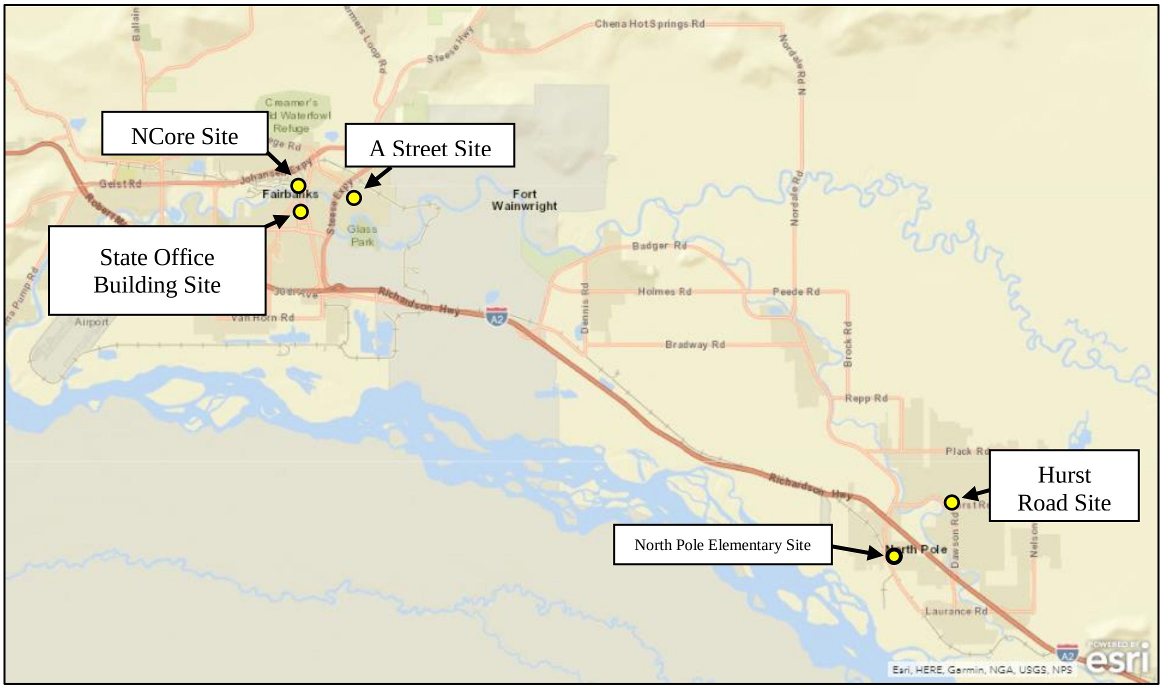


Figure 7.4-1 Locations of Fixed $PM_{2.5}$ Monitoring Sites

7.4.2 Trends in Monitored $PM_{2.5}$ Concentrations

The 24-hour $PM_{2.5}$ standard is designed to provide health protection against short-term fine particle exposures, particularly in areas with high peak $PM_{2.5}$ concentrations; the standard is set at 35 µg/m^3. A community attains the 24-hour standard when the 98^{th} percentile of 24-hour $PM_{2.5}$ concentrations for each year, averaged over three years, is less than or equal to 35 µg/m^3. Since “the form of the standard” (the basis for attainment) is specified using 98^{th} percentile values, the values calculated for each monitor for each year presented in Table 7.4-2 are 98^{th} percentile values.

Table 7.4-2 shows that almost all values from 2011 to 2017 exceeded 35µg/m^3. Fluctuations in concentrations recorded across the years reflect differences in both meteorology and human activity in areas impacting the monitors. In general, there is a rough correlation between the State Office Building and NCore monitoring sites. In contrast, the concentrations recorded at the Hurst Road Site are approximately 2-4 times the values recorded at the other monitors from 2011-2017. In 2017, DEC conducted a saturation study to determine if the Hurst Road site is representative of the surrounding North Pole area or if it is an area with unusually high concentrations (commonly referred to as a “hot spot”). The study concluded the site is not a “hot spot” and is generally representative of the study area. The report is available on the Department’s website at *http://dec.alaska.gov/air/north-pole-study/*.

Table 7.4-2
Trend in 98th Percentile $PM_{2.5}$ Concentrations Recorded at Fairbanks Monitoring Sites (FRM)
2011-2017

Site Name	Location	98th Percentile (µg/m^3)							
		2011	2012	2013	2014	2015	2016	2017	2018
State Office Building	Fairbanks	38.0	49.6	36.3	34.5	35.3	39.7	38.0	27.0 [a]
NCore	Fairbanks	33.1	50.0	36.2	31.6	36.7	30.3	34.4 [a]	25.3[a]
Hurst Road[b]	North Pole	-	158.4	121.6	138.5	111.6	66.8	75.5	52.8
North Pole Elementary	North Pole	20.6	68.1	47.2	-	-	-	-	-

Notes:
a. Based on exclusion of proposed summertime wildland fire exceptional events in 2017 and 2018
b. Formerly North Pole Fire Station

While Table 7.4-2 displays 98th percentile values, another measure of public exposure to elevated $PM_{2.5}$ concentrations is the number of days the 24-hour standard is exceeded each year; this information is presented in Table 7.4-3. It shows that since 2012 there has been a decline and stabilization of the number of days the standard is exceeded at the Fairbanks-area State Office Building and NCore sites which are located less than half a mile from each other. The North Pole-area site, Hurst Road, is located 12-13 miles southeast of the State Office Building monitor and shows an upward trend. When viewing Table 7.4-3 it is important to remember that FRM data was only collected once every three days until recently, when daily sampling began at each of the three sites. Thus, the 2012-2016 values displayed may not be representative of the actual number of days the public is exposed to higher concentrations. If the conditions on the unmonitored days are the same as those on the monitored days, which they are not, the 2012-2016 values in Table 7.4-3 could be up 3 times higher. The apparent increase in the number of exceedance days at the three sites in 2016 and 2017 is the result of a switch to daily sampling that is representative of the conditions the public experiences daily, so it is not directly comparable to the counts of exceedance days in previous years when samples were collected every third day. Daily FRM sampling began at the NCore Site in October, 2016, the State Office Building Site in January, 2017, and the Hurst Road Site in July, 2017.

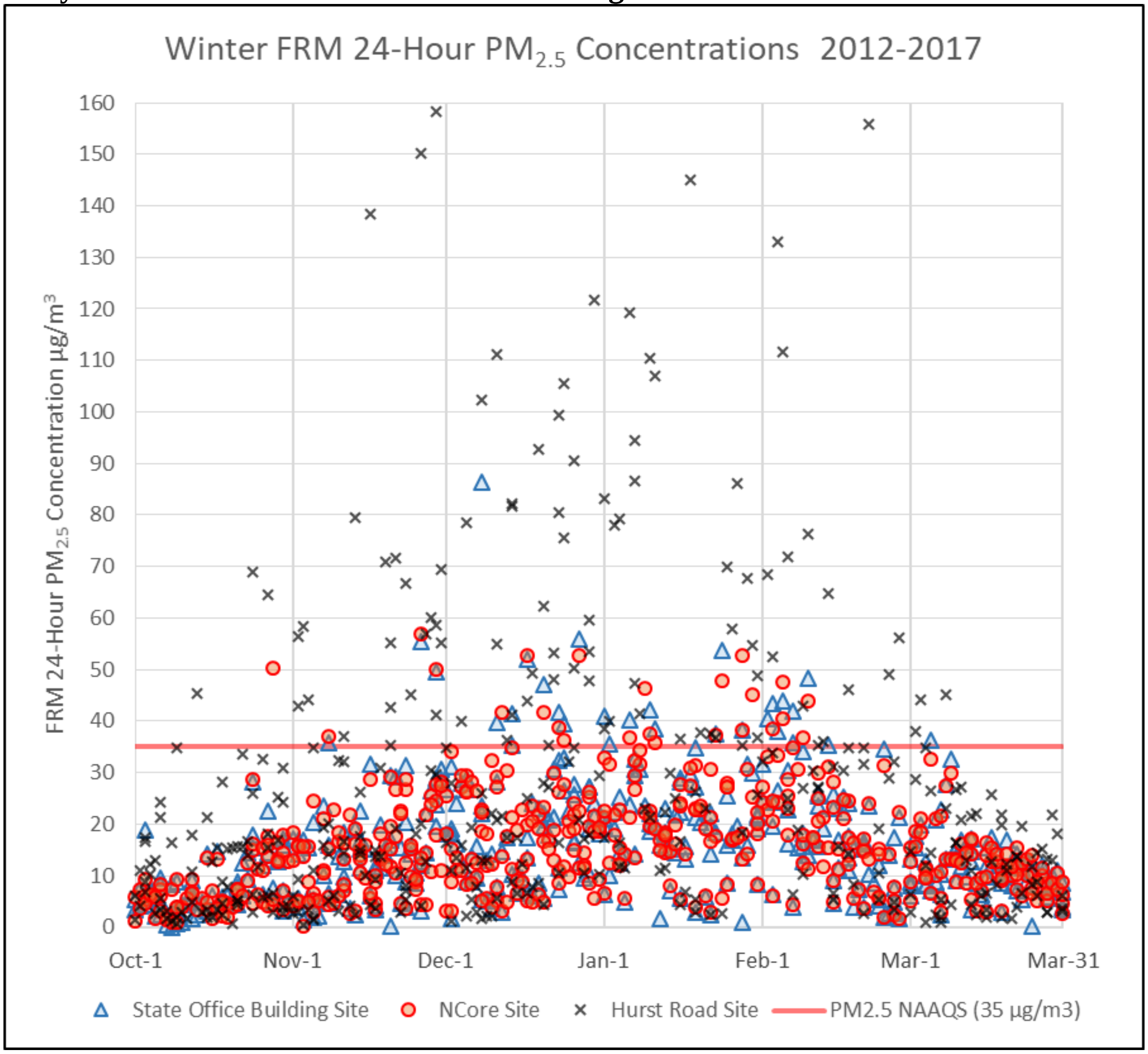
Table 7.4-3
Trend in Days Exceeding the 24-hour $PM_{2.5}$ Standard
at Fairbanks Monitoring Sites (FRM)
2012-2017

Site Name	Location	Days Exceeding 35 µg/m^3 Standard						
		2012	2013	2014	2015	2016[a]	2017[a]	2018[a]
State Office Building	Fairbanks	7	3	2	2	3	10[a]	1[a]
NCore	Fairbanks	6	3	2	3	2[a]	6[a]	1[a]
Hurst Road[b]	North Pole	10	11	22	18	14	17[a]	27[a]
North Pole Elementary	North Pole			-	-	-		-

Notes:
a. FRM sampling frequency increased from 1:3 to 1:1 in 2016-2017 at State Office Building (Jan, 2017), NCore (Oct, 2016), and Hurst Road (July, 2017), resulting in a larger number of FRM sampling days exceeding the standard than in previous years.
b. Formerly North Pole Fire Station

A different view of public exposure to $PM_{2.5}$ concentrations can be seen in the daily concentrations recorded during the course of the winter season (October – March). $PM_{2.5}$ concentrations collected using FRM samplers over the period of 2012 to 2018 are shown in Figure 7.4-2. Data are presented for three separate monitors: State Office Building (Fairbanks), NCore (Fairbanks), and Hurst Road (North Pole).

Figure 7.4-2
Daily Wintertime FRM $PM_{2.5}$ 24-hour Average Concentrations 2012-2017



The concentration data shown in Figure 7.4-2 reveal that exceedances occur throughout the winter season. Over the six-year period of 2012-2017, the Hurst Road site recorded more than three times the number of exceedances as either the State Office Building or NCore sites. Approximately 94% of exceedances were recorded between November and February, a period of approximately 120 days.

7.4.3 Calculation of Design Values

Compliance with ambient air quality standards is based on the calculation of a "design value" for individual monitors consistent with the form of the standard. For the 24-hour ambient $PM_{2.5}$ standard, the design value is calculated from the 3-year average of annual 98th percentile values. In 2009, EPA designated a portion of the Fairbanks North Star Borough as nonattainment for that standard using measurements collected at the

State Office Building over the previous 3-year period, 2006 – 2008,[10] which produced a $PM_{2.5}$ design value of 41 µg/m^3. Design values are updated each year, based on the previous three years of data. In 2014, the Hurst Road site had three consecutive years of data from which to calculate a design value of 139 µg/m^3. This new, higher, Hurst Road design value became the design value for the entire nonattainment area. Between 2014 and 2018, the Hurst Road design value fell 74 µg/m^3 to 65 µg/m^3. The State Office Building design value in 2018 was 35 µg/m^3.

Table 7.4-4 shows the 3-year design values calculated for the State Office Building site, NCore site, North Pole Elementary site, and Hurst Road site between 2011 and 2018.

7.4-4 Fairbanks and North Pole FRM 3-Year Design Values

	2011	2012	2013	2014	2015	2016	2017	2018
State Office Building 3-Year DV	47	46	41	40	35	37	38	35 [a]
NCore 3-Year DV	43	45	40	39	35	33	34 [a]	30 [a]
Hurst Road 3-Year DV	-	-	-	139	124	106	85	65
North Pole Elementary 3-Year DV	63	47	45	-	-	-	-	-

[a] Dependent on EPA Approval of 2017 and 2018 Exceptional Events Waiver Requests

Figure 7.4-4 displays the 98th percentile and 3-year design value statistics for the State Office Building site, NCore site, and Hurst Road site between 2000 and 2018. The figure is available as an interactive chart on DEC's website accessible through: *http://dec.alaska.gov/air/air-monitoring/community-data/*.

[10] 74 FR 58690 dated November 13, 2009

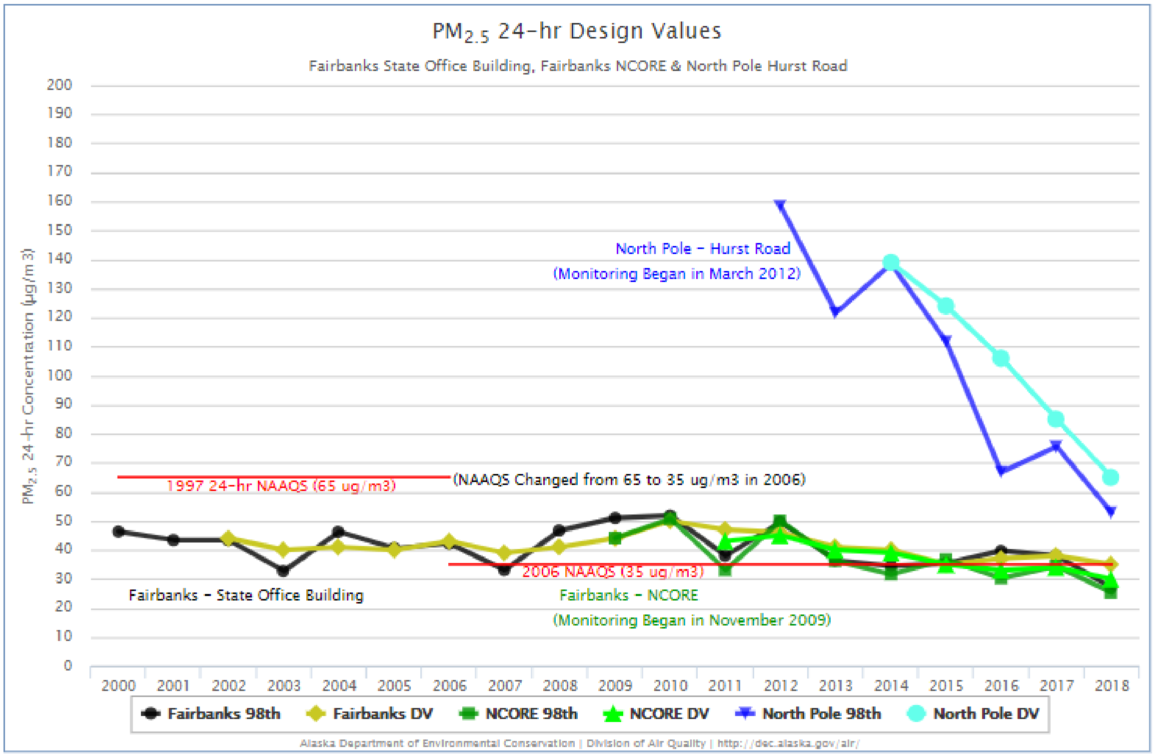


Figure 7.4-4 Fairbanks $PM_{2.5}$ Nonattainment Area Design Value and 98th Percentile 24-hr $PM_{2.5}$ Concentrations 2000-2017

While the design values described above are used to assess compliance with the ambient 24-hour $PM_{2.5}$ standard, a different design value is calculated to provide guidance on the emission reductions needed for attainment planning. That value is calculated as a rolling 3-year average of concentrations recorded over the 5-year period between 2011 and 2015, as recommended by EPA modeling guidance. This approach uses a longer averaging period so that more recent measurements are used to calculate reduction targets; it produces the 5-year baseline design values shown in Table 7.4-5. For information on the use of the 5-year baseline design values in modeling, refer to Section III.D.7.8 – Modeling.

Table 7.4-5
Calculation of 5-Year Baseline Design Values for 2011-2015 at Sites in Fairbanks and North Pole

Site	2011-2013 3-yr DV[a]	2012-2014 3-yr DV[a]	2013-2015 3-yr DV[a]	2011-2015 5-yr Baseline DV
State Office Building	41.3	40.1	35.4	38.9
NCore	39.8	39.3	34.8	38.0
Hurst Road	-	139.4	123.8	131.6[b]
North Pole Elementary	45.3	-	-	45.3[c]

[a] Not rounded to the nearest integer. Unrounded 3-yr DVs are used to compute the 5-yr DV.
[b] Calculated using only four years of data
[c] Calculated using only three years of data

7.4.4 Representativeness of Meteorological Conditions Used in Design Value Calculations

The following analysis was completed to determine whether the year-to-year variations in meteorology since 2010 have had a significant effect on the official measures of peak 24-hour average $PM_{2.5}$ concentrations—the yearly 98th percentiles of 24-hour $PM_{2.5}$ and the Design Values (DVs) computed from them. For Fairbanks, based on the NCore monitoring site, the yearly 98th percentiles and DVs have improved (declined) since 2010 and have stayed below the 24-hour $PM_{2.5}$ standard of 35 µg/m³ for the past two years (the 5-year DV) and the past three years (98th percentile and 3-year DV). For North Pole, based on the Hurst Rd monitoring site, the yearly 98th percentiles and DVs have improved dramatically since 2012, although recent years remain well above the 24-hour standard.

The State Office Building (SOB) monitor was not included in the analysis for Fairbanks because a statistical model of its $PM_{2.5}$ concentrations versus meteorology was not available. The SOB monitor has its own yearly 98th percentiles and DVs, which differ somewhat from those at NCore due to differences in the density and mix of emissions sources. Because of the close proximity of SOB and NCore monitors, they necessarily share the same trends in meteorology and their yearly 98th percentiles and DVs will be affected by meteorology in the same way. The analysis demonstrates that meteorology has not significantly influenced the improvements at the NCore monitor. We can be confident that the same is true at the SOB monitor.

The analysis presented here—how meteorology affects $PM_{2.5}$ concentrations in the Fairbanks North Star Borough—is based on an extension of the methodology developed for that purpose in the Moderate SIP. When the analysis results are used to adjust the yearly 98th percentiles and the DVs to be consistent with the average meteorology over the past decade, none of the conclusions drawn from the official, unadjusted values are changed.

For Fairbanks, the official 98th percentiles for NCore have dropped from 51 and 50 µg/m³ in 2010 and 2012 to values consistently below 40 µg/m³ starting in 2013 and to 25 µg/m³ in 2018. The official 3-year DV values have dropped from 40–45 µg/m³ in 2012 and 2013 to values below the 24-hour standard in 2016, 2017 and 2018. The official 5-year design values have followed a similar course, dropping to values below the 24-hour standard in 2017 and 2018. Very nearly the same DVs would occur, and exactly the same pattern would be seen over time, if meteorology had not varied.

For North Pole, there is a similar, but much more dramatic trend. There, the official 98th percentiles for Hurst Rd have dropped from 158 µg/m³ in 2012 to values below 80 µg/m³ in 2016 and 2017 and to 53 µg/m³ in 2018. The 3- and 5-year DVs have also dropped from values well above 100 µg/m³ in the early years to values of 65 µg/m³ and 89 µg/m³, respectively, in 2018. Very nearly the same DVs would occur, and exactly the same pattern would be seen over time, if meteorology had not varied.

From these results, it is clear that the year-to-year variation in meteorology is not a primary determinant of trends in the DVs. "Favorable" meteorology is not responsible for the reductions that have occurred since the early years. Instead, control measures (such as the Borough's Wood Stove Change Out Program and the Curtailment Program) and fuel prices have led to lower wintertime emissions and $PM_{2.5}$ concentrations over this period. Note, however, that this analysis was limited to evaluating the effects of meteorological variability and did not attempt to identify the causal factors for the observed trends in the yearly 98th percentiles and DVs.[11] Details on the meteorological representativeness can be found in Appendix III.D.7.4.

7.4.5 Exceptional Events

As noted above, attainment of the 24-hour standard is based on the 3-year average of the 98th percentile values calculated for each NAAQS-comparable monitor using measurements collected over the course of the year. Fairbanks experiences high $PM_{2.5}$ concentrations during the winter that are the result of stable boundary layers, low wind speeds and anthropogenic activity. Fairbanks also experiences high concentrations during the summer that are the result of wildland fires (located both near and far from the nonattainment area) and meteorology (wind speed, wind direction, etc.). Since most wildland fires are caused by non-anthropogenic events (e.g., lightning strikes, etc.), EPA has established a process for excluding days with elevated concentrations from regulatory calculations (e.g., the calculation of design values). The process requires states to identify the high concentration days (known as "exceptional events"), their causes (e.g., wildland fires, volcanic activity, etc.), and evidence that the causes could not be controlled.

CAA section 319(b) references the exceptional event exception and the process governing the request to exclude exceptional events from regulatory calculations was established by EPA in 2007 (72 *Fed. Reg.* 13,560 (3/22/07)) and updated in 2016 (81 *Fed. Reg.* 68216 (10/3/2016)). The Exceptional Events Rule establishes criteria and procedures for determining if an exceptional event has influenced ambient air quality monitoring data. The Exceptional Events Rule (EER) clarified the CAA in that public health should be protected where and when possible without holding State and Local Agencies accountable for unique events beyond their control such as high winds, wildland fires and volcanic activities. The EPA defines an exceptional event in 40 C.F.R. § 50.1(j) as an ambient air quality event that "is not reasonably controllable or preventable, is an event(s) caused by human activity that is unlikely to recur at a particular location or a natural event(s), and is determined by the Administrator in accordance with 40 C.F.R. § 50.14 to be an exceptional event." The EER gives DEC the option of presenting the EPA Region 10 with compelling and clear causal evidence of an event with exceptionally high concentration(s) affecting the area of interest in a regulatory manner that could not have been reasonably controlled. DEC must provide supporting documentation for the following elements in their Exceptional Event Waiver Request (EEWR) package submitted to EPA Region 10:

[11] Effect of Meteorological Trends on Design Values for Fairbanks and North Pole, Robert Crawford and Tom Carlson, 2019.

(A) A narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s);

(B) A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation;

(C) Analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times to support the requirement at paragraph (c)(3)(iv)(B) of this section. The Administrator shall not require a State to prove a specific percentile point in the distribution of data;

(D) A demonstration that the event was both not reasonably controllable and not reasonably preventable; and

(E) A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event.

The state must also document that it has followed a public comment process with a comment period of at least 30 days before submitting the request to Region 10.

DEC documents its compliance with these requirements on its webpage at *http://dec.alaska.gov/air/air-monitoring/exceptional-events/*.

Once Region 10 concurs with the DEC's EEWR that the event-related exceedances should be excluded from regulatory calculations, DEC can remove them from the calculations used to determine the design value, which is used for nonattainment designations, re-designations, or reclassifying an existing nonattainment area to higher classification.

In Alaska's case, the State has prepared EEWR for any measured concentrations with potential regulatory significance, exceedances or not, that could possibly cause areas not previously in danger of a nonattainment designation to be designated nonattainment, whether or not they affect current regulatory designations. DEC cannot predict future year ambient air quality monitoring results. However, because a number of EPA's regulations include three year averages for design values, it behooves the DEC to prepare for the worst case scenario ahead of time.

Once exceptional events concentrations are identified, the state and local agencies follow the exceptional events implementation guidance posted on EPA's website.[12] Once an exceedance is noted by air quality staff, the Air Monitoring and Quality Assurance (AMQA) program manager immediately notifies EPA Region 10. If the exceedance(s) is/are due to an Exceptional Event and the event has regulatory significance, then State

[12] *https://www.epa.gov/air-quality-analysis/final-2016-exceptional-events-rule-supporting-guidance-documents-updated-faqs#guidance*

staff begin to collect evidence and prepare modeling for preparation of an EEWR demonstration package. All monitor data related to the event(s) are flagged in EPA's national Air Quality System (AQS) database as being associated with an exceptional event. Days measuring exceedances and values that may affect the annual design value are qualified with an exceptional events flag consistent with the requirements of 40 C.F.R. § 50.14 (for example the AQS flag RT refers to Request Exclusion Wildfire U.S.). These data records are associated with an event description in AQS. DEC flags other days with concentrations that have been affected by the event(s) but that will not have regulatory significance with informational flags in AQS (for example the AQS flag IT refers to Informational Wildfire U.S.). For the events with regulatory significance, the DEC prepares an EEWR (per the list above).

On February 20, 2018, DEC submitted an EEWR for Fairbanks and North Pole for 30 days during the 2015 summertime wildland fire season in Interior Alaska, 10 of which had 24-hour FRM-monitor $PM_{2.5}$ concentrations exceeding the 24-hour or annual $PM_{2.5}$ NAAQS, shown in Table 7.4-6. On October 31, 2018, EPA Region 10 concurred with all 4 of those 10 days that had concentrations exceeding the 24-hour $PM_{2.5}$ NAAQS (6/23, 6/26, 7/2, & 7/8). EPA declined to act on the remaining dates because they did not have current regulatory significance.[13]

Table 7.4-6
Fairbanks and North Pole $PM_{2.5}$ Exceptional Event Requests Submitted to EPA for 2015

Date	State Office Building $PM_{2.5}$ Concentration	NCore Primary Sampler $PM_{2.5}$ Concentration	NCore Secondary Sampler $PM_{2.5}$ Concentration	Hurst Road $PM_{2.5}$ Concentration
6/20/2015	8.8	8.0	-	15.3
6/23/2015	**68.3**	**68.8**	**76.9**	**83.2**
6/26/2015	**105.0**	**102.4**	-	**95.0**
7/2/2015	**44.3**	**45.2**	13.5	**45.4**
7/5/2015	14.0	13.8	-	15.4
7/8/2015	**57.1**	**60.0**	-	**54.5**
7/14/2015	14.3	14.7	-	14.9
7/20/2015	4.6	4.2	-	22.1
7/26/2015	14.6	15.2	-	9.6
7/29/2015	14.6	15.0	14.5	11.7

Note: Exceedances of the 24-hour $PM_{2.5}$ NAAQS are indicated in **bold** font. EPA concurred with all exceedances.

DEC is currently working on an EEWR for 2017 and Table 7.4-7 below lists the six days that DEC has flagged for exclusion from the 2017 98th percentile and design value

[13] *dec.alaska.gov/air/air-monitoring/exceptional-events*

calculations for the nonattainment area. Only the 7/13 NCore exceedance has an impact on a 2017 98th percentile, lowering the NCore value from 34.9 µg/m^3 to 34.4 µg/m^3. Pending EPA approval, the 2017 98th percentile concentrations used to calculate design value concentrations are as shown in Table 7.4-2.

Table 7.4-7
Fairbanks and North Pole $PM_{2.5}$ Exceptional Event Requests DEC has Flagged for Exclusion in 2017

Date	State Office Building Primary Sampler $PM_{2.5}$ Concentration	State Office Building Secondary Sampler $PM_{2.5}$ Concentration	NCore Primary Sampler $PM_{2.5}$ Concentration	NCore Secondary Sampler $PM_{2.5}$ Concentration	Hurst Road Primary Sampler $PM_{2.5}$ Concentration	Hurst Road Secondary Sampler $PM_{2.5}$ Concentration	Hurst Road Tertiary Sampler $PM_{2.5}$ Concentration
06/29/2017	-	-	-	-	12.1	-	-
07/12/2017	-	12.4	-	12.5	12.2	12.7	-
07/13/2017	**37.3**	-	**38.2**	-	-	-	27.7
07/14/2017	20.3	-	20.7	-	16.5	-	-
07/15/2017	12.7	-	-	-	-	-	-
07/24/2017	-	27.1	-	27.5	16.3	16.8	-

Note: Exceedances of the 24-hour $PM_{2.5}$ NAAQS indicated in **bold** font.

DEC is currently working on an EEWR for 2018 and Table 7.4-8 below lists the day where concentrations exceeded 35 µg/m^3 that DEC has flagged for exclusion from the 2017 98th percentile and design value calculations for the nonattainment area. The 6/14 SOB and NCore exceedances have an impact on a 2018 98th percentiles, excluding them would lower the NCore value from 26.2 µg/m^3 to 25.3 µg/m^3 and the SOB value from 27.5 µg/m^3 to 27.0 µg/m^3. Pending EPA approval, the 2018 98th percentile concentrations used to calculate design value concentrations are as shown in Table 7.4-2.

Table 7.4-8
Fairbanks and North Pole $PM_{2.5}$ Exceptional Event Requests DEC has Flagged for Exclusion in 2018

Date	State Office Building Primary Sampler $PM_{2.5}$ Concentration	State Office Building Secondary Sampler $PM_{2.5}$ Concentration	NCore Primary Sampler $PM_{2.5}$ Concentration	NCore Secondary Sampler $PM_{2.5}$ Concentration	Hurst Road Primary Sampler $PM_{2.5}$ Concentration	Hurst Road Secondary Sampler $PM_{2.5}$ Concentration	Hurst Road Tertiary Sampler $PM_{2.5}$ Concentration
06/14/2018	**60.5**	-	**61.3**	-	**47.8**	-	-